Calendar



Semmelweis University

Faculty of Medicine • Faculty of Dentistry Faculty of Pharmaceutical Sciences • Faculty of Health Sciences

2020 / 2021 Budapest

www.semmelweis.hu

"Medical students can only be prepared for patient care when practising by hospital beds; Not only the teachers explaining diseases will teach them then, but diseases themselves... Let theory be combined with practice as it is in real life, and make students visit sickhouses once they are studying to be medical doctors; also have them take care of patients with all the knowledge that is expected from doctors."

Lajos Markusovszky (1815-1893)

CALENDAR SEMMELWEIS UNIVERSITY



Anniversary Edition to Mark the 250th Year of the Foundation of Semmelweis University



LEGAL SUPERVISING AUTHORITY OF THE UNIVERSITY

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SEMMELWEIS UNIVERSITY

Detailed history of Semmelweis University

I. The history of the Medical Faculty (1769-1951)

The Nagyszombat (now Trnava) university founded in 1635 by PÁZMÁNY Péter archbishop of Esztergom and the former Jesuit order institution was given a royal rank during Maria Theresa's reign and turned from a truncated university to a real one with the addition of the missing fourth faculty, the Medical Faculty. All of the above formed an integral part of the comprehensive, imperial level reform process with the recognition in the background that health care is a key interest of the state and requires a high level of public intervention. The plans of the Medical Faculty in Nagyszombat was elaborated by the royal physician of the queen, the Dutchman Gerard van Swieten, based on the Medical Faculty in Vienna reformed by him as well. Organisation started with the decree of Maria Theresa dated on 7 November 1769. Before this, the whole university had received a royal rank with a royal charter on 17 July that year. To host the new faculty, a separate building was constructed according to the plans of Franz Anton Hillebrandt, which was completed in May 1772. Education was able to start in 1770, first with five faculties: Physiology and Pharmacology (PRANDT Ádám Ignác), Anatomy (TRNKA Vencel), Surgery (PLENCK József Jakab), Botany and Chemistry (WINTERL Jakab József) and General Pathology (SHORETITS Mihály), i.e. the actual clinics. Due to the lack of an own clinics, the education of general pathology faced severe difficulties, and the lack of the corpses and the botanical garden was also a great problem. By moving the university to Buda in 1777, these problems seemed to be solved.

The Ratio Educationis I issued simultaneously with the transfer to Buda modified the management of the University. The consistory considered as the representative of the state, which had been heading the university since 1767, was replaced by the university council (senate), however, practically with the same members. The magistratus academicus re-elected every year, which administered mostly the ritual issues, remained on. To lead the whole institution, a president and a director general and to lead the faculties, faculty directors (faculty presidents) were elected. A bit later (in 1786), Joseph II deleted this position (except the Medical Faculty) and their scope of authority was taken away by the previously marginalised deans. This time, the method of appointment of the tutors was also regulated. Based on the opinion of the faculty, the senate submitted a proposal to the king who decided on the appointment through the Royal Council of Governors.

It was on 25 March 1780 when Maria Theresa issued the Diploma Inaugurale, called as the "Magna Charta" of the university, in which she set among other general regulations the legal status of the university and the financial basis of the maintenance thereof. The successor of the



Queen, Joseph II was also dealing with the fate of the University. During his personal visits he decided on the translocation of the institution to Pest, which took place in 1784. The Medical Faculty found a home in a former Jesuits' monastery at the corner of Hatvani (now Kossuth Lajos) and Újvilág (now Semmelweis) streets. The frequent relocations held back educational activity, since the majority of resources was directed to the establishment of the conditions. The rapidly developing Pest provided a larger and more diverse patient population than before and the number of clinical beds also increased up to 16. The reconstructed building of the monastery proved to be small for the growing number of departments (Theoretical Medicine, Natural History in 1784; Veterinary in 1787; Public Medicine and Special Medical Studies in 1793; Theoretical Surgery in 1808; Obstetrics in 1812 and Ophthalmology in 1817) and the increasing number of students. Practical Training was strongly held back by that contrary to the international practice, the clinics were located not in the city hospital, but in the building of the faculty, therefore, there was no possibility to regularly change the patient population necessary for education. Although there were many attempts by the faculty to involve the Saint Roch Hospital to expand the institutions of the faculty, they were systematically rejected due to the resistance of the city magistrate. Contrary to this, from the 20's, the clinical trend emphasising practical education was established, the main representative of which was BENE Ferenc, the introducer of vaccinations against pox.

Initially, based on the idea of van Swieden, the duration of the medical training was not regulated. First, a decree in 1774 determined the training period of physicians to be 5 years and according to the study regulation in 1786, it became 4 years. After tightening the examinations, the mutual recognition of medical diplomas had been valid since the reign of Joseph II (the principle of the so-called conformetur), at least as regards Vienna-Prague-Cracow-Pest. In 1804, Vienna left this agreement and obtained a privilege against the others. The surgeon master and civil surgeon training were 2 years long, while the pharmacist training was of 1 year. Midwives were trained in short courses started each semester. In 1787, the Veterinary course joined as well.

The end of the century, showing a vivid university life was replaced by the retrograde mentality of the era of Francis I. This is reflected by the Ratio Educationis II in 1806, created in the spirit of centralisation and the deprivation of the freedom of education, which was dealing with the Medical Faculty in a much deeper level than the previous one. It stipulated in details the teaching material and the obligations of the professors, it updated the order of the education and comprehensive exam and increased the length of education to 5 years. The president (praeses universitatis) executing the intent of the government and his deputy and the vice president (vicepraeses) who was at the same time the chancellor of the university played a key role in the management of the university. The university magistrate consisting of rectors, deans and seniors had only limited power. At the end of the 1810's, even the faculty director position was reset, however, the professional supervision of the Medical Faculty was exercised by the national chief medical officer.

As in terms of the French revolutionary ideas feared by the government, medical training was a neutral area, at the beginning of the 19th Century, this was the only faculty able to perform considerable scientific activity and more significant developments. Contrary to the efforts, the substantial conditions of education became worse and worse due to overcrowding and the increasing demands. The devastation of the icy flood in 1838 increased on the problems in an extent that even the parliament was dealing with the situation of the Medical Faculty.

Under these narrow circumstances, the tutors of the faculty tried to keep up with the pace of international medical science which started to develop and specialise that time. In the light of the above should one consider that overtaking Vienna, Pest was one of the first cities to found an individual faculty of veterinary in 1793, which included the contracted forensic medicine and public health as well. Vaccination against pox has been applied in Hungary since 1799 and in 1824, headed by GEBHARDT Ferenc, a Central Vaccination Institute was established within the Medical Faculty. One of the most significant scientist of his era, KITAIBEL Pál was also among the tutors of this faculty. The Institute of Pathology founded in 1844 by ARÁNYI Lajos was one of the oldest similar institution in the world. At the beginning of 1847, only few months after the first experiment in the Massachussets Hospital, Balassa tried anaesthesia with ether. The first anaesthetic surgery was performed few days later by SCHOEPF-MEREI Ágost. The faculty was continuously playing key role in the fight against the great Hungarian epidemics (typhus, yellow fever, pox and the cholera leading to riots in 1831 and 1848-49).

The medical and surgical training courses were taught in Latin from the beginning. Education in Hungarian was first dealt with at the end of the 18th Century. RÁCZ Sámuel, who was the fifth professor of the medical faculty in 1793/94 to hold the position of rector, issued the first Hungarian physiology book in 1789 with the title "A physiologia rövid sommája" (Short summary of physiology), which was considered as the first Hungarian university textbook as well. In 1830, law allowed the use of Hungarian language and 3 years later, the first doctorate was written in Hungarian by FLÓR Ferenc and in 1844, Hungarian became the official language. Contrary to the national partiality of the tutors, the education in Hungarian was accepted by the Medical Faculty with reservations, since many of the students - and even some of the tutors - did not speak Hungarian and the Hungarian medical language was practically missing. Finally, the Hungarian as the language of education was introduced in 1848. The lower degree courses (surgeon master, midwife, veterinarian) had been held in the national languages since the beginnings, i.e. in Hungarian, German and Slovakian.

In the legal code of April 1848, a separate article (Art. XIX, 1848) was dealing with the university and promulgated the independence of the university and the principle of liberal freedom of education. The majority of the tutors and students actively took part in the freedom fight. Therefore, the reprisal after the surrender severely affected the tutors of the university. Many were forced to go to prison (BALASSA János), to hide (BUGÁT Pál) or to emigrate (e.g. SCHOEPF-MEREI who later founded a children's hospital in Manchester). Certification procedures were performed, the tutors might hold their position depending on their loyalty and authority harassments were permanent. Tutors loyal to the emperor, but often of secondary level were employed by the faculty. At the time of the absolutism, the language of education and administration became the German instead of the Hungarian. Instead of the educational order of 1848, in the spirit of the "conformetur" principle, the Vienna order of 1833 was introduced. At the same time, there were modernisations as well. In this way, the secondary school maturity became obligatory and the faculty director position was deleted. Although experts were trained still in 9 faculties, the surgeon master course slowly faded and based on the pattern in Lemberg, Olmütz and Salzburg, this training was suspended also in Pest. In 1872, the guilds were also dissolved. As regards the language issue, a shift occurred only after the large foreign policy defeat of the royal court. In 1859, a delegation of students went to Vienna to restore the Hungarian language. In 1860, the right of autonomous rector and dean election was extended also to the university of Pest. As a result of the October Diploma, the main subjects were taught in Hungarian and the others in German, Slovakian or Latin depending on the demands. Finally, it was the Article XLIV of 1868 after the Austro-Hungarian Compromise to reinstate the Hungarian language. This time, many tutors not speaking Hungarian left the university, e.g. the outstanding physiologist, Jan Nepomuk Czermák resigned as well contrary to the efforts of his Hungarian colleagues to make him stay.

The harmonised medical training was introduced in 1872, thus, since 1878, only one medical diploma has been existed with the name "doctor of the universal medical sciences". The new university decree in 1875 determined the order of the new and universal medical doctor comprehensive exam in addition to the provision of the freedom of education and the autonomy. In 1881, the duration of the academic year also changed. Earlier it had been between November and August and since that time, it has been between September and June. Due to the poor facilities, the main problem of the medical faculty was the lack of space. Although in 1848, the clinics were transferred from the Újvilág utca building, it proved to be only temporary, since after the suppression of the freedom fight, they returned there. The Saint Roch Hospital refused on to host the clinics and the capital failed to provide a site for the constructions for a long time. The acquisition of the Kunewalder house (located that time in the Országút, today in the Múzeum körút) in 1858 was a temporary relief that time, which was originally bought for the Institute of Veterinary. The surgery (Balassa), the zoology, the physiology and the obstetrics headed by Semmelweis that time were able to move here. The administration of the faculty and the library got temporary home in buildings nearby. A real solution was brought only by the large-scale constructions started in 1873 with a cost of 25 million krones, which were finished only in 1911. This time, the Üllői út considered that time as a rather outer belt area became the axis of the Medical Faculty, where the clinics, the institutions and the administration were located in two sites. Simultaneously, new, often parallel departments sufficiently equipped in the level of the era were established one after the other. The number of such departments almost quadrupled until the 1880's. In these still unique developments, EÖTVÖS József and TREFORT Ágoston ministers of the Ministry of Religion and Public Education, BERZEVICZY Albert state secretary, MARKUSOVSZKY Lajos councillor and on behalf of the Medical Faculty BALASSA János, KORÁNYI Frigyes and the later secretary of state, TÓTH Lajos played key role.

With the rapid development of the clinics, the catch-up of the lagging behind was successful. Parallelly to the constructions, the "medical school of Budapest" became clear around Balassa having launched a medical weekly "Orvosi Hetilap" and Markusovszky. As an effect of Semmelweis, this was the place where the deliberate prevention of surgical infections was started. Public health was among the first to get a department in Budapest, headed by the outstanding bacteriologist, FODOR József. By continuing the work of Schoepf-Merei and Sauer, KORÁNYI Frigyes was the one to begin the establishment of a Hungarian internal medicine school on a state-ofthe-art foundation. His work was carried on by his son, Sándor. JENDRASSIK Ernő, named also as the Hungarian Charcot was one of the founders of neurology, DOLLINGER Gyula was that of orthopaedics and TAUFFER Vilmos was that of the surgical obstetrics and gynaecology. LUMNICZER Sándor, the founder of modern surgery was the first to use the Lister's system of antisepsis. Owing to the work of SCHULEK Vilmos, GRÓSZ Emil and IMRE József, Hungarian ophthalmology became this time famous throughout Europe. As regards paediatrics, the Bókays and KOPITS Jenő, the international expert of hip dislocation deserve mention. The first director of the Hungarian Pasteur Institution, HŐGYES Endre set the foundations of the later Nobel prize winner invention of BÁRÁNY Róbert. With the research of the fine structure of the nervous system, the anatomist LENHOSSÉK Mihály achieved the recognition of his Nobel prize winner colleague, Santiago Ramón y Cajal who considered him as his fellow during the creation of neuron studies. In stomatology, the work of ÁRKÖVI József, while in pharmacology, that of BALOGH Kálmán were outstanding. In 1907, the Radiology got a separate institute headed by the founder of radiology in Hungary, ALEXANDER Béla. Physiology became a modern science in the Medical Faculty owing to the outstanding Czermak of Czech origin. He was followed by JENDRASSIK Jenő whose aim was the foundation of the modern Hungarian physiology school.

The number of students drastically increased. In the 1860's, their number was between 400-500, while in the 1880's, it exceeded 1000. In the 1860's, the first student associations were established. In 1862, aid society and 5 years later, a self-education association was founded. The end of the century was the first time when the issue of the admission of women arose. The medical faculty had generally a rejecting opinion thereabout. The first Hungarian female physician, countess HUGONNAY Vilma succeeded to achieve the recognition of her diploma obtained in 1879 only after 17 years of administrative struggling. In 1895, a decree made it possible for women to participate in trainings and practices in humanities, medical studies and pharmacology. The first female physician graduated in Budapest, STEINBERGER Sarolta was inaugurated on 3 November 1900. A real change in the training of female physicians was brought only by the world war. During the World War I, the majority of the students and the tutors joined the army and the half of the beds the number of which increased to 2000 were maintained for the injured. The change to war industry and the economic exhaustion of the Monarchy drastically decreased the financial supply of education and also of the university. The war almost eliminated the students, however, after their disarmament, there was a dumping. Compared to the last year in peace, more than twice as many (6526) medical students wanted to con-

The revolution and the dictatorship of the proletariat triggered further chaos in 1918-19. The university was made subject to stringent central administration and there were significant transformations. There were changes in the personnel and the tutors considered as right wing were deprived of their positions. During the short existence of the Council Government, its measures could not be long-lasting. By rising to power of the counterrevolution, the faculty council qualified the events after 31 October 1919 as "ex lex" and further changes in personnel and certification procedures were started. Tutors were removed from the faculty, among others HEVESY György, one of the founders of nuclear medicine who later won the Nobel prize abroad or the outstanding ophthalmologist, GRÓSZ Emil, but his removal was only temporary.

tinue their interrupted studies.

From the annexed areas, a smaller migration started to the remaining "Mutilated Hungary" and especially to Budapest. Mostly the state-employed intellectuals (public officers, physicians, teachers etc.) were forced to migrate, partly as their

job was linked to the language and partly as they could have been hardly employed by a newly settling foreign state. The largest overcapacity was experienced in the field of physicians, mostly in Budapest, therefore, the fight for making a living was quite harsh. In addition to the too large number of students and the experience from the revolutions, this was also a reason of the issue of the Act XXV of 1920 also known as "numerus clausus", the initiation of which just started from the Medical Faculty of Budapest. The point of this act was to tighten the conditions of the admission to university, with which on the one hand, they tried to decrease the number of students in further education and on the other they tried to exclude anyone who had taken part in the revolution and to limit the number of Jewish students. This latter affected especially the Medical Faculty, since as it was a course of open access, many Jewish youngsters have selected the medical profession since the beginning. On the other hand, this act was beneficial for the spread of protectionism. At the same time, the faculty tried to block the admission of women as well. On 14 April 1921, the university in Budapest took the name of its founder, PÁZMÁNY Péter and had this name until 1950.

The economic crisis aggravated on by the mutilation of the country led to a financial crisis for the university it had never experienced before. The situation had just begun to normalise when the crisis in 1929 resulted again the decrease in the financial resources spent on education and health care. Unemployment appeared among the physicians as well, the workforce reduction in the university exceeded 10%, the investments stopped and the quarter of the beds had to be left empty due to financial reasons. The number of students sharply decreased as well (in 1925-26 there were 1729, in 1930-31 only 1234 students), contrary to the international trends.

The reform of the medical training which had been on agenda for a long time was introduced in 1922. As a main principle, the researcher and practising physician trainings were in focus. The duration of the education increased to 6 years instead of 5, the comprehensive exams were separated in four cycles and the number of the courses announced was also increased. Later, the system of comprehensive exams was modified on, but it was entered into force only in 1943. In 1936, the classification of the diplomas changed. This was the time when the qualifications used even today, i.e. the rite, the cum laude and the summa cum laude were introduced. After a long time, also the pharmacist education was renewed by increasing the duration of the education from 2 years to 4 and by decreasing the practice from two years to one. Thereafter, the start of the pharmaceutical studies was not linked to a prior practice in a pharmacy, but after the maturity exam, one could immediately enrol.

Between the two world wars, internationally acknowledged schools were operating in the Medical Faculty, such as the school of KORÁNYI Sándor who developed on the school founded by his father. Among his results, the elaboration of the functional examination methods of kidney and the reduction of tuberculosis are outstanding. Many of his students became academicians and heads of department, such as RUSZNYÁK István, HETÉNYI Géza and HAYNAL Imre. The research on cancer made by KROMPECHER Ödön who described the basocellular cancer, that on nucleins, complementaries and enzymes by LIEBERMANN Leó or that on morphology by SCHAFFER Károly were significant. As regards pathoanathomy, BUDAY Kálmán clarified the pathogenesis of necrotic stomatitis and mellitis. In microbiology PREISZ Hugó, in biochemistry HÁRI Pál, in physiology FARKAS Géza and in biology HUZELLA Tivadar can be mentioned. In the fields of clinical medicine, the paediatrician HEIM Pál, BÓKAY János and BÁLINT Rezső, the surgeon VEREBÉLY Tibor and the ophthalmologists GRÓSZ Emil and BLASKOVICS László were the outstanding experts of their fields.

Apart from the military duty affecting the tutors as well and the care of the injured, the World War II had not trigger any special disturbance in the life of the Medical Faculty until 1944. With the approach of the front, the majority of the tutors were deployed. The rise to power of the Arrow Cross Party on 15 October 1944 posed new threats on the university and thus, the Medical Faculty as well. Contrary to the categorical order of the government, the university denied to move to Germany. Afterwards, there were plans to transfer the clinics and laboratories to Buda, however, they were mostly thwarted partly due to the repeat resistance of the faculty and partly due to the difficulties in transportation. Before the closure of the shell of fortress lines, the engineering, medicine, pharmacy and veterinary senior students were carried to Germany with a military call-up, i.e. the representatives of every programme considered as important regarding the continuation of the war. In this way, about 600 medical and pharmacist students from the Medical Faculty Budapest were settled partly to Halle and partly to Austria with some of the education staff. They succeeded to return only after the war among huge difficulties and with the mediation of the university, with American passport.

Together with the city, the faculty was also heavily hit by the siege of Budapest. The damage in the buildings were enormous (four clinics were severely hit) and the majority of the equipment was also destroyed. The total damage was around 13 million golden pengő (at 1938). The largest devastation affected the Internal Medicine II, the Gynaecology I, the Dermatology, the Surgery II and the Paediatric Clinics, but several other buildings were damaged as well. This was aggravated by the freezing of the drainage system and the plundering affecting the whole city. Contrary to all these, the clinics were operating even in case of the siege, often under impossible circumstances. Even the Institute of Physiology and the Pathoanathomy department started to perform the care of the injured.

After the war, the tutors were significantly changed according to the taste of the new political forces having the power. The main tool of this was the certification procedure. It describes the ratios well that against 15 out of the 27 regular tutors of the medical faculty, procedures were launched or they were dismissed with various sanctions. In addition to this, in January 1945, IMRE József professor died which led the Ophthalmology Clinic to get empty. In addition to them, 6 honorary extraordinary tutors, 17 private professors and 11 physicians were dismissed. Out of the physicians above, 44 were still in Germany with the students carried there. From June 1945 until his emigration, the Nobel Prize winner professor SZENT-GYÖRGYI Albert was among the tutors of the faculty, who was that time the head of the Department of Physiology and Medical Chemistry. From 1945, there was a sharp increase in the number of the students, which exceeded multiple times the capacity of the faculty, therefore, from 1947/48 onwards, they were forced to introduce admission examination. After the rising of the Communist Party to power, one of the most important factors became the origin of the candidate, therefore, the social composition of the students significantly changed. Soon, almost 25% was the ratio of the students from worker or pawn origin. The National Association of Peoples' Colleges was founded and from the academic year 1951/52, the Scientific Students' Association movement was introduced based on Soviet pattern. In 1948, education was reformed again. The examinations were tightened, education turned more pragmatic and the medical chemistry and physics were included into the curriculum, in addition to the biology in 1950. Due to political reasons, the Marxism and Leninism, the Russian language and the national defence knowledge were also added.

In this period, multiple hospitals were attached to universities by forming clinics. Therefore, the number of beds increased to 3167 in 1955 from the 1178 in 1946. In parallel, specialisation was going on within the disciplines, which led to further separations in the clinics as well. Areas with larger and larger costs entered into research, therefore, fallback behind the rich countries was evident. This was worsened on by the isolation policy in the 1950's when there was Soviet influence also in science.

II. History of the separate Medical University: BOTE, SOTE (1951-2000)

After 1949, the Hungarian higher education underwent consecutive reforms. Due to the fight against churches, the name of the university was modified, therefore, instead of its founder, PÁZMÁNY Péter, the university got the name of one of its most prominent scientist tutors, EÖTVÖS Loránd on 1 September 1950. At the end of 1950, the Council of Ministers discontinued the former practice and traditions and decided the creation of specialist universities subject to the sectoral

ministries. They wanted to reach it partly by founding new institutions and partly by the division of the currently existing ones. During the reorganisation, the Soviet higher education system of the 1930's was taken as example, disregarding that since that time, this had been significantly modified also in the Soviet Union by resetting the unified management of higher education. The deadline of the completion of the action was planned to be on 1 February 1951. Within the framework of

Semmelweis University

this, the medical faculties of the universities were separated and transformed into separate specialist universities. In a parallel way, the new medical universities were subordinated not to the Ministry of Religion and Public Education, but the newly formed Ministry of Health. Therefore, from 1 February 1951, the Faculty of Medicine of the Eötvös Loránd University continued its operation as a separate Medical University of Budapest.

In 1955, the organisational transformations went on. Within the University, 3 faculties were formed (with their former names: Faculty of General Medicine, Faculty of Dentistry and Faculty of Pharmacy). On 1 September 1955, the rectorate was established. The pharmacist training was transferred permanently to the medical university from the Eötvös Loránd University back in 1951 and in 1952, the dentist training of new system was started. Finally, on 7 November 1969, for the 200th Anniversary of the Faculty of Medicine, the university took the name of SEMMELWEIS Ignác.

Separation had, however, some disadvantages as well. From certain aspects, the distance from the humanities and the Faculty of Sciences led to drawbacks for the medical profession. The everyday life of the new university was made more difficult by that it had only the narrowest professional institutes and the conditions for the cultural and sports life or the rooms suitable for hosting large events were missing. They were able to be terminated only by the large investments of the 1970's. After the separation of the university, the separation from the BEAC university sports club also took place to form the Orvosegyetem Sport Club (OSC, Medical University Sports Club). The fencers and waterpolo players of the OSC have been the regular and successful participants of the Olympic Games and world championships.

The prints of the war had not even disappeared when as a protest against the communist power, the revolution broke

out on 23 October 1956. In the student movements, the students of the medical university also took place and after the breaking out of the armed fight, the role of our university aimed mostly at the care of the injured, since our institutions were in the centre of the war in Budapest. The staff of the affected clinics and institutions exhibited superhuman and heroic withstand multiple times. Further buildings were damaged and the most severely hit building was the Dermatology clinic. The reprisal after the communist restoration did not avoid our university either. The victim of this reprisal was the innocently slandered and executed TÓTH Ilona senior physician student who is considered today as the martyr of our university.

After consolidation, the emerging external relations from the 1960's facilitated us to keep up with the scientific international profession. In the following decades, serious developments were performed as well. The most important of them were the reconstruction of the Dermatology clinics demolished in 1956, the huge theoretical building finished in 1978, the Ophthalmology clinic I and the delivery of the Transplantation and Surgery Clinics in the beginning of the 1990's. In the clinics, healing and education took place this time with more than 3100 beds.

The increase of the ratio of the international students has started to grow since the 1970's. This time, they arrived mostly from the developing countries and mostly from the so-called democratic countries. Education in German language started in 1983 and after an experiment in 1987, the regular education in English language started in 1989.

The Act LXXX of 1993 on Higher Education made it the task of the universities to prepare for scientific degree and to award the PhD degree, based on which the Semmelweis University got its Doctoral School accredited in the same year and until 2018, it started 47 programmes.

III. The history of Semmelweis University (2000-)

At the end of the 1990's, the transformation of the Hungarian higher education network was put on agenda with the aim of institutional integration. The final stage of this process was determined by the Act LII of 1999 on the Transformation of the Higher Education Institutional Network. Accordingly, even in July that year, three universities (the Semmelweis University of Medicine, the Haynal Imre University of Health Sciences and the University of Physical Education) elaborated the plan of the organisational, operational and financial policy of the university to be created, together with the call for application for the rector and the director general. After the preparatory work, on 1 January 2000, Semmelweis University was established by the merger of the Semmelweis University of Medicine, the Haynal Imre University of Health Sciences and the University of Physical Education, which consisted of the following faculties: Faculty of General Medicine, Faculty of Health Sciences, College Faculty of Health, Faculty of Dentistry, Faculty of Pharmacy and Faculty of Physical Education and Sport Sciences. From this group, the Faculty of Health Sciences of the Haynal Imre University of Health Sciences was removed and based on a governmental decree, it ceased to exist. (The successor of the Haynal Imre University of Health Sciences was the new organisation, the National Medical Centre formed from it, which was known as Szabolcs utca Hospital until its closure in 2007.) The College Faculty of Health of the Haynal Imre University of Health Sciences remained on the part of the university, which continued its operation from the end of 2001 with 5 faculties: Faculty of General Medicine, College Faculty of Health (from 2007 with the name of Faculty of Health Sciences), Faculty of Dentistry, Faculty of Pharmacy and Faculty of Physical Education and Sport Sciences. In its decision no 62/2008 on 29 May 2008, the Senate of Semmelweis University decided to found its sixth faculty, the Faculty of Health and Public Services with the participation of three institutions working in the border of natural sciences and social sciences, i.e. the Health Services Management Training Centre, the Institute of Mental Health and the Institute of Health Informatics, Development and Further Training. The faculty started its activity in January 2010 and the inaugural meeting of the Faculty Council was

held on 21 April 2010. The new faculty has mostly social science orientation, however, it integrated interdisciplinary trainings at the border of sciences. With its programmes, it covers the whole educational spectrum including the basic training, the master training, the doctoral training and the postgraduate specialist training courses in the field of health-care management, mental and community health and health informatics.

In addition to the structural reorganisation, the new millennium brought significant developments as well. In 2003, the College Faculty of Health succeeded to move to a new site instead of its earlier fragmentation (Óbuda, Újpest, Józsefváros), to the Vas utca close to the centre of the university, into the fastidiously renovated building of the former Pajor sanatorium and later Balassa János Hospital. The Educational Centre of the Faculty of Dentistry was built between 2006-2007 in the site of the Pátria printing house, in the Szentkirályi utca. Almost all of the clinics and departments of the faculty moved to this state-of-the-art building. In September 2008, the plan of a long-standing desire of a second theoretical building, back from the 1960's came true in the form of the Theoretical Medical Centre in the Tűzoltó utca, which won several architectural professional prizes. In the gross 27,000 m² of the building, there are research laboratories, study rooms, student laboratories, lecture rooms, a modern animal house and seven seminar rooms. The two latter investment was performed in the so-called PPP construction. Among the renovations of buildings, the multistage project of the Central Management Building (Üllői út 26) started in 2008 has to be mentioned, the first stage of which, the renovation, was finished in 2009 and the project was completed by the formation of the loft in 2012. The Ophthalmology Clinic in the Mária utca and the 1st Department of Pathology and Experimental Cancer Research were renovated in 2013. In the summer of 2012, the large-scale development of the Outer Clinical Site, the Korányi project was started, which is one of the most significant investment of the previous century of the university.

Between 2008 and 2010, Semmelweis University started three off-site trainings abroad. The first was the Asklepios Campus Hamburg, within the framework of which the students studying in German language continue their studies in the Hamburg campus according to the Hungarian curriculum, after the theoretical training in Budapest and they get the medical (M.D.) diploma of the Semmelweis University at the end of the training. In cooperation with the L.U.de.S University, Lugano, Switzerland, the Italian and English language physiotherapy basic training (BSc) started in 2009, with the same curriculum as the Faculty of Health. In 2010, the Faculty of Health and Public Services established an offsite training in Bratislava. The postgraduate health management training programme organised jointly with the Health Management Academy, Bratislava was held in Slovakian language with two groups, one in 2010 and in 2012.

In 2010, Semmelweis University won the title of Prestigious Research University related to which it performed a large-scale tender with the title "Modern Medical Science Technologies in the Semmelweis University". Within the framework of a tender of almost 3 billion Hungarian Forints, outstanding results were achieved in five distinguished fields of research: personalised medicine, imaging procedures and bioimaging, bio-engineering and nanomedicine, molecular medicine and in the integrative educational module. The university won the Research University qualification for the period 2013-16 as well, which is still possessed.

In Hungary in 2011, Semmelweis University was the first among the medical universities to develop e-learning learning materials within the framework of a two-year Social Renewal Operational Programme (TÁMOP) and the possibility became open to hold on-line examinations. Even in that year, the E-learning and Digital Content Development Centre was founded, which performs the coordination tasks of the development of the university learning materials.

In 2013, the Central Institute of Stomatology was terminated, the role of which was taken away by the Department of Community Dentistry within the university. This Department renovated in 2019 is the largest institute of the Faculty of Dentistry in terms of staff and floor area and in addition to the continuous patient care, it takes part in the education, specialist physician training and further education tasks as well. In 2014, the Thoracic Surgery Department was established, which is operating on the basis of the National Institute of Oncology. In December 2015, the first successful lung transplantation in Hungary was performed here.

On 1 September 2014, the Faculty of Physical Education and Sport Sciences spun off Semmelweis University and it continued its operation separately again, with the name of University of Physical Education.

In the end of 2014, similarly to many Hungarian institutes of higher education, with the introduction of the chancellor position, the management system of Semmelweis University was changed. Education, research and patient care are managed by the rector, while the tasks regarding the operation and the management of the university were transferred to the chancellor. From 2015, the management of the Clinical Centre of the university was taken by the vice-rector for clinical affairs from the rector. In 2016, as a separate patient care institution of the university, the Centre of Oncology was formed after its spin-off from the Department of Radiology and Oncotherapy. On 1 August 2017, the Pető András College and its part, the Institute of Conductive Education joined the University, which has been operating as the Pető András Faculty. In this way, the number of faculties increased to six again.

In 2018, the university celebrated the 200th anniversary of the birth of Semmelweis Ignác after whom the university got its name and with the solemn opening ceremony of the academic year 2019/2020, the jubilee year of the university starts, with which we pay tribute to the 250th anniversary of the foundation of the university.

Compiled by dr. MOLNÁR László – SÁGI Zenina – DOBOZI Pálma



BENE Ferenc, tutor of internal medicine 1775-1858



BÓKAI János, tutor of paediatrics 1822-1884



BALASSA János, tutor of surgery, the director of the Medical Faculty in 1848/49 1814-1868



ARÁNYI Lajos, the first tutor of pathology 1812-1887



SEMMELWEIS Ignác, painted by THAN Mór 1818-1865



WAGNER János, tutor of internal medicine 1811-1889



JENDRASSIK Jenő, tutor of physiology 1824-1891



LENHOSSÉK József from 1864, tutor of anatomy 1818-1888



Semmelweis University

GENERSICH Antal, tutor of pathology 1842-1918



LUMNICZER Sándor, tutor of surgery 1821-1892



MIHALKOVICS Géza, tutor of anatomy 1844-1899



HŐGYES Endre, tutor of general medicine 1847-1906



FODOR József, the first tutor of the independent public health 1843-1901



TAUFFER Vilmos, tutor of obstetrics and gynaecology 1851-1934



KORÁNYI Sándor, tutor of internal medicine 1866-1944



NÉKÁM Lajos, tutor of dermatology 1868-1957



KROMPECHER Ödön, tutor of pathology 1870-1926



HUZELLA Tivadar, the director of the Institute of Histology and Embryology 1886-1950



BALOGH Károly, the first dean of the Faculty of Dentistry 1895-1973



HAYNAL Imre, the director of the Department of Internal Medicine II 1892-1979



Semmelweis University

MOZSONYI Sándor, the first dean of the Faculty of Pharmacy 1889-1976



SZENT-GYÖRGYI Albert, Nobel Prize winner, tutor of biochemistry 1893-1986



BALÓ József, tutor of pathology 1895-1979



SZENTÁGOTHAI János, neuroscientist, tutor of anatomy 1912-1994

HONORARY DOCTORS OF THE MEDICAL FACULTY OF BUDAPEST DURING THE UNIVERSITY'S SCIENCE ERA

1895/96	Tivadar Károly, royal prince from Bavaria John Shaw Billings, professor from Philadelphia	1914/15 1928/29	Otto Karl Schjerning, professor of Berlin Friedrich Schmidt-Ott, Minister of State of Prussia
	Rudolf Virchow, professor from Berlin Joseph Lister, professor from London Adolf Anders Retzius, professor from	1930/31 1934/35	Harvey Williams Cushing, professor of Harvard University in Cambridge Jenő Sipőcz, Lord Mayor of Budapest
	Stockholm Guido Bacelli, professor from Rome Pierre-Paul-Émile Roux, professor from Paris Károly Than, professor of Budapest	1935/36	Ferdinand-Jean Darier, Chairman of the French Society of Dermatology Anton Freiherr von Eiselsberg, professor from Vienna
1899/1900	Tivadar Duka, chief doctor Col. Emeritus of the royal Bengal army of England, on the occasion of his 50th anniversary of operation		Freiburg August Krogh, professor fom Copenhagen Granville Harrison Ross, professor at Yale University
1909/10	Albert Apponyi, Minister of Culture, on the occasion of the XVI. International Medical Congress held in Budapest		Charles Scott Sherrington, professor from Oxford Frederick Gowland Hopkins, professor
1911/12	Heinrich Wilhelm Waldeyer, professor from Berlin, on occasion of his 50th jubilee as a doctor	1942/43	from Cambridge Gustave Roussy, professor from Paris Károly Szendy, Mayor of Budapest

LIST OF PERSONS AWARDED WITH THE "DOCTOR HONORIS CAUSA" TITLE AT THE BUDAPEST/ SEMMELWEIS UNIVERSITY OF MEDICAL SCIENCES

1967	Boris Vasilyevich Petrovsky (Soviet Union)	1972	Marcelino G. Candau (Switzerland)
1969	Pyotr Kuzmich Anohin (Soviet Union) Assen Hadyolov (Bulgaria) György Békéssy (USA) Vasily Vasilyevich Parin (Soviet Union) Daniel Boyet (Italy)	1976	Britton Chance (USA) Leonid Semyonovich Persyanilov (Soviet Union) Tadeusz Krwawicz (Poland) Vasyl Vasilyevich Zakusov (Soviet Union)
	Stefan Milcu (Romania)	1978	Uktam Aripov (Soviet Union) Nikolai Nikolaevich Blohin (Soviet Unio
	Karl Fellinger (Austria)	1980	
	Samuel Rapaport (Germany)	1982	George Weder (USA)
	Jules François (Belgium)	1983	Philip Gerald Mechanick (USA)
	Pyotr Grigoryevich Sergiyev (Soviet Union)		Viking Olov Björk (Sweden)

1984	Walter Birkmayer (Austria) Arje Scheinen (Finland)	1995	Takao Yamauro (Japan) H. W. Wouters (Netherlands)
1985	Jens J. Pintborg (Denmark) Armand Hammer (USA) Klaus Thurau (Germany)	1996	Károly Balogh (USA) Thomas Rabe (Germany) Horst Cotta (Germany)
1986	Hans Altmann (Austria) Mitropan Studenikin (Soviet Union)		Eberhard Ritz (Germany) Viktor E. Frankl (Austria)
1987	John Gergely (USA) Halfdan I. Mahler (Denmark) Shogo Sasaki (Japan) Ludwig Mecklinger (Germany) F. Gotthard Schettler (Germany)		Heikki Ruskoaho (Finland) John A. Hobkirk (England) Thomas Schiff (USA) Dieter Ernst Lange (Germany) Volkmar Schneider (Germany)
1988	László Ernster (Sweden) Jan Solich (Czechoslovakia) Dieter Schleger (Germany) Emeric Szilágyi (USA) Thomas P. Singer (USA) George B. Udvarhelvi (USA)	1997 1998	Theodor Hellbrügge (Germany) Hans-Günter Sonntag (Germany) Thomas Kenner (Austria) Moussa B. H. Youdim (Israel) Edward R. Perl (USA) Bernd Brinkmann (Germany)
1989	Douve D. Breimer (Netherlands)		Frank A. Chervenak (USA)
1990	Yoshinori Nozawa (Japan) Walter Künzel (Germany) Herbert Oelshcläger (Germany) Jerzy Maj (Poland) Martin Reivich (USA)	1999	Asim Kurjak (Croatia) Ferenc Robicsek (USA) Werner Schmidt (Germany) André Haynal (Switzerland) Luis Gabriel Navar (USA) Nikolaus Freudenberg (Germany) Stefan Pollak (Germany) Tamás Hacki (Germany) Norbert Schwenzer (Germany) Thomas D. Kerényi (USA) Georg Stingl (Austria)
1991	Friedrich Wilhelm Ahnefeld (Germany) László Róbert (France) Endre A. Balázs (USA) Benno Runnebaum (Germany) Herbert Braunsteiner (Austria) Heitaroh Iwata (Japan)		
1992	Merton Sandler (England) Hans Weidinger (Germany)		Michael Wahl (Germany) Michael Wahl (Germany)
1993	György Ács (USA) László Iffy (USA)		Klaus Wolff (Austria)
1994	Ursula Lachnit-Fixon (Germany) Milan Chalabala (Slovakia) Felix Unger (Austria) Ulrich Joos (Germany) Isaac van der Wald (Netherlands) Sergio Ferri (Italy)		

LIST OF PERSONS AWARDED WITH THE "DOCTOR HONORIS CAUSA" TITLE AT SEMMELWEIS UNIVERSITY

2000	Allen Cowley (USA) Péter Illés (Germany) Iván Kiss (Germany) Ryszard Jerzy Gryglewski (Poland) Emmanuel van Praagh (France) Claes B. Wollheim (Switzerland) Gottfried O. H. Naumann (Germany) Gabriel P. Haas (USA) Gerd Schmitz (Germany)	2004	Stephen Katz (USA) Sebastian G. B. Amyes (England) Sir George Radda (England) Michael Marberger (Austria) István Seri (USA) Peter Gängler (Germany) Osmo Hänninen (Finland) Albert William Taylor (USA) Barry D. Kahan (USA)
2001	Elemér Zsigmond (USA) Pekka Juhani Saukko (Finland) Leo M. Sreebny (USA) N. Joan Abbott (England) Christopher Squier (USA) Ádám Tegzess (Netherlands) Gottfried Heinisch (Austria) Herbert Rübben (Germany) Han C. G. Kemper (Netherlands)	2005	Vilmos Vécsei (Ausztria) Louis Ignarro (USA) Gyöngyi Szabó (USA) Heinrich Schmidt-Gayk (Germany) Jos Hendrik Willem Hoogmartens (Belgium) Cynthia K. Larive (USA) Tibor Hortobágyi (USA) Vladimir Brusic (Australia)
2002	Jacques Rogge (Belgium, Switzerland) Sataro Goto (Japan) Matthias Brandis (Germany) John Holloszy (USA) János Alpár (USA) Denys Wheatley (England) Angelo Benedetti (Italy) Ferenc Jolesz (USA) Tatsuo Nagai (Japan)	2006 2007	Uwe Wilhelm Joseph Heemann (Germany Philippe Morel (Switzerland) Rolf Christian Gaillard (Switzerland) Mátyás Sándor (USA) Hideki Ohno (Japan) John Raymond Garrett (England) Michael Landthaler (Germany) Kamal K. Midha (Canada)
2003	Thomas E. Andreoli (USA) Michael Georgieff (Germany) László Víg (Hungary) György Gosztonyi (Germany) Martin Black (England)		Gertrud Pfister (Denmark) Roberto Romero (USA) Heinz Schilcher (Germany) Jörg Schubert (Germany) Clemens Sorg (Austria)
	Helmut Hahn (Germany) Thomas Detre (USA) Carl Hermann Lücking (Germany) David B. Ferguson (England) Marteen J. H. Slooff (Netherlands)	2008	Olaf Bodamer (Austria) Péter Pál Bucsky (Germany) Kelvin Davies (USA) Gabor Kaley (USA) Anton Sculean (Netherlands)

2009	Maynard R. Case (England)		Marie T. O'Toole (USA)
	Christopher R. Chapple (England)		Peep Veski (Estonia)
	László Endrényi (Canada)		Kai-Ming Chan (China)
	Zsuzsanna Fábry (Hungary – USA)		Paul G. M. Luiten (Netherlands)
	Bruno Grandi (Italy)	2014	Richard M. Satava (USA)
	Jerzy Kosiewicz (Poland)		René Sylvain Kahn (Netherlands)
	Karl-Heinz Kuck (Germany)		, Péter Gloviczki (USA)
	Peter Malfertheiner (Germany)		Herbert Ehringer (Austria)
	Franco Mantero (Italy)	2015	Shigeru Saito (Japan)
	Éva Mezey (Hungary – USA)		Pál Pacher (USA)
	Georg Petroianu (Germany – USA)		lacques Marescaux (France)
	Tamás Péter Sótonyi (Hungary)		Leena Kaarina Bruckner-Tudermann
2010	Roger Y. Tsien (USA)		(Germany)
	Masaki Kitajima (Japan)		Stephan Züchner (Germany)
	Hartmut P. H. Neumann (Germany)		Fausto J. Pinto (Portugal)
	István Boldogh (USA)		György Kálmán Béla Sándor (Finland)
	Constantin Copotoiu (Marosvásárhely,		Panos Macheras (Greece)
	Romania)		Attila A. Hincal (Turkey)
2011	Péter Ferenczi (Austria)	2016	László Bögre (England)
	Dirk Pickuth (Germany)		Walter Klepetko (Austria)
	Andrzej Wiecek (Poland)		Lajos Okolicsányi (Italy)
	Renato V. Iozzo (USA)		György Kúnos (USA)
	Örs Nagy (Romania)		Josep Figueras (Spain)
	István Bocskai (Romania)		Henning H. Blume (Germany)
	James S. Skinner (USA)		Gábor Tigyi (USA)
2012	Pierre Corvol (France)	2017	Gerhard Hindricks (Germany)
	Tibor Juhász (USA)		Christine Baylis (USA)
	George Berci (USA)		Rainer Schulz (Germany)
	Axel Ullrich (Germany)		Mikael Björnstedt (Sweden)
	Jozef Corveleyn (Belgium)		Keiichi Maruyama (Japan)
	Joseph Kutzin (Switzerland)		Josef Smolen (Austria)
	Daan Braveman (USA)		Clive G. Wilson (England)
	Imre G. Csizmadia (Canada)		Stefan Offermanns (Germany)
	Árpád Gyéresi (Marosvásárhely, Romania)	2018	Dr. Miklos Sahin-Toth (USA)
	Vinod P. Shah (JSS University of Mysore,		Dr. Maria Antonietta Stazi (Italy)
	India)		Dr. Piotr L. Chlosta (Poland)
	Jürgen Michael Steinacker (Germany)		Dr. Jianguang Xu (China)
2013	Peter Gabor Medveczky (USA)		Dr. Daan J. A. Crommelin (Netherlands)
	Arthur J. Moss (USA)		Dr. Olavi Pelkonen (Finland)
	Gerhard M. Kostner (Austria)		Prof. Dr. Scott David Solomon (USA)

PRIVATE TUTORS OF SEMMELWEIS UNIVERSITY

1995	Dr. Árpád Mayer head physician, Uzsoki Hospital, Oncology Centre
	Dr. László Takácsi Nagy deputy head physician, Uzsoki street Hospital, Oncology Centre
1996	Dr. Elemér Nemesánszky head physician, Buda Hospital of the Hospitaller Order of Saint John of God
	Dr. István Hartyánszky, chief physician, National Institute Of Cardiology
	Dr. János Strausz medical director, Törökbálint Institute of Pulmonology
	Dr. Szabolcs Ottó deputy director-general chief physician, National Oncological Institute
	Dr. András S. Szabó associate professor, Head of Department, Saint Stephen University
	Dr. Endre Ludwig head physician, Péterfy Sándor street Hospital
1997	Dr. Béla Goldschmidt head physician, Saint Roch Hospital
	Dr. János Hamar head physician, National Institute of Traumatology
	Dr. György Jermendy head physician, Bajcsy-Zsilinszky Metropolitan Hospital
	Dr. György Karmos senior research fellow, Hungarian Academy of Sciences, Institute of Psychology
	Dr. Elek Kisida head physician, Buda Hospital of the Hospitaller Order of Saint John of God
	Dr. Tibor Raposa head physician, Saint Stephen Metropolitan Hospital
	Dr. Géza Tasnádi head physician, Pál Heim Metropolitan Municipality Children's Hospital
	Dr. István Péter Temesvári head physician, National Institute of Rheumatology and Physiotherapy
	Dr. Józset Tóth head physician, National Oncological Institute
	Dr. Kåroly Såndor Toth head physician, Saint Margaret Hospital
	Dr. Valeria Varadi nead physician, Saint Margaret Hospital
	Dr. Gabor Petho director of quality assurance, Pharmavit Ltd.
1998	Dr. Hedvig Bodánszky consultant, National Medical Centre
	Dr. István Láng chief physician, National Oncology Institute
	Dr. Béla Lombay head physician, B-A-Z County Hospital, Radiology Institute, Department of Paediatric Radiology
	Dr. János Radó physician, Virányos Clinic
	Dr. Károly Simon head physician, Saint Emeric Hospital-Clinic
1999	Dr. György Bodoky chief physician, Saint Ladislaus Hospital
	Dr. Kristóf Nékám head physician, Buda Hospital of the Hospitaller Order of Saint John of God
	Dr. Gyula Poór director-general chief physician, National Institute of Rheumatology and Physiotherapy
	Dr. László Simon head physician, Tolna County Municipal Hospital, Szekszárd
	Dr. Attila Tankó medical specialist, District II. Municipality Clinic
	Dr. Gábor Veres director-general chief physician, Balatonfüred State Hospital
	Dr. István Vermes chief physician, Medical Spectrum, Twente (Netherlands)
	Dr. Bosco Camelo associate professor, University of Rome
	Dr, Péter Göblyös head physician, National Insitute of Hematology and Immunology

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2000	Dr. Miklós Bély head physician, Buda Hospital of the Hospitaller Order of Saint John of God Dr. György Berencsi head physician, Béla Johan National Epidemiology Centre Dr. Tamás Szabó Hoad of the scientific group. Central School of Sport
2001	Dr. Tamas Szabo Head of the scientific group, Central School of Sport Dr. Sándor Frenyó head physician, National Traumatology Institute Dr. Ferenc Horkay head physician, National Cardiology Institute Dr. Krisztina Kádár chief physician, National Cardiology Institute Dr. Lajos Kotsis chief physician, National Korányi Institute of TBC and Pulmonology Dr. Ilona Kovalszky senior research fellow, No. I. Institute of Pathology and Experimental Cancer Research Dr. Aladár Rónaszéki head physician, Elizabeth Hospital of Péterfy Sándor street Hospital Dr. Ágnes Szebeni head physician Emeritus, Ministry of Home Affairs Central Hospital Dr. András Végh head physician, Pál Heim Metropolitan Municipality Children's Hospital Dr. Gábor Winkler head physician, Saint John Hospital
2002	 Dr. Mátyás J. Baló (Banga) head physician, Central Hospital of the Hungarian Homeland Defence Forces, Department of Internal Medicine Dr. Béla Büki chief physician, Kremsi Hospital, Department of Otolaryngology Dr. Sándor Czirják chief physician, Deputy Director-General, National Scientific Institute of Neurosurgery Dr. Gyula Domján head physician, Saint Roch Hospital, No. I. Department of Internal Medicine Dr. Sándor Dubecz chief physician, National Oncology Institute, Department of General Surgery and Thoracic Surgery Dr. Lajos Kullmann director-general chief physician, National Medical Rehabilitative Institute Dr. Károly Nagy deputy scientific director, National Institute of Dermatology and Venereology Dr. Erzsébet Temesvári senior research fellow, National Institute of Dermatology and Venereology
2003	Dr. Áron Altorjay head physician, Fejér County Saint George Hospital Dr. István Bodrogi head physician, National Oncology Institute Dr. Károly Cseh head physician, Sándor Korányi Hospital and Clinic Dr. Gábor Faludi head physician, Kútvölgyi Clinical Array Dr. Irén Herjavecz head physician, National Korányi Institute of TBC and Pulmonology Dr. Kálmán Róna scientific consultant, Department of Forensic Medicine Dr. György Szeifert chief physician, National Scientific Institute of Neurosurgery Dr. Imre Klebovics head of science department, EGIS Pharmaceuticals PLC
2004	Dr. Jenő Julow head physician, National Scientific Institute of Neurosurgery Dr. László Bognár head physician, National Scientific Institute of Neurosurgery
2005	Dr. György Bagdy head of laboratory, scientific director, National Institute of Psychiatry and Neurology Dr. Katalin Borbély head physician, National Scientific Institute of Neurosurgery

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2006	Dr. Ildikó Horváth head physician, National Korányi Institute of TBC and Pulmonology, doctor of the Hungarian Academy of Sciences
	Dr. László Dézsi research supervisor, Gedeon Richter PLC Research Department of Pharmacology and Drug Safety
	Dr. Tamás Szamosi consultant, No. II. Clinic of Paediatrics
2007	Dr. Róbert Veres head physician, National Scientific Institute of Neurosurgery
2008	Dr. Attila Csekeő head physician, National Korányi Institute of TBC and Pulmonology
2009	Dr. Péter Andréka head physician, György Gottsegen National Cardiology Institute, Department of Cardiology
	Dr. István Szikora deputy director-general chief physician, National Neuroscience Institute
2010	Dr. Tamás Görcs lecturer, Department of Anatomy, Histology and Embyrology Dr. György Keleti head physician comm. Joint Saint Emeric and Saint Ladislaus Hospital, Surgery Department
	Dr. Ödön Gaál graduate chemist emeritus, National Institute of Nutritional Science (1972-2005)
2011	Dr. Béla Schumann director, Laborexpert Kft. Dr. Miklós Lőw chemist emeritus, Gedeon Richter PLC
	Dr. András Bálint project manager chief physician, Saint Emeric Municipal Hospital, General Surgery Section
	Dr. Miklós Merksz head physician, Pál Heim Metropolitan Municipality Children's Hospital, Department of Urologic Surgery
	Dr. András Telekes head physician, Bajcsy-Zsilinszky Metropolitan Hospital-Clinic, Department of Oncology
2013	Dr. Attila Vörös chief physician, State Medical Centre - Central Hospital of the Hungarian Homeland Defence Forces
	Dr. Zoltán Takács-Nagy head physician, National Oncology Institute, Deparment of Radiotherapy
2014	Dr. György Ostoharics-Horváth chief physician, Aladár Petz County Hospital, Department of Psychiatry, Mental Hygiene and Addictology
2015	Dr. Sándor Bende chief physician, titular associate professor, B-A-Z County Hospital and University Teaching Hospital
	Dr. Tamás Sándor chief physician, (retired volunteer assistant), 2nd Department of Surgery
2016	Dr. Ferenc Ender chief physician, Joint Saint Emeric and Saint Ladislaus Metropolitan Hospital, Surgery Department

Dr. Bertalan Meskó, Webicina Kít., manager

Dr. Gamal Eldin Mohamed Elmowag head physician, Budaörs Healthcare Centre

Dr. Miklós Szokoly director-general consultant, Péterfy Sándor street Hospital, Clinic and Casualty Centre

Dr. Tamás Iváncsy associate professor, Budapest University of Technology and Economics, Faculty of Electrical Engineering and Informatics, Department of Electric Power Engineering

Dr. Judit Moldvay chief physician, National Korányi Pulmonology Institute, Tumor Biology Department Dr. Géza Nagy college professor, Semmelweis Hospital, head physician, University of Miskolc, Faculty of Healthcare

THE MANAGEMENT OF SEMMELWEIS UNIVERSITY

Senate

The Senate is the supreme autonomous leading body endowed with rights of decisional authority, initiative, review and control. The chairman of the Senate is the rector of Semmelweis University.

The makeup of the Senate

The member of the Senate may be such a person – excluding representatives of the Student's Union and other representative organisations – who is employed by Semmelweis University in an employment relationship or as a full-time working public servant, i.e. lecturer, researcher, teacher, or other scope of activity. The Senate consists of 45 members. This number is determined according to the seats available based on position, election and delegation as a result of election, defined in Section 13, part (4)-(5) of the Organisational and Operational Rules. The Rector and Chancellor are ex officio members of the Senate.

Members of the Senate

RECTOR	1. Dr. Béla Merkely
CHANCELLOR	2. Dr. Károly Szász
FACULTY OF MEDICINE	3. Dr. Miklós Kellermayer
	4. Dr. Edit Buzás
	5. Dr. Péter Ferdinandy
	6. Dr. Alán Alpár
FACULTY OF HEALTH SCIENCES	7. Dr. Zoltán Zsolt Nagy
	8. Dr. Gabriella Bednárikné Dörnyei
	9. Dr. István Vingender
	10. Dr. Tímea Tóth
FACULTY OF DENTISTRY	11. Dr. Gábor Gerber
	12. Dr. Károly Bartha
	13. Dr. Csaba Dobó Nagy
FACULTY OF PHARMACEUTICAL SCIENCES	14. Dr. Romána Zelkó
	15. Dr. István Antal
	16. Dr. Szabolcs Béni
FACULTY OF HEALTH AND PUBLIC SERVICES	17. Dr. Miklós Szócska
	18. Dr. Eszter Zimányiné Sinkó
	19. Dr. Beáta Judit Pethesné Dávid
PETHŐ ANDRÁS FACULTY	20. Dr. Andrea Tenk Miklósné Zsebe
	21. Dr. Éva Szabó Dr. Feketené
	22. Dr. Ibolya Túri
KÁROLY RÁCZ SCHOOL OF PHD STUDIES	23. Dr. Zoltán Benyó

Semmelweis University

CLINICAL CENTRE

STUDENT'S UNION

DOCTORANDUS STUDENT UNION PUBLIC SERVICE COUNCIL

SEMMELWEIS LABOUR ORGANISATION

(according to Section 13. Parts (2) and (3) of the Organisational and Operational Rules) **INVITEES**

24. Dr. Attila Szabó 25. Dr. Ferenc Bánhidy 26. Dr. Péter Hermann 27. Dr. Balázs Hankó 28. Dr. Péter Nyirády 29. Dr. Attila Szijártó 30. Tamás Hegedűs 31. Bence Gusztáv Stubnya 32. Bálint Mátyás Borsik 33. Bálint Tripolszky 34. Edina Vajda 35. Frida Méth 36. Hermann Daniel 37. Szilárd Szigeti 38. Cintia Szabó 39. Viktória Kiss 40. Bence Áron Benedikti 41. Dr. Szilárd Szanyi 42. Krisztina Tódorné Bognár 43. Kornélia Dr. Tóthné Kónya 44. Dr. Zoltán Berki 45. Dr. Katalin Antmann Dr. Ágoston Szél Irén Baumgartnerné Holló Dr. Zsolt Kovács Dr. Levente Török Dr. Andrea Kormos Dr. Marcel Pop Dr. Attila Mócsai András Boros Istvánné Riesz Dr. Péter Reichert Dr. Miklós Szathmári András Balogh Eszter Kovács Emőke Márton representatives of the supervising ministries

GOVERNMENT SEMMELWEIS UNIVERSITY



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VICE CHANCELLOR: Irén Holló Baumgartnerné

- VICE RECTORS:
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 Prof. Dr. Péter Hermann D.M.D., M.Sc., Ph.D. Educational Affairs
 Prof. Dr. Péter Ferdinandy M.D., Ph.D., D.Sc., MBA Scientific Affairs
 Prof. Dr. Attila Szabó M.D., Ph.D., D.Sc.
 Clinical Affairs
 Dr. Balázs Hankó Ph.D.
 Strategical and Developmental Affairs
 Prof. Dr. Alán Alpár M.D., Ph.D., D.Sc.
 International Studies
- DEANS: Prof. Dr. Miklós Kellermayer M.D., Ph.D., D.Sc. Faculty of Medicine Dr. Gábor Gerber D.M.D., Ph.D. Faculty of Dentistry Prof. Dr. István Antal dr. pharm., Ph.D. Faculty of Pharmaceutical Sciences Prof. Dr. Gabriella Dörnyei Ph.D. Faculty of Health Sciences Dr. Péter Gaál M.D., M.Sc., Ph.D. Faculty of Health and Public Services Dr. Miklósné Tenk Dr. Andrea Zsebe András Pető Faculty

PRESIDENT OF THE DOCTORAL COUNCIL: **Prof. Dr. Zoltán Benyó** M.D., Ph.D., D.Sc.

HEAD OF THE CENTER FOR EDUCATION OF INTERNATIONAL STUDIES **Prof. Dr. Alán Alpár** M.D., Ph.D., D.Sc.

DIRECTOR of the DIRECTORATE OF INTERNATIONAL STUDIES and ACADEMIC PROGRAM DIRECTOR FOR MEDICINE, DENTISTRY AND PHARMACEUTICAL SCIENCES IN ENGLISH: **Prof. Dr. Miklós Csala** M.D., Ph.D., D.Sc.

Division of English Office: Basic Medical Science Center Language Programs 1094 Budapest IX., Tűzoltó u. 37-47, first floor 1604 Phone: (36-1) 266-0452 e-mail: english.secretariat@semmelweis-univ.hu Website http://semmelweis.hu/english/education/english-language-program/

250 SEMMELWEIS UNIVERSITY

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Deputy Head of Division:	Ms. Andrea Kev kevi.andrea@ser	i (459-1500 ext 60081; nmelweis-univ.hu)	
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Staff:	 busa.zsuzsanna@semmelweis-univ.hu) Ms. Viktória Bálinth (459-1500/ ext 60071; on leave fekete.viktoria@semmelweis-univ.hu) Ms. Renáta Bódai (459-1500/ ext 60073; bodai.renata@semmelweis-univ.hu) Ms. Alexandra Gonda (459-1500/ ext 60481; gonda.alexandra@semmelweis-univ.hu) Ms. Barbara Győri (459-1500/ ext 60076; gyori.barbara@semmelweis-univ.hu) Ms. Borbála Hanák (459-1500/ ext 60077; hanak.borbala@semmelweis-univ.hu) Ms. Borbála Hanák (459-1500 ext 60079; horvath.balazs1@semmelweis-univ.hu) Ms. Tímea Jurászik (459-1500 ext 60080; juraszik.timea@semmelweis-univ.hu) Ms. Tímea Kapisinszky (459-1500 ext 60074; kokavecz (459-1500 ext 60074; kokavecz.sarolta@semmelweis-univ.hu) Ms. Dorottya Kóros (459-1500 ext 60077; on leave koros.dorottya@semmelweis-univ.hu) Ms. Tímea Kotálik (459-1500 ext 60077; horvath.balazs100 ext 60077; horvathy@semmelweis-univ.hu) Ms. Zenina Korponai (459-1500 ext 60075; kotalik.timea@semmelweis-univ.hu) Ms. Márta Ágnes Mészáros (459-1500/ ext 60077; horsaros.marta@semmelweis-univ.hu) Ms. Alexandra Noémi Szujó (459-1500 ext 60072; szujo.alexandra@semmelweis-univ.hu) 		
Office hours:	Monday: Tuesday: Wednesday: Thursday: Friday:	1 p.m. – 3 p.m. 1 p.m. – 3.30 p.m. CLOSED 9.30 a.m. – 12 p.m. 10 a.m. – 12 p.m.	

SCHEDULE FOR THE 2020/2021 ACADEMIC YEAR (Faculty of Medicine, Faculty of Dentistry, Faculty of Pharmaceutical Sciences)

The dates are subject to change

Opening Ceremony

September 4, 2020

September 2, 2020

September 3, 2020 September 5, 2020 September 7, 2020 September 7, 2020 September 7, 2020 December 11, 2020 December 11, 2020 December 11, 2020

August 31 - September 1, 3, 4, 2020

July 20 - September 18, 2020

September 21 – December 11, 2020

December 12, 2020–January 29, 2021

December 14, 2020–January 29, 2021

December 12, 2020–January 29, 2021

First Semester

Date of registration	– 1 st year		
0	- the other years		
Neptun Day	– 1 st year		
Freshmen's Day	– 1 st year		
First day of the semester			
Faculty of Medicine	(1 st – 5 th years)		
Faculty of Dentistry			
Faculty of Pharmaceutical S	ciences (1 st – 4 th years)		
Last day of the semester			
Faculty of Medicine	(1 st – 5 th years)		
Faculty of Dentistry	,		
Faculty of Pharmaceutical S	ciences (1 st – 4 th years)		
5th year Pharmaceutical Sci	ences:		
Practical training			
The semester lasts for 5 th year Pharm. Sc.			
(12 weeks)			

Examination period

Faculty of Medicine $(1^{st}-5^{th})$ years)Faculty of Dentistry $(1^{st}-5^{th})$ years)Faculty of Pharmaceutical Sciences $(1^{st}-5^{th})$ years)

Second Semester

Date of registration First day of the semester	$(1^{st}-5^{th} \text{ years})$	January 25 – 29, 2021			
Medicine and Dentistry	ior i - 5 years	February 1, 2021			
Last day of the semester	for 1 st - 5 th years	, ,			
Medicine and 1 st - 4 th years Dentistry May 14, 2021					
Last day of the semester	for 5 th year Dentistry	April 29, 2021			
Faculty of Pharmaceutical Sciences					
First day of the semester	(1 st – 4 th years)	February 1, 2021			
Last day of the semester	(1 st – 4 th years)	May 14, 2021			
First day of the semester (practice)					
	for 5 th year	January 27, 2021			
Last day of the semester (practice)					
	for 5 th year	May 28, 2021			

Examination period for	r Faculty of Medicine, Faculty of 1 st – 5 th year Medicine 1 st – 4 th year Dentistry 5 th year Dentistry	Dentistry May 17 – July 2, 2021 May 17 – July 2, 2021 May 3 – June 11, 2021
Faculty of Pharmaceut	ical Sciences 1 st – 4 th year	May 17 – July 2, 2021
Exam held outside the academic year – EOAY		August 24 – September 1, 2021 (presumably)
EOAY for Pharm. Sc. 4 th year		July 6–14, 2021
2020/2021 Schedule for 6 th year Medicine 2021/2022 Schedule for 6 th year Medicine		July 13, 2020 – April 28, 2021 July 12, 2021 – April 27, 2022
General Board Examination Period Faculty of Medicine		November 16-25, 2020 May 26 – June 11, 2021 August 25 – September 2, 2021
Faculty of Dentistry Faculty of Pharmaceutical Sciences		June 14 – 18, 2021 June 1 – 18, 2021
Graduation Ceremony f Graduation Ceremony f	for Dentistry for Pharm. Sciences	July 3, 2021 planned (Saturday) July 3, 2021 planned (Saturday)
	Holidays:	October 23, 2020 (Friday)
	(Spring holidays)	March 15, 2021 (Monday) April 6 – 9, 2021 April 2, 2021 (Good Friday) April 5, 2021 (Easter Monday)
Research Students' Conference:		February 10 – 11 – 12, 2021
		No lectures or seminars for years 2–5/6: on February 10 – 11 at the Faculty of Medicine and at the Faculty of Pharm. Sc. (Wednesday – Thursday), on February 10 (Wednesday) at the Faculty of Dentistry, on February 11-12 solely for dental students whose participation at the conference is certified.
Faculty Day:		April 13, 2021 (Tuesday)
THE WORDS OF THE SOLEMN VOW AT REGISTRATION

I....., student of Semmelweis University promise under oath that I will respect the Hungarian laws and the Fundamental Law of Hungary. I promise that I shall abide by the regulations of Semmelweis University. I promise solemnly that I will respect the professors and teachers of the University, and that my conduct will be in keeping with the honor of my profession. I will keep the secrets of the patients that I learn about in the course of my studies. I will pursue my studies with full sense of responsibility to prepare myself to the best of my abilities for all my duties and obligations in my profession so as to be able to serve with my knowledge the progress of mankind. So help me God!

HE WORDS OF OATH AT GRADUATION

Faculties of Medicine and Dentistry

"I, swear that I will devote myself to the medical profession at all times. I will use the knowledge acquired in the field of medicine to prevent and cure diseases, and to benefit the physical and mental well-being of my patients. I will not betray the confidence of those who turn to me, nor will I take advantage of their defenselessness, nor will I disclose their secrets. I will treat every person with equal care and attention. I will maintain the high quality of my knowledge and skills by continuous education, but will also acknowledge the limits of my knowledge and abilities. I will submit myself to the ethical requirements of my medical practice. I will strive to enhance the reputation of the medical profession and SEM-MELWEIS University."

"Én,esküszöm, hogy orvosi hivatásomhoz mindenkor méltó magatartást tanúsítok. Orvosi tudásomat a betegségek megelőzésére, a betegek testi-lelki javára, betegségük gyógyítására fordítom. A hozzám fordulók bizalmával, kiszolgáltatott helyzetével visszaélni nem fogok, titkaikat fel nem fedem. Egyenlő figyelemmel és gondossággal gyógyítok minden embert. Tudásomat és gyakorlati ismereteimet állandó képzéssel magas szinten tartom, de ismereteim és képességeim korlátait is tudomásul veszem. Az orvosi működésemmel kapcsolatos etikai követelményeket tiszteletben tartom. Arra törekszem, hogy az orvostudomány, valamint a SEMMELWEIS Egyetem jó hírnevét öregbítsem és megbecsülését előmozdítsam."

Faculty of Pharmaceutical Sciences

I,, swear that in virtue of my acquired knowledge of pharmaceutical sciences, I shall do my professional duty with the utmost diligence, and I shall always behave worthy of my profession. I shall place before all things the care for and the healing of my patients. I shall not reveal any data concerning the health status or the medication of my patients. I shall maintain my theoretical and practical knowledge at a high level. I shall never use my knowledge for activities that are contrary to the ethical code of pharmacists. As a participant in the activity of healing, I shall use my knowledge only for the defense and restitution of health to my fellow humans. I shall do my best to promote the science of pharmacy and keep the good name of the Semmelweis University.

Study and Examination Regulations

Faculties of Medicine, Dentistry and Pharmaceutical Sciences

1. Scope of the Regulations

Article 1 [Scope of the Regulations]

- (1) The scope of this part of the Organizational and Operational Regulations (hereinafter referred to as "Regulations" applies to the study and examination issues of Semmelweis University undergraduate, masters, postgraduate specialist training, higher education training students and also of visiting students. It applies especially to the student academic policy and the order of acquisition and examination of the knowledge, skills and abilities. The application of the Regulations is regardless of the location of the training, the language, work schedule, form of expenditure and nationality of the student.
- (2) A special part of the Regulations regulates the study and examination issues of the students participating in the doctoral program.
- (3) The knowledge of and the compliance with the Regulations is binding on all instructors, researchers, administrative staff and students involved in education, directly or indirectly.

2. Interpretative Provisions

Article 2 [Interpretative Provisions]

- (1) In the Application of These Regulations
 - 1. Pre-degree certificate (absolutorium): A document certifying without qualification and evaluation that the student has completed their traineeship required and has met the study and examination requirements of the curriculum without having done the closing examination (terminal board exam), the Thesis and the language examination, specified in the graduation requirements. The pre-degree certificate does not qualify as a certificate of qualification or as vocational qualification.
 - 2. Active semester: the semester in which the student's status is not suspended.
 - 3. Transfer: the process in which a student with a student status at a higher education institution continues his or her studies at another institution; unless otherwise stipulated in these regulations, the student may apply for admission from another higher education institution except from those institutions included in the 87/2015 Government Regulation (IV.9) that provides a degree of the same level as that offered by Semmelweis University. This process is only possible if the termination of the student status is not in process. Transfer within Semmelweis University can be requested between specialties and faculties, and in line with legal restrictions, between training levels.
 - 4. Registration: the student's statement in the NEPTUN Higher Education Administration System (hereafter: NEPTUN) that he/she will continue his/her studies in the semester; Recorded continuation of the student's studies is based on the student's registration in the NEPTUN, and on the course registration in the student information system according to prior information given by the faculties. Students taking part in a partial training abroad in the given semester are also subject to the obligation of registering for the continuation of their studies.
 - 5. Enrollment: the establishment of a student status between the eligible student and Semmelweis University through the authentication of the enrollment form. Those who have been admitted or transferred to Semmelweis University may establish a student status with the university. Student status is created through enrollment. Enrollment is accomplished by signing an enrollment form printed from the Student Information System (hereafter: NEPTUN) and by registering in the NEPTUN on the basis of a notice sent to the student in advance. Upon enrollment, the student is required to complete the course registration on the basis of the information given by the faculty.
 - 6. CV course (i.e. Exam Only Course): An opportunity for course completion that does not qualify as a course registration, during which a course to be concluded by a term grade or an exam, which course has been registered by the student in a previous semester and in which the student has obtained a signature but has not completed yet, can be completed in the given semester without the obligation to attend the contact lessons or to fulfill other term-time requirements by using any unused exam opportunities remaining from the semester of the last registration of the original course.
 - 7. Diploma work: an independent piece of work which substitutes the Thesis. It is required for the completion of the student's studies. Its preparation can verify that the student has met certain output requirements of the training;

- 8. **Individual study schedule**: the total of subjects and courses taken by a student in a given semester, during which the student can choose individually from the offered study opportunities within the frames of the curriculum and regulations, i.e. under the conditions defined in the regulations and curricula so that they can deviate from what is suggested in the model curriculum;
- 9. **Concurrent prerequisite:** a course unit or a module of up to 15 credits, whose at least concurrent registration with a given subject is required by the curriculum;
- 10. Prerequisite schedule: the set of pre-requisites for the subjects included in the curriculum of the degree program;
- 11. Prerequisite: a course unit or a module of up to 15 credits that the curriculum requires to be completed beforehand for the registration to the given subject;
- 12. Term grade: a mark determined during the term-time based on the results of partial performance evaluations;
- 13. FM course (i.e. "exempt from" course): An opportunity for course completion that qualifies as a course re-registration, during which a course to be concluded by a term grade or an exam, which course has been registered by the student in a previous semester and in which the student has obtained a signature but has not completed yet, can be completed in the given semester without the obligation to attend the contact lessons or to fulfill other term-time requirements by using the exam opportunities of the given semester according to the general rules of assessment of study requirements.
- 14. Exceptional study schedule: completion of subjects included in the student's individual study schedule, in a way different from the general rules of order (including, in particular, the exemption from lessons or the possibility to make up for non-attendance at lessons, meeting study requirements in a different way or at a scheduled time);
- 15. End-term examination: assessment of study requirements concluding a single subject in the form of an exam. The material of the end-term exam of a multi-semester subject may include the material any course involved, which is not finished with a cumulative assessment of study requirements;
- 16. Thesis advisor: an expert supporting the student in the preparation of the thesis and guiding his/her work;
- 17. Obligatory elective subject: a subject defined in the curriculum, in which the student decides for himself/herself to register at the credit value defined in the model curriculum (for example: subjects of specialization or subjects of differentiated professional knowledge);
- 18. Compulsory subject: a subject which all students are required to complete;
- 19. Credit recognition: the acceptance of a subject of another faculty or institution, determining its credit value and determining whether the subject is substitutable with or different from other subject(s);
- 20. Committee competent in credit recognition: a committee defined in another part of the Regulations, which acts on students' credit recognition issues at first instance;
- 21. Criterion requirement: a mandatory requirement without credits that is specified in the training and output requirements (e.g. apprenticeship, language requirements);
- 22. Course: the completion of a subject in a given semester, a set of study sessions and performance assessment procedures with place(s), date(s), and instructor(s) specified;
- 23. Justified exceptional case: a circumstance beyond a student's control, including childbirth or various unexpected conditions, such as accident, serious illness, which prevents the student from fulfilling his/her obligations arising from his/her student relationship.
- 24. Course record book: a public document printed from NEPTUN in a format certified by the Educational Authority, indivisibly stapled and certified by the Dean of the faculty. The printed course record book must be created upon the termination of the student status. The numbered pages of the printed course record book should be stitched together with a national-colored cord and this part affixed with a circular label must be sealed, made indivisible and should be authenticated by the signature described above. The printed course record book contains all the data and records that are by law required to be included, in particular, but not exclusively, all the student's studies at the very level of education. The faculty maintains a record book if it does not meet the legal requirements for not needing to conduct record books.
- 25. Model curriculum: A subject registration order recommended on the basis of the prerequisite schedule, which includes the compulsory subjects prescribed in the curriculum; part of the credit value which is to be obtained from elective subjects, and description of these subjects assigned to the given semester.;
- 26. Module: a unit including several subjects from the curriculum of one program (e.g.: foundation module, professional core material module) or an equivalent, substitute unit (specialization module);
- 27. Vice Dean for educational affairs: a Vice Dean who assists the Dean's work in the educational and academic tasks of the graduate courses, or, in the absence thereof, a Vice Dean appointed by the Dean;
- 28. Parallel training: simultaneous participation in or eligibility for two or more training courses;

- 29. Passive semester: the semester
 - a) for which the student has not registered,
 - b) for which the student has stated that he/she does not wish to fulfill his/her student obligations,
 - c) for which the student has withdrawn his/her registration before the deadline,
 - d) in respect with which the student has been prohibited from continuing to study as a disciplinary measure; and
 - e) which is declared to be a passive semester after the deadline of de-registration, i.e. late de-registration, therefore, the student's status is suspended;
- 30. Partial training: self-financed training for the acquisition of partial expertise without a special admission procedure, which is designed primarily to meet the requirements of new specializations, to prepare for the master's degree, and to acquire the knowledge (credits) required by law for practicing a profession;
- 31. Independent specialization: the specializations of the medical diagnostic analysis higher education training, the conductive undergraduate education, the health care manager training and the medical diagnostic analysis bachelor training;
- 32. Thesis: a paper written as a completion of higher education studies, demanded by the training and output requirements. It verifies that the student has met certain output requirements of the training. It also helps the student through his/her own scientific work on any issue of a given scientific discipline to develop the ability to grasp the essence of a matter, to master the methods of library use and also of literature research. It enables the student to be able to formulate his/her opinion briefly and concisely. The term "thesis" also refers to "diploma work" unless otherwise stated;
- 33. Specialty supervisor: a lecturer appointed by the Senate, on the recommendation of the Dean, after the opinion of the Faculty Board; or failing this, the Dean, an authorized person who is responsible for the content and training processes of the specialty training leading to independent professional qualification within the degree course.
- 34. Degree course supervisor: a lecturer appointed by the Senate, on the recommendation of the Dean, after the opinion of the Faculty Board; or failing this, the Dean, who is responsible for the content and entire training process of the course. The term "degree course supervisor" also refers to "specialty supervisor" unless otherwise stated.
- 35. Final examination: an exam concluding a multi-semester subject or a combination of several courses. In the latter case, the final exam may be passed at the earliest after obtaining the credits of the subjects covered by the final examination;
- 36. Academic calendar: a document containing the schedule for a given academic year and the deadlines concerning the student and the organizational unit;
- 37. Subject registration: registration for a specific course in an announced subject. The registration is only possible if the prerequisites of the subject are met;
- 38. Subject requirements: a document containing the student's duties and the completion deadlines;
- 39. Establishment of a subject: the approval of the subject's syllabus for the first time;
- 40. Announcement of a subject: the announcement of courses enabling the completion of a subject. The course(s) required for the completion of the compulsory or obligatory elective subject must be announced within the semester of the model curriculum, by the educational unit which is responsible for the subject;
- 41. Course syllabus (course program): defines the knowledge and skills to be acquired in each subject;
- 42. Curriculum: defines the detailed educational and study requirements of a particular course and its detailed rules;
- 43. Registrar's Department: the organizational unit, regardless of its name, designated in the Organizational and Operational Regulations for the administration of students' general study affairs and for the management of study records;
- 44. Committee competent in educational and examinational affairs: a committee, regardless of its name, established by the Senate in each faculty, which acts at first instance in the study and examination affairs of students at the faculty;
- 45. Multi-semester subject: a set of courses, which are combined to form a thematic unit, and have names differing only in their serial number or in an extension to a common name. Furthermore, its subjects may differ in the requirements for their summative benchmarking;
- 46. Block education: a course scheduling method, applied for the compulsory subjects of year 4 and year 5 studies in the Model curriculum of the Faculty of Medicine. The student attends the theoretical and practical lessons of only one compulsory subject in each section of the semester (i.e. block), which are held in the timescale specified by the course supervisor. The student can take the examination of each subject at the end of its block;
- 47. Late de-registration from a semester, or a semester declared passive after the deadline of de-registration: the semester in which, upon the student's request submitted after the deadline of de-registration and until the last day of the term-time, suspension of the student's status is authorized by the competent body;
- 48. Visiting student status: the student may register to the subjects of his/her studies at another training program of the higher education institution with which he/she has an active student status or at another higher education institution as a visiting student. Recognition of the subject and the knowledge obtained shall be subject to the credit recognition procedure of the faculty responsible for the course. It shall be counted accordingly into the fulfillment of the student's study obligations;

- 49. Examination: a form of assessment of the acquisition of the specific knowledge, skill and experience assigned to a given subject or to certain subjects, which is combined with a summative assessment of performance;
- 50. Examination course: CV course or FM course. The exam course is a non-scheduled course with no contact lessons;
- 51. Closing examination (terminal board examination): the examination and assessment of the knowledge (and practical skills) required to obtain a higher education qualification, in which the candidate must demonstrate to the Examination Board of the Faculty that he/she acquired the knowledge required for the qualification and that he/she understands it and is capable of applying it, too. Gaining the pre-degree certificate (absolutorium) is a prerequisite for taking the closing exam.
- (2) When applying these regulations and if not stated otherwise
 - a) "student" refers also to "visiting student",
 - b) "specialization" refers also to specializations leading to separate qualifications,
 - c) "self-funded student" refers also to students funding their own studies; "(partly) state-funded student" refers also to students whose studies are funded by the state.

3. Bodies Responsible for Educational Affairs

Article 3 [Persons and Bodies Competent in Teaching and Educational Matters]

- (1) The Senate
 - a) approves the training program of the university,
 - b) approves the syllabus in the case of an inter-faculty training.
- (2) The Rector
 - a) approves the academic calendar by 31 May each year, after seeking the opinion of the faculties and the Student Council,
 - b) may allow three days' study break per academic year, after consultation with the Deans.
- (3) The Faculty Board shall
 - a) determine the curriculum of the specialization,
 - b) determine the order of specialization choice if it is not within the frame of the admission procedure,
 - c) decide on the establishment, suspension and cancellation of subjects, and approve the subject syllabus and decide on the modification of the syllabus,
 - d) propose the content of the syllabus to the Senate in the case of inter-faculty trainings,
 - e) approve at intervals of no less than three years the list of persons who may be nominated as chairpersons and members of the Closing Examination Boards.
- (4) The Dean
 - a) may declare the requirement of a minimum number of students for the announcement of the subjects in a specialization module,
 - b) in agreement with the Rector, may allow three days' study break per academic year,
 - c) if the conditions laid down in these Regulations are fulfilled, may oblige the educational unit to announce a course,
 - d) makes recommendations to the Faculty Board regarding the Specialty Supervisor and the Degree Course Supervisor,
 - e) permits taking examinations outside the campus,
 - f) permits the participation of other teachers, researchers, lecturers, clinical chief physicians as examiners at final examinations,
 - g) is responsible for the organization of the closing examination, appointing the chair and the members of the Closing Examination Board among the persons selected by the Faculty Board,
 - h) specifies the exact date of each part of the closing examination within the closing examination period.
- (5) The Specialty Supervisor
 - a) may, in the case of a declaration of admission, permit the student to complete a traineeship at another domestic university, at their clinics or a foreign health institution,
 - b) allow the participation of an external consultant in the preparation of the thesis,
 - c) approve, in the courses of András Pető Faculty, the completion of professional traineeships at domestic professional services, travel conductor and health care institutions, or conductive education institutions in Hungary and conductive education institutions abroad, or at conductive education institutions that are adapted to the foreign system.

- (6) The Occupational Health Service
 - a) organizes, with the cooperation of the Registrar's Department, the obligatory pre-traineeship occupational medical examinations required by the Faculty. These examinations are the occupational, professional, personal hygiene and health examinations that are required by law (In the Regulations all of these or any of these will be referred to as an aptitude test.),
 - b) keeps an up-to-date record of the need for, and the participation at an aptitude test and of the presentation of the documents proving the aptitude (including Hepatitis vaccines), including registration of the validity of the compulsory aptitude test and Hepatitis vaccines in the NEPTUN,
 - c) ensures that the details of the aptitude test are published on the website of the relevant faculty in accordance with the law, for each training program until the beginning of the last examination period before each academic year.
- (7) The committee competent in educational and examinational affairs shall be responsible for
 - a) approval of exceptional study schedules,
 - b) late de-registration of a student from a semester (i.e., declaration of a student's semester to be passive after the deadline of de-registration),
 - c) approval of visiting student status,
 - d) approval of examinations and approval of examinations after the examination period in justified exceptional cases,
 - e) consideration of requests for special permissions,
 - f) approval of transfer among degree programs, faculties or institutions,
 - g) proceedings in other academic issues,
 - h) performing other tasks specified in other legal acts, university regulations, faculty regulations,
 - i) proposing the choice of specialization or study track,
 - j) conducting the choice of specialization or study track, and the classification of the students if they have not been classified during the admission procedure.
- (8) The committee competent in credit recognition is responsible for
 - a) decision-making on individual credit recognition issues,
 - b) performing preparatory tasks in matters of consultation, organization and regulation.
- (9) The student:
 - a) is responsible for: enrolling/registering for training, monitoring and adhering to applicable deadlines,
 - b) must make his/her payments on time if he/she is obliged to pay fees,
 - c) is responsible for the registration to the subjects announced for the training, within the time limit laid down in the calendar of the academic year, taking into account the prerequisite schedule,
 - d) should notify the Registrar's Department of changes to data by recording them to the NEPTUN,
 - e) must substantiate his/her request regarding educational and examinational issues (depending on the nature of the application) and has to duly justify and certify the content of such request.
- (10) If the student has an active training during the period of studies, he/she is entitled:
 - a) according to his/her progress, to register to the subjects specified in the curriculum and to take the examination of the subjects,
 - b) to visit the university facilities (library, cultural and sports facilities) accessible to students,
 - c) to use services for protection of students' interest,
 - d) to be a member of TDK (i.e. Scientific Students' Association),
 - e) to use a student card proving the active student status,
 - f) to apply for a university grant if he/she participates in a (partly) state-funded program.

4. Basic Concepts of the Credit System

Article 4 [Basic Concepts of the Credit System]

- (1) One credit equals the completion of 30 student study hours. Student hours include classroom (contact hours) and individual student study hours.
- (2) Credit may be given only to subjects which award a grade on a five-point or three-point scale. Only positive integer credits can be assigned to a subject.
- (3) Completion of a subject is achieved by at least a "satisfactory/pass" (2) grade in the rating scale of five grades or at least a "fair" (3) grade in the rating scale of three grades at the assessment within the subject requirements.
- (4) The student must complete the compulsory subjects prescribed in the curriculum in order to obtain a pre-degree certificate. In addition to the elective subjects, on the basis of the breakdown prescribed by the curriculum and by the training and output require-

ments, the students must complete the required number of credits. A student of a specialization or independent specialization is also required to complete the subjects specified as compulsory for the students of the independent specialization, as well as to collect the credit number(s) of the optional subjects specified in the curriculum regarding independent specializations.

(5) The student may obtain the credits required for the pre-degree certificate in a shorter or longer period.

Article 5 [The Curriculum and the Model Curriculum]

- (1) The syllabus consists of compulsory, obligatory elective and elective subjects. Credits beyond the total number of credits required by the training and output requirements of the course cannot be required in the curriculum. This includes the minimum credit for the elective subjects specified in the training and output requirements.
- (2) The faculty ensures that the student may take elective subjects of at least 5% of the total number of credits required for the degree or may engage in voluntary activities in lieu of such subjects. The student can also choose from subjects with a credit value of at least twenty percent excess of all credits. In the case of an optional subject, the university does not restrict the student's choice of subjects announced by the higher education institutions. Any student may take on any elective subjects that were announced by any faculty of the university during the general subject admission procedure, this is subject to the prerequisite schedule.
- (3) Without paying any extra cost or fee, the student can complete subjects
 - a) for 10% credit value above the total required credits in the study schedule,
 - b) languages different from that of the training for up to 10% credit value above the total required credits in the study schedule.
- (4) The model curriculum within the curriculum includes, divided into educational periods,
 - a) all compulsory and elective subjects along with their credit value,
 - b) the number of subjects with their assigned credit values for a semester,
 - c) the types of assessments (signature, term grade or exam at the end of the semester),
 - d) the semester of announcing the subject,
 - e) the criteria of the subject and the deadline for their fulfillment,
 - f) the rules and requirements for the selection and completion of the specialization if it was not within the frames of the admission procedure,
 - g) the prerequisite schedule,
 - h) the requirements for the selection of the topic of the thesis and its completion if they are not included in these Regulations and the relevant course syllabus,
 - i) the detailed conditions for eligibility for the closing examination,
 - j) the potential subjects of the closing examination and the rules for their selection.
- (5) The Student Council has the right to comment on the curriculum before it is submitted.
- (6) Prerequisites can be determined if the knowledge obtainable in another subject, group of subjects, or in a subject module is required for the understanding of the given subject.
- (7) A subject can only be registered by those students who have fulfilled its prerequisite(s) before the semester and have fulfilled earlier or registered currently to its concurrent prerequisite(s).
- (8) The model curriculum includes the maximum of forty lessons per week (apart from the Language and Physical Education classes).
- (9) The length of lessons is 45 minutes. In the case of a combined lesson, a break of 15 minutes should be provided beyond 90 minutes.
- (10) In the case of inter-faculty training, the Senate defines the curriculum on the proposal of the Faculty Boards of the faculties participating in the training.
- (11) It is the right of the student of the degree program concerned to apply for specializations announced simultaneously in the given degree program if it is not done through the admission procedure. The number of students entering a specialization may be limited; the Dean may require a minimum number of students to apply for the specialization in advance. If the number of registered students is limited, the registration to the specialization is according to the order in which the specialization was selected by the students.

Article 6 [Course Syllabus (Course Program)]

- (1) The course syllabus is prepared by the subject supervisor based on the Student Evaluation of Teaching ("OMHV") survey by taking the opinion of the Student Council into account. The course syllabus should be published in a study information brochure, accessible to all students in the faculty, and electronically at the beginning of the academic year. The educational unit in question should publish the information of the brochure on their website or otherwise in the usual way or in the NEPTUN at the basic information of the subject. The contents of the brochure cannot be changed or deviated from during the given academic period.
- (2) The Faculty Board is responsible for modifying the course syllabus at the initiation of the head of the given educational unit and with the support of the Dean.

- (3) The course syllabus includes:
 - a) the code of the subject, its full and any abbreviated name, its name in English and in German,
 - b) the number of lessons per week (per semester) (lecture + seminar + lab practice + clinical practice),
 - c) the frequency with which the subject is announced,
 - d) a list of courses in which the subject is compulsory or obligatory elective, the number of semesters for the subject, recommended by the curriculum,
 - e) the type of assessments (signature, term grade or examination mark),
 - f) the credit value of the subject,
 - g) the name of the educational unit responsible for the subject and the instructor, as well as the prerequisites for admission to the subject,
 - h) the purpose and the task of acquiring the professional content of the subject in order to achieve the aim of the training,
 - i) the description of the content of the subject and its syllabus in such a way as it enables decision-making on credit recognition at another institution, including the knowledge, the (partial) skills and (partial) competences to be acquired,
 - j) the grading method, the conditions for getting the signature, the number, topic(s) and date(s) of the mid-term tests (reports, oral, written tests), and the possibility of their retake,
 - k) if applicable, the type of examination and its requirements (list of topics, test pool),
 - the requirements regarding the participation at the lessons and the possibility of compensating for absences, the accepted means
 of certification in the event of absence,
 - m) written material, recommended literature, relevant technological and other material, study aids,
 - n) the number and type(s) of the student's assignments to be completed by individual work, the deadline of their submission,
 - o) a list of the essential notes, textbooks, manuals and literature that may be used to acquire the educational material.

Article 7 [Optional Application of a Requirement Introduced in a Phasing-in System]

- (1) The new or modified curriculum, other study and examination requirements should also apply to students who have commenced their studies prior to the introduction of the requirement but who, at their will, request the application of the new or modified study and examination requirements.
- (2) A declaration of choosing to apply the new requirement should be submitted to the Registrar's Department of the faculty in writing or, if the faculty allows, electronically, within a time limit specified by the Registrar's Department of the faculty. The deadline for such declaration cannot be earlier than 15 days after the date of announcement of the change in the requirement, set out in paragraph (1), and the declaration cannot be withdrawn. The faculty notifies the students concerned of the change in the requirement and about the deadline for the declaration set out in this paragraph.
- (3) In the case of a curriculum change, the correspondence of the old and the new curricula may also be recorded in an equivalence table.

Article 8 [Periods of Training]

- (1) The training period comprises a term-time (term) and an examination period.
- (2) During the term, the student participates in the lessons of the subjects he/she has registered to and performs related tasks and may also complete the professional traineeship prescribed in the curriculum during the term. The term consists of at least fourteen teaching-weeks. The term-time of each semester is preceded by a registration period, which may overlap the examination period of the previous semester.
- (3) At the Faculty of General Medicine, the subjects within the model curriculum for the 4th and 5th year, including lectures and exercises, are taught in the form of training blocks, with no separate term-time and examination period for these subjects.
- (4) During the ninth semester of the Pharmaceutical Sciences training course, the term-time is twelve (12) weeks long, and it is supplemented with eight (8) weeks of compulsory professional practice before the closing examination.
- (5) During the tenth semester of the Dentistry training course, the term-time is twelve (12) weeks long.
- (6) Students can take their examinations in the exam period, which is seven (7) weeks long both in the fall semester and in the spring semester. At the Faculty of General Medicine, the exams of the subjects included in the 4th and 5th years of the model curriculum may be taken at the end of each block.
- (7) In the case of part-time trainings at the Faculty of Health and Public Services, the Faculty Board shall make a proposal to the Rector on the length of the term-time, the times of the lessons and on the duration of the examination period on the basis of the opinion of the head of the given educational unit. The Rector may deviate from the provisions of this paragraph in the academic calendar, but the examination period may not be shorter than four weeks, or in the case of master trainings, shorter than five weeks.

- (8) The Rector and the Dean may grant a three-day study break in each academic year, in agreement with the Student Council. The date of the study break should be determined before the beginning of the term, whenever it is possible. The Dean and the Rector shall consult before the study break is granted.
- (9) Missing from any lessons on official bank holidays or breaks/holidays ordered by the Rector or Dean may not be considered as absences. Extra opportunities for making up any missed lectures or practices may be organized in these days, in which participation may not be considered as obligatory.

Article 9 [Academic Calendar]

- (1) The first and last dates of the registration period, term-time, exam period, and closing exam period of the academic year are determined by the academic calendar.
- (2) The academic calendar includes deadlines for study, allowance and other student matters in accordance with the applicable regulations. Unless otherwise specified in the relevant regulations, the deadline in the calendar shall be deemed to be applicable.
- (3) The academic calendar may determine which weekday's schedule should apply to the lectures and practices to be held on Saturdays, which are rendered to be working days during the academic year.
- (4) The academic calendar is published on the webstie of the faculty.

Article 10 [General Rules Concerning Traineeship]

- (1) The hours to be worked, credits and exam type regarding the traineeship are determined by the curriculum.
- (2) Regarding the traineeship, the thematic collection, organization, the control of the external traineeship locations, in addition to the certificate of completition, and the methods of evaluation are determined by the relating course syllabus of which preparation is carried out by the responsible professional.
- (3) The institue of the traineeship is responsible for certifying the completion of the traineeships by filling out the course registration and evaluation form of the faculty.
- (4) Completion and the grade of the traineeship are recorded by the traineeship supervisor or the degree course supervisor the Registrar's Department in the NEPTUN.
- (5) The traineeship shall be assessed by a 5-grade qualification indicated on the form by the specialty supervisor of the traineeship or the degree course supervisor referred to in paragraph (3). In case the traineeship is evaluated as "fail", the supervisor determines whether and when the traineeships can be repeated during the training period.
- (6) Traineeships are completed in accordance with the work schedule of the institute of the traineeship.
- (7) Students are required to undergo an aptitude test of occupational health every year prior to their traineeship. Registration for the aptitude test in September of each academic year is compulsory.
- (8) In accordance with the current legistation, details and requierments of eligibility are published regarding to the certain program or specialization on the website of the faculty until the examination period of the semester prior to each academic year.
- (9) In the absence of registration, the student may not start the traineeship. The attendances on the compulsory aptitude tests must be checked by the educational unit responsible for the given traineeship or, in the absence thereof, by the Registrar's Department. In order to fulfill this obligation, the educational unit (e.g., department or institute) may access the NEPTUN database. The traineeship may be assigned to the student only after the aptitude test and the registration of the Hepatitis vaccine have been verified by the educational unit responsible for the organization of the given traineeship.
- (10) Registration under paragraph (7) is the student's responsibility and duty. If the student participates in the traineeship without registration, the traineeship is invalid and the student is liable for any damage caused.
- (11) The student completes the traineeship required by the curriculum in the educational units of the university or in other places of training, which have been accredited by the relevant faculty or by a faculty providing equivalent training in another domestic university.
- (12) The supervision of the traineeship is organized and managed by the head of the educational unit responsible for the subject. The head of the educational unit shall send a written report to the Dean of the Faculty by the 1st of October each year, about the experiences of the traineeships completed by the 1st of September.

Article 11 [Special Regulation Concerning the Traineeship at the Faculty of Medicine, Faculty of Dentistry and Faculty of Pharmaceutical Sciences]

(1) The duration of the traineeship at the Faculty of Medicine: the summer practice and the 6th year students' practice are of forty hours per week, during which the student can be assigned once bi-weekly to an on-call period of up to 12 hours, which should be undertaken on weekends or at nights depending on the student's choice.

- (2) The duration of the traineeship at the Faculty of Pharmaceutical Sciences is thirty-five hours per week for summer practice and forty hours per week before the closing examination.
- (3) At the Faculty of Pharmaceutical Sciences, summer internships can be conducted at an optional location (an accredited public pharmacy, an in-house pharmacy, a Galenian laboratory, a research institute, a university institute, a pharmaceutical technology plant). The 2-month period of compulsory traineeship prior to the closing examination must be completed in an accredited public pharmacy. One month of the 4-month-long compulsory traineeship before closing examination must be completed in a hospital or institutional pharmacy and the remaining 3 months in an accredited public pharmacy.
- (4) Signing of the evaluation of traineeship shall be denied if the absence has reached 25% of the duration of the traineeship.
- (5) In case of "fail" (1) qualification, the student may not continue his/her studies until the completion of the traineeship.
- (6) At the Faculty of Medicine, a final examination after the 6th year traneeship may be prescribed in the model curriculum. Once a final exam is requested, the traineeship does not have to be evaluated by an individual grade; in case the examination is failed, the practice does not have to be repeated.

Article 12 [Special Regulations Concerning the Traineeship at the Faculty of Health and Public Services]

- (1) The student is required to complete the traineehip required by the curriculum at any educational establishments or institutes, which are on the list approved by the degree course supervisor or have been individually approved.
- (2) Students are required to undergo an aptitude test every year prior to their traineeship. By contrast, the aptitude test is not obligatory if the student already has a valid occupational suitability certificate for the activity or for the performance of the job duties, or it is not required by the law for the tasks to be performed. In this case, the student is required to submit an aptitude statement or a form called "Student's Statement on Health Condition" at the Registrar's Department.
- (3) Students of the Faculty of Health and Public Services prepare a written report on their traineeship, the acceptance of which is a prerequisite for completing the course.
- (4) In the NEPTUN the completion of the traineeship is recorded by the head of the educational unit responsible for the training or by the instructor concerned.

Article 13 [Special Regulations Concerning the Traineeship at the Faculty of Health Sciences]

- (1) The faculty may organize traineeships in the form of summer practices for the students.
- (2) The summer practice corresponds to the practice to be completed in autumn in the model curriculum, the completion belongs to the fall semester, and the related assessment is included in the study indexes of the fall semester.
- (3) Even in case of completing the autumn traineeships in the form of summer practices, the subjects for which the traineeship is a prerequisite, cannot be registered for sooner than in the spring semester.
- (4) The student may re-register to the traineeship in term-time after a not completed summer practice, but this shall be considered as a re-registration to the subject (i.e. second or further course registration).

Article 14 [Special Regulations Concerning the Traineeships and Practical Training at the András Pető Faculty]

- (1) Practice is the form of education in which the gained theoretical knowledge is applied and implemented in practice, in an organized method, following the principles of conductive education. In some subjects, lectures and practice can complement each other.
- (2) The complex final session is a practical report required to complete a Bachelor of Science degree in Conducting. Complex final session is considered as a closing examination and hence must be taken before a committee/board. The committee is chaired by a conductor educator. The minimum number of members of the committee shall be 2. Minutes should be taken of the complex final session. In the case of a complex final work, a course syllabus should be prepared and published before the semester begins. The complex final session fails if any of the minutes in the protocol are insufficient. An unsuccessful final session can be repeated once. In the case of a successful complex final session, the student has no opportunity to request an improvement exam.
- (3) The coordinator of conductive pedagogical exercises (basic individual, individual methodological and group conductive education) is provided by the instructor responsible for continuous professional practice.
- (4) The task of coordinating pedagogical and pedagogical rehabilitation practices (group education, group methodological, teaching, rehabilitation) is the responsibility of the advisor of specialization.
- (5) The completion of the traineeship, the grade of the evaluation, is recorded in the NEPTUN by the Traineeship Teacher or the Traineeship Trainer, the Course Director or the Registrar's Department.
- (6) Participation in conductive pedagogical exercises (basic individual, individual methodological and group conductive education) is compulsory. The student may miss up to 20% of their practice hours, which must be made up for. Absence of basic individual and individual methodological practice should be remedied by the end of the exam period. The weekly schedule of the individual and individual methodological exercises is prepared by the chief conductor, taking into account the characteristics of the group, the

agenda and the students' requirements. Repeating the missed group conductive education practice is possible until the end of the semester. To repeat is the student's responsibility.

- (7) The student can miss the pedagogical exercises (school group teaching practice, kindergarten group methodological practice, group education, pedagogical rehabilitation) up to three times. Students who have not successfully met the methodological requirements of the given semester cannot take part in the group teaching/methodological/teaching practice at school and kindergarten.
- (8) The student may be absent from 20% of the practice relating to theoretical study.
- (9) In conductive pedagogical practice, the grade/qualification of the individual and the individual methodological practice of the foundation consists of grades and signatures that vary from year to year. All signatures and shares are a prerequisite for an aggregate rating. If the required semester signatures or digits are missing, the semester end signatures will be denied. If the continuous practice grade is "fail" and the total grade is "fail", the semester shall be repeated. If the grade of the practical report is "fail", the report may be repeated once before the end of the examination period with the presence of an instructor. If the grade of the practical report is also fail, then the sum of the grades is also fail. In case of basic individual, individual methodological practice, if the total mark is insufficient, there is no possibility of correction, the subject can be completed by re-registration. In case of a successful report, there is no possibility to repeat it for gaining a better grade.
- (10) The qualification of kindergarten, school and pedagogical rehabilitation education and methodology (individual and group, external, internal, integrated) consists of different grades for each part. For the sum of grades and closing a semseter each part is required. If the required grades to complete the semester are missing, the end of semester qualification will be denied. If the grade on the practice report is insufficient, the report may be repeated once until the end of the exam period. If the grade of the practical report is also fail, the sum of the grades is also fail. In case of a successful report, there is no possibility of a corrective report.
- (11) If the sum of the grades of the kindergarten and school (educational, methodological, external, integrated) practice is insufficient, the subject can be completed by re-registration.
- (12) In years III. and IV, the professional practice (conductive pedagogical, pedagogical, and pedagogical rehabilitation) can be organized in the exam period.

5. Provisions Concerning Student Status

Article 15 [Student Status, Enrollment Obligations, Course Registration]

- (1) Those who have been enrolled or transfered to Semmelweis University may establish a student status at the university no later than the semester following the decision. Student status is created through enrollment. Only one legal relationship may be established with one student at one training, considering the nature of the training, its way of funding and its language.
- (2) Prior to starting their studies, students take a solemn oath according to the nature of the training.
- (3) By enrolling, the student declares that he/she is familiar with and adheres to the university's rules applicable to him/her.
- (4) Enrollment, as well as the submission of declarations or applications regarding the continuation or suspension of studies shall be accomplished within the periods specified in the academic calendar.
- (5) The student may withdraw his/her registration within one month after the beginning of the training period but not later than 14 October or 14 March. If the student does not request to discontinue his/her studies by this date, the semester is considered to be an active semester even if the student does not attend the lectures and practices, and does not fulfill his/her study duties. If the student requests such discontinuation of his/her studies by the above deadlines, the given semester shall be considered as a passive semester.
- (6) In justified exceptional cases, on the basis of the student's application and supporting documents submitted at the latest by the last day of the term-time, the committee competent in educational and examinational affairs may, on one occasion during the whole training, authorize the ongoing active semester to be declared passive after the deadline specified in paragraph (5). A justification of the reason(s) shall be attached to the application. The issuing of the approval, which changes the status of an active semester to passive, is followed immediately by the cancelling of the study results of that semester, and the rules governing the suspension of student status apply to that semester. If an active semester is declared passive (late declaration of a passive semester), 75% of the tuition fee can be refunded upon a duly substantiated request by a student participating in fee-paying training.
- (7) For student obliged to pay for their training (self-funded training), the fulfillment of this obligation is a condition of registration. Students who have not fulfilled their payment obligations by the due date(s) may not be enrolled.
- (8) The student is required to report any changes in their data recorded in NEPTUN immediately. There is no legal redress for any disadvantage resulting from failing to do so. The student may be requested to pay a special procedure fee for failure to report changes in data.
- (9) Assessment of student performance is entered into the NEPTUN by an authorized instructor.
- (10) Registration to at least one subject by the student in the NEPTUN for a given semester qualifies as announcement of continuation of studies.

Article 16 [Suspension and Termination of Student Status]

- (1) Student status is suspended
 - a) if the student declares that he/she does not wish to fulfill his/her student obligation in the next training period, or if the student does not register for the following training period.
 - if the student has withdrawn his/her relevant registration until the deadline, b)
 - if the semester is declared passive after the deadline upon the student's request, c)
 - d) if the student is prohibited from continuing to study as a disciplinary punishment,
 - e) for the duration of the actual military service of the volunteer reserve, during which the student is exempt from the obligations laid down in these Regulations.
- (2)In the case referred to in point a) of paragraph (1), the continuous interruption of student status shall not exceed two semesters, except on the basis of the authorization specified in paragraph (3). The student may suspend his/her student status more than once according to these regulations.
- The committee competent in educational and examinational affairs may, at the request of the student, authorize the suspension of (3)the student relationship:
 - a) for a continuous period longer than that specified in paragraph (2),
 - b) prior to completion of the first semester, or
 - c) until the end of the training period which has already began, for that training period (late declaration of a passive semester) provided that the student is not able to fulfill his/her obligations arising from the student status due to childbirth, accident, illness or any other unexpected condition beyond his/her control.
- When the student status is suspended, (4)a) the student may not receive any normative allowance,

 - b) the student card cannot be validated,
 - c) NEPTUN can be used by the student.
- The student status terminates: (5)
 - a) if the student is admitted and enrolled by another higher education institution, on the day of admission,
 - b) if the student announces the termination of his/her student status, on the day of application/announcement,
 - c) if the student is not able to continue his/her studies at the Hungarian (partly) state-funded training program and does not want to continue his/her studies at the self-funded (fee-paying) training,
 - d) on the last day of the semester in which the student obtained the pre-degree certificate (absolutorium),
 - e) if the student's status is terminated by the Rector due to payment arrears after unsuccessful demand note and due consideration of the student's social situation, on the day of the decision becoming final,
 - f) on the day when the students' expulsion as a disciplinary punishment becomes final,
 - on the day when the decision that terminates the student's status becomes final, if the condition that is specified in the Act on g) National Higher Education as a prerequisite for establishing the student status does no longer apply,
 - h) if the student who participated in a Hungarian (partly) state-founded training withdraws the declaration that is required under the relevant provision of the Act on National Higher Education and does not undertake to participate in a self-funded (fee-paying) training.
- (6)Unilateral declaration of dismissal terminates the student status:
 - a) if the student fails to fulfill his/her obligations described in the regulation regarding the progress of studies,
 - b) if the student fails to register for the next semester third time in a row,
 - if the student does not commence studies after the suspension of the student status, C)
 - d) if the student could not complete a subject at its third registration, provided that the student has been notified in writing in advance to fulfill his obligation within the time limit specified and has been informed of the legal consequences of the omission.
- The university terminates, by a unilateral statement, the student status of a student whose total number of unsuccessful retake and (7)repeated retake examinations in the same subject unit reaches five. This provision applies only to those who have commenced their studies in the relevant program in the fall semester of 2012/2013 or thereafter.
- (8)Those students whose student status has been terminated shall be removed from the list of students.

Article 17 [Transfer]

- (1) Deadline of the application is June 15th of each year, for whom the conditions for dismissal are not met.
- (2) The student applying for admission is required to send it by July 15th
 - a) a certified copy of a sealed course book or an equivalent certificate,
 - b) certficate of student status
 - c) detailed curriculum of the training and the certified subject program of the completed subjects. Completion of documents upon request is possible.
- (3) At the András Pető Faculty, the application shall be accompanied by the decision on the successful aptitude test.
- (4) Decision about the transfer is made by the committee competent in educational and examinational affairs in the light of the student's academic achievement and other circumstances, taking into account the available capacity.
- (5) Students who have participated in (partly) state-funded training at the transferring institution may also be admitted to a (partly) state-funded training.
- (6) In the event of a transfer, the university will require information from the Information System for Higher Education (FIR):
 - a) whether the student has attended a (partly) state-funded or self-financed training,
 - b) in case of (partly) state-funded studies, how many (partly) state-funded active semesters have been used by the student during the studies,
 - c) if the student's student status is terminated or terminated due to transfer. If the required information cannot be gained from the FIR system, a statement is requested in this regard from the donor institution.
- (7) If admission is refused, the student may commence studies at the institution only after successful admission.
- (8) In case of the student applying for the admission of the subjects completed in another specialty, faculty or institute, the committee competent in credit recognition shall make a preliminary credit transfer decision taking into account the opinion of the course supervisor. when making a takeover decision. During the pre-credit transfer procedure, the committee competent in credit recognition decides on the credit requirements (subject to fulfillment conditions) expected to be fulfilled by the end of the semester in which the application is submitted. In the case of student admission, credits recognized in a prior credit recognition decision shall be deemed to be recognized at the time of the actual commencement of studies without further application.
- (9) Transfer to Semmelweis University training can only be requested between courses of the same level, except for transfer
 - a) from undivided training to bachelor training,
 - b) from bachelor training or undivided training to higher vocational training.
- (10) The transfer decision must stipulate
 - a) the academic year,
 - b) the faculty, specialty, work schedule, financial form,
 - c) and, on the basis of the prerequisite schedule, the year (grade), in which the transferred student can begin or continue his/her studies.
- (11) In the case of transfer to the András Pető Faculty, the applicant can gain admission to the first year of the self-finaced training. The prerequisite for admission to the specialization is the fulfillment of the conditions specified for the specialization. Transfer from full-time to part-time training may be subject to the conditions set out in the admission bulletin, in addition to the above.
- (12) If the transfer student does not have a continuous legal relationship until enrollment, then the decision on the transfer will be withdrawn by the committee competent in educational and examinational affairs in accordance with Article 57 (6) of the Acton National Higher Education.

Article 18 [Simultaneous Training]

- (1) The student participating in parallel training programs will be awarded a separate diploma upon successful completion of each training.
- (2) Students can gain eligibility to pursue parallel training by means of admission or transfer.
- (3) Once a student of the university gains eligibility to a parallel training at the university, he/she may not establish a separate student relationship, so he/she does not enroll again, and the date of the beginning of the new training is the date of the decision under paragraph (2).
- (4) The student may not obtain multiple rights for studying in the same program if he or she has been allowed to study in parallel training even if the student is studying in different places of study, different languages of instruction, different work schedules, or by different financing modes. If the student has applied for admission to a degree program (or if the student has applied for admission for an advanced training) that the student is already studying at the university, then the student's request shall be treated as a request for conversion or reclassification that is based on place, language or work schedule. If a student enrolled in a particular program and is re-admitted to the same program for Bachelor, Master, or in the case of vocational training in higher education, then the Dean will

ask the student to select the appropriate training location, training language, work schedule and mode of finance at the same time when the Dean announces his or her decision on the admittance of the student then the student's right (to continue his or her studies on a different training from the one that he or she has already selected) shall be removed from the register. This provision does not preclude the student from pursuing parallel studies in several specialties leading to a separate qualification.

- (5) If a student participates in parallel training within the university then he or she may suspend his or her studies in one of his or her training programs, in which case the student shall fulfill the obligations that arise from the studies that he or she has not suspended.
- (6) If a student of the Faculty of Health Sciences establishes a student status at a different institution, then the enabling of the exceptional study order of the student may come into existence after the student has been admitted to another institution.
- (7) If a student studies at the András Pető Faculty, he or she may not request for an exceptional study order even if the student wants to study in simultaneous trainings. The student of András Pető Faculty may undertake a parallel training at another higher education institution if the student has fulfilled his or her prior notice requirement at the relevant faculty. The documentary evidence, which proves that the student has enrolled in another institution must be presented to the Registrar's Department in order to keep the records.

Article 19 [Partial Training]

- (1) If the student wishes to study in the framework of partial training, the student may establish a student status for a semester and re-initiate to establish a student status without restriction of times but may only complete courses up to a total of sixty credits. The student participating in the part-time training shall pay a fee corresponding to the cost of the given training. The Registrar's Department issues a course completion sheet and a certificate of the student status and issues a certificate of the subjects that the student registered for within the given student status.
- (2) If a student wishes to establish student status in order to study in part-time training, the student must submit a request to the Registrar's Department and the student must specify the subjects he or she wishes to complete in this request.
- (3) The student must attach the following documents to his or her request:
 - a) the following information necessary for the establishment of a student status: the applicant's name, gender, name of birth, mother's name, place and date of birth, nationality, permanent address and telephone number of the student's apartment or other place of stay. If the student is not a Hungarian citizen, he or she must attach the document, which proves that he or she has the right to stay in Hungary. If the student is a citizen of a country that falls under special requirements, then the student must present the official title and the number of the permit of residence that guarantees the free movement and the right of residence in Hungary
 - b) a certificate of student status,
 - c) a certified copy of the student's mark book or the certified copy of the master sheet.
- (4) The application may be submitted no later than 30 days before the beginning of the study period.
- (5) The committee competent in educational and examinational affairs makes a decision on the submitted request within fifteen days. The Registrar's Department shall notify the student who submitted a request on the decision no later than fifteen days before the beginning of the semester.
- (6) If the student wishes to take part in part time training, he or she will have a student status. By this student status, the student is not eligible to pursue further professional qualifications or to apply for a transfer or to establish additional guest student status. The student is not entitled to suspend his student status (except for a specific reason defined in Article 16(3)), the student is not eligible for studying in a training that is partially or fully sponsored by the Hungarian state, the student is not eligible to apply for support time.
- (7) If the student has obtained a student status in order to study in a part time training then the student status must be accounted into the duration of the student's statutory benefits, or any services that the student may be entitled to.
- (8) After the student completed a part time training the Registrar's Department issues a certificate of the completed subjects and of their credit value. The subjects that were acquired by the student can be included in the student's tertiary education.

Article 20 [Guest Student Status]

- (1) The university shall contribute to the student pursuing a degree as a guest student at another higher education institution, either in Hungary or abroad if the host institution allows the student to do so. If the student studies in a training of a Hungarian higher education institution that is partially or fully sponsored by the Hungarian state then the student may establish a guest student status in accordance with the regulations applicable to students who study in a training that is partially or fully sponsored by the Hungarian state and if the student takes part in a self-financed training program, then the student may establish a student status in accordance with the regulations applicable to students who study in a self-financed training program.
- (2) The procedure for applications for partial trainings, which are organized by the university are ruled by the regulation regarding the university partial trainings.

- (3) A student may participate in partial training courses at a foreign university if he or she signs a study contract both with the university and the host institution abroad. This study contract must be submitted by the student to the department of the university responsible for the applications within 15 working days after the end of the enrollment period in the host institution.
- (4) If a student of the university organizes it individually to attend partial training, then it has to be allowed by a decision of the committee competent in educational and examinational affairs, and this committee takes the preliminary credit transfer decision of the committee competent in credit recognition into consideration (if such a preliminary decision is available). The student is obliged to submit the permit of admittance issued by the host institution to the Registrar's Department within 8 days of receiving and the Registrar's Department submits the permit to the committee competent in educational and examinational affairs.
- (5) The university may recognize the student's credits that the student has obtained in another higher education institution (while he or she had a guest student status) under the credit recognition rules. The student must show a credit certificate or an equivalent certificate (e.g. transcript) issued by the host institution to prove that he or she has obtained the credits.
- (6 If the student (who has concluded a cooperation agreement with the foreign higher education institution in order to study in that institution according to the Learning Agreement) concluded a study contract, which includes the credits that the student wants to obtain with the university before departure requires the university to accept his or her credits then the university will carry out a prior credit transfer procedure. In such a case, the credit recognition procedure shall be done before the beginning of the student's studying in a part time training abroad and it is not revocable.
- (7) If a university student has obtained a guest student status and thus obtained exams, then these examinations are treated by the university as if they had been taken by the student at the university. The university then has to do a prior or regular credit recognition process in order to make sure that the student meets the curriculum requirement. When a student has passed an examination in another institution, this subject is recorded by the Registrar's Department of the university in NEPTUN as an accredited subject. The student has to submit the certificate of the subjects that he or she has obtained in the part time training courses to the Registrar's Department by the 14th of March (if he or she completed the subjects in the fall semester) or by the 14th of September (if he or she completed the subjects in the spring semester). If the student fails to meet the deadline given above, then he or she can have the results of the subjects that he or she completed in the framework of the student status accepted by the university in the following spring semester (if the student completed the subjects in the fall semester), or in the next fall semester (if the student completed the subjects in the spring semester).
- (8) If the student wants to establish a guest student status then he or she must submit an application. The application must be submitted at the same time as the student enrolls for the semester either in NEPTUN or on paper at the faculty of the university of which courses the applicant wishes to take. This period may be extended up to the end of the third week of the semester for international students.
- (9) The acceptance of the application is decided by the committee competent in educational and examinational affairs within eight days of receiving the application. The decision shall include information about the following: the form of financing of the studies of the guest student, the amount of any cost to be paid by the student and the method and deadline of the payment.
- (10) The Registrar's Department registers the guest student for those courses in NEPTUN, based on which courses are enabled by the permission of the guest student based on his or her student status.
- (11) The Registrar's Department issues a certificate of the student's academic achievement of the given semester in the framework of the guest student status, accompanied by a credit certificate per completed course.
- (12) The issued certificate shall include the following:
 - a) the student identification data (name, name of birth, place and date of birth, student ID number),
 - b) the title, description, work schedule, identifying number, credit value and earned grade of the completed course,
 - c) the school year and the semester of the course,
 - d) the duration of studies (first and last days of the student status) and the time for which the student received support,
 - e) the number and the date of the certificate;
 - f) the signature, the stamp of the certifying body.

6. Course Registration

Article 21 [Announcement of Subjects and Courses]

- (1) A The announcement of the subject means the announcement of the courses of the subjects, the announcement process is supervised and directed by the Vice Dean for Education of the faculty.
- (2) In case of obligatory elective and elective subjects, the faculty responsible for the training ensures that an appropriate selection of these subjects of at least 1.20-fold credit value is announced.
- (3) The educational unit responsible for teaching the subject decides on the announcement of the subject and it must announce a compulsory subject in accordance with the curriculum. The Dean of the educational unit may require the announcement of a subject on the proposal of the committee competent in educational and examinational affairs of the faculty.
- (4) The subjects and the courses related to the subjects must be announced in a way that each student can complete the requirements of the model curriculum in each semester.
- (5) Compulsory subjects that end with an exam must be announced with a sufficient number of courses for a sufficient number of students in every semester, which contains the subject course in the model curriculum ("current semesters"), and in cross semesters, these courses must be announced at least in the form of CV and FM courses. CV and FM courses need to be announced only upon students' request if these courses do not seem to be required on the basis of the number of eligible students, or in cases of part-time trainings and trainings for few students, i.e. maximum 60 students per year.
- (6) Low and high limits for the registered students may be defined by the educational unit responsible for the course. This fact and the parameters should be published in NEPTUN.
- (7) The number of students per teacher in clinical practice and laboratory practice courses corresponds with the number of students per group that has been established by the given faculty.
- (8) Compulsory subjects have to be announced by the educational unit in every semester, which contains the subject course in the model curriculum ("current semesters") with a capacity at least 5% higher than the number of students eligible for registration, so that all eligible students can register these courses. This condition must be met according to the expected number of students at the time of the announcement of the course. The high limit of registered students for the subject or the course may be increased later, particularly for this purpose.
- (9) The number of students to register to a course may be limited on the basis of the work capacity of the instructors, the availability of teaching tools, the capacity of the seminar rooms and teaching laboratories, and with the agreement of the Student Council for other objective reasons.
- (10) The head of the educational unit responsible for announcing the subject ensures that the subjects and courses (including examination courses) are recorded in NEPTUN until the last day of the preceding term-time. The courses are recorded by entering the data described in paragraph (15) into NEPTUN.
- (11) The faculty responsible for teaching the program (or the training) ensures that the courses are scheduled in the timetable and the scheduling is recorded in NEPTUN before the end of the third week of the exam period of the previous semester. In the case of courses having only one teaching session per semester, the scheduling is indicated in the comment box.
- (12) The educational unit assigns the instructor of the subject/course before the beginning of the course registration period of the current semester if the instructor is already known. Subject/course instructor assignment may be modified under appropriate circumstances.
- (13) A classroom must be assigned to each scheduled course (with the exception of criterion requirements). The registrar responsible for course scheduling at the faculty assigns the classroom by taking the recommendation of the educational unit into consideration.
- (14) The courses in compulsory and obligatory elective subjects, which are announced for the same semester according to the model curriculum, and have no parallel courses on different weekdays, must be scheduled to different times.
- (15) The subject is announced through NEPTUN by the deadlines specified in this section, with the following information:
 - a) the course code,
 - b) the type of course,
 - c) the nature of the course,
 - d) the instructors of the course and their participation in the education of the course,
 - e) the course registration requirement,
 - f) the subject program,
 - g) the minimum number of students and the maximum number of students who may be registered to the course,
 - h) the size of an optional waiting list,
 - i) in the event of over-application to the course, the ranking criteria where this is not the order of application to the course,
 - j) the language of instruction of the course,
 - k) the classroom assigned to the course,
 - I) the timetable details of the course.

- (16) The person who is responsible for the curriculum of the faculty determines the timetable data of the courses by taking the recommendation of the educational unit responsible for the teaching of the subject into consideration.
- (17) The educational units responsible for teaching the subjects may also publish the course announcement in addition to the central announcement.
- (18) If the Registrar's Department finds an error in the range of subjects or of the courses, then it will report it to the Vice Dean of education (and also to the leader of the educational unit responsible for the training in the Faculty of Public Health) or it can directly initiate the rectification of deficiencies while it is delegated to do so by the vice Dean for education.
- (19) The faculty Vice Dean of education will take the recommendation of changes of the designated lesson administrators (or department administrators) into consideration (at the Faculty of Public Health, the Vice Dean of the faculty also takes the opinion of the head of the educational unit responsible for training into consideration) and makes sure that the preliminary subject and course offers are published in NEPTUN (except for the assigned classroom of the course, the timetable and the course instructor) until the end of the last week of the term-time in the preceding semester.
- (20) The head of the educational unit responsible for the announcement of the courses may request the faculty coordinator to modify, add or delete courses until the end of the last working day before the subject registration period. The person (department administrator) who is designated to manage the timetable may modify the offer of courses and he or she can coordinate with the Vice Dean of education when he or she makes his or her decision (at the Faculty of Public Health, he/she may coordinate with the head of the educational unit responsible for the training) with respect to a decrease in the number of students and to a decrease in the number of courses but he/she may not cancel any examination course.
- (21) The final offer of courses and subjects cannot be modified (with the exceptions defined in paragraph (20))

Article 22 [Rules and Limitations of Subject Registration]

- (1) Subject registration consists of
 - a) an optional preferential subject registration period and
 - b) the regular subject registration period including
 ba) the period of registration to compulsory subjects, and
 bb) the period of registration to obligatory elective and elective subjects.
- (2) Subject and course registration periods should be organized in several stages over time while the load bearing capacity of NEPTUN should be taken into account.
- (3) The students may register to compulsory, obligatory elective and elective courses until midnight of the last workday before the beginning of the term-time in respect to the prerequisite system of the subjects.
- (4) The preferential subject registration period begins not sooner than 12 hours before the beginning of the regular subject registration period to compulsory subjects.
- (5) The timing, the circle of eligible students and appropriate reasons for a preferential subject registration period are determined by the Vice Rector for educational affairs. The Vice Rector notifies the Registrar's Department at least eight days before the beginning of the period, and the Registrar's Department enforces the terms in NEPTUN. A preferential subject registration period cannot be installed in the lack of such notification.
- (6) Students register to the subject assuming that their registration to the courses required to complete the given subject will be accepted. Registration to all types of courses required to complete a subject occurs simultaneously. The students' registration is accepted if the student has fulfilled his/her prerequisite obligations and the course has not reached its registration limit. The student may withdraw his/her registration for a course and may register for another course by the end of the subject registration period.
- (7) The student receives an automatic notification of the fact that he/she has registered to a subject in NEPTUN. The Registrar's Department closes the registration for addition or modification in NEPTUN on the first weekday after the subject registration period and thus the timetable for the student's current semester becomes final. The student receives a notification via NEPTUN within one workday after the closing of the subject registration urging them to check their subject registrations.
- (8) Students may object to their subject registrations within five days after the end of the subject registration period. The application may be submitted in person at the Registrar's Department or by email. The Registrar's Department modifies the student's registration to a subject in case of a well-founded and properly substantiated complaint. The head of the Registrar's Department processes the objection request in a way that if the request is accepted, the registrar's Department may make the change within 8 days after the end of the subject registration period. The student may have his/her course registrations without any consequences by the third week of the time-term.
- (9) In case of sequential multi-semester subjects, if the student has obtained the signature of the subject in the previous semester but was unable to meet the examination requirements, his/her registration to the subject in the following semester may be permitted by the committee competent in educational and examinational affairs by the end of the subject registration period, on the basis of the

approval of the educational unit that is responsible for the course. However, the student may only obtain the grade of the examination of the subject in the current semester after obtaining the credits of the given subject for the previous semester.

- (10) If the student was unable to register to a course due to a reason that is attributable to the university, the educational unit or to the instructor, the student shall be allowed to register to the course according to his/her original decision or to a course that can be fit to his/her timetable.
- (11) The students have the right to choose between parallel lessons, or between parallel groups of the same year up to the announced registration limits, provided that the curriculum requirements and the restrictions defined in this section are met.
- (12) Those students who are foreseeably undertaking a part of their studies abroad and for whom only certain turns are suitable, may receive preference in the subject registration period if they attach the appropriate certificates (learning agreement, letter of intent from the host institution, certificate from the organization having an agreement of cooperation with the university).
- (13) The condition for the students' registration to the subject(s) related to their activities in Scientific Students' Association (TDK) is the students' inclusion in the TDK Register, and this information must be indicated in the appropriate field in NEPTUN. Registrations of those students who are not recorded in the TDK Register must be deleted. Registrations of those TDK students whose performance meets the requirements defined in the TDK Code of Conduct are modified to a subject of higher credit value by the Registrar's Department.

Article 23 [Subject Re-registration]

- (1) The missing credits of an unaccomplished compulsory course can be obtained no later than in the semester when the subject is re-announced at the second time, except if the student's status has been suspended.
- (2) If the student was unable to obtain credits for a registered subject at first registration, he/she may re-register to the subject in two of the subsequent semesters provided that restrictions of the prerequisite schedule and the regulations in paragraph (1) are met.
- (3) If the student was unable to obtain the credits of a subject in the way described in paragraph (2), a special permission can be requested only once in the whole training, and regarding only one subject to re-register to the subject one more time. If the student has already obtained the signature, he/ she only needs to take the exam for the subject in the next semester. The student may also request another opportunity to obtain the signature.
- (4) Re-announcement of a subject, in this section, means the soonest announcement of the course in a spring semester if the subject was first registered to by the student in a spring semester; and it means the soonest announcement of the course in a fall semester if the subject was first registered to by the student in a fall semester.

Article 24 [Repeating a Subject, Examination Course]

- (1) The examination course may be:
 - a) a CV course,
 - b) or an FM course.
- (2) Compulsory courses must be announced in every semester at least in the form of an examination course.

7. Assessment of Meeting the Study Requirements

Article 25 [Assessment of Study Requirements and of Student Performance]

- (1) Completion of a subject, and acquiring the credits for a subject:
 - a) Via fulfillment of the course, the study activities and other requirements assigned to the subject and obtaining the learning achievements ("completion"), or
 - b) Via recognition of the student's previously acquired knowledge, which has been learnt in either formal, informal or non-formal ways, in accordance with the provisions of Article 43 ("credit recognition").
- (2) Student performance may be assessed by:
 a) a rating scale of five grades, such as: excellent (5), good (4), average/fair (3), satisfactory/pass (2), unsatisfactory/fail (1)
 b) or a rating scale of three grades, such as: excellent (5), fair (3), fail (1).
- (3) The funding of education (e.g. self-financing, state-funding, scholarships) must not influence the evaluation of the students' performance.
- (4) The student's knowledge can be assessed in the following ways:
 - a) through oral or written test(s) during term-time in the lessons or at separate occasions (classroom test), or through evaluation of the student's assignment completed as an extracurricular work, or

- b) through an examination, which can be:
 - ba) a practical examination (practical mark), which may be prescribed if the training goals allow and necessitate the practical application of the subject and the evaluation of the students' skills for such practical application;
 - bb) end-term examination (examination),
 - bc) final examination,
 - bd) closing examination (terminal board examination).
- A grade can be given to the student at the end of the semester:
- a) as a term grade, in either theoretical or practical subjects based on assessments during the term,
- b) as an examination grade.
- (6) The grade that the student receives at the examination can based only on the student's performance at the exam, and the results of mid-term assessments cannot be taken into consideration.

Article 26 [Offering a Grade]

(5)

- (1) In cases of subjects concluded by end-term examinations and of those consisting of seminars and practical sessions only, the head of the educational unit (the lecturer of the subject) can offer the student an excellent or a good grade based on the student's performance during the study period. The terms of offering practical grades must be announced at the beginning of the semester.
- (2) The relevant students must be informed about their offered grades on the last session of the subject at the latest through the appropriate platform of NEPTUN. The student is not obliged to accept the offered grade, he/she may apply for taking an examination instead. If the student does not register for any examination of the subject, then the offered grade that has been recorded in NEPTUN shall be deemed accepted.
- (3) Maximum 5% of the students registered to the course may be offered a grade in the case of compulsory subjects.
- Article 27 [Methods of Assessment and Measurement of Student Performance]
- (1) The aim of assessment and measurement of student performance may be:
 - a) confirmation of the possession of prior competences, which are required in order to accomplish a study activity, may be carried out by diagnostic assessments (such as a placement test),
 - b) recording the students' mid-term progress with continuous feedback, which requires a supportive (formal) partial performance assessment, or
 - c) evaluation of the competences acquired during a given study period by using a summative assessment.
- (2) The types of the assessments under paragraph (1) may be applied in combination within the same subject in a manner that is appropriate to the nature and purpose of the subject.
- (3) Any type of measurement and evaluation may be used for examining the existence of competences, such as knowledge or ability.
- (4) The existence of competencies, such as attitude, independence or responsibility should be measured primarily by partial performance assessment, and secondarily by summative assessment.
- (5) Partial performance assessment may take place in the following ways:
 - a) Continuous assessment, which means that the teacher may evaluate the student's performance and activity in the sessions of the course. This can include: (active participation, raising ideas, participating in organized group work or debate, reports (made by the students) in the previous lesson, etc.),
 - b) One-off action(s) (the students make an oral report, a laboratory measurement, or they prepare reports of laboratory measurements or they make regular, self-help tasks, which help the students to learn the study material, etc.),
 - c) Students create work(s) supported by the instructor on a continuous basis, with guidance or consultation. It can be homework, home written essay, project assignment, presentation, plan, artwork and documentation), or
 - d) the students undertake a practical task (or tasks).
- (6) Results of the obligatory partial performance assessment, with the exception of criterion requirements, must be taken into consideration at granting the signature and forming the grade with a weight determined in the course syllabus.
- (7) The student completes the summative assessment through one-off action(s) as defined in the course syllabus, i.e. written test, written, practical or oral end-term exam or final exam, etc.

Article 28 [Performance Assessment System]

- (1) The system of evaluating the performance of the students should be done in such a way that it should facilitate and encourage continuous learning and it should not lead to the undue overload of the students. The method of evaluation of the subjects of the subsequent academic year, i.e. practical grade or examination, shall be recorded in the model curriculum.
- (2) The number of term-time performance assessments, which belong to a subject and which are necessary for the student to complete the subject should be determined in the following way:

- a) although the number of evaluations that aim to assess prior competences of the students is not limited, such assessments may only be applied in subjects including practical course(s) or laboratory practice course(s),
- b) the number of activities for the summative assessment of competences acquired during the semester (e.g., mid-term test)
 - ba) cannot be more than three, in the case of a course concluded by a term grade or more than two, in the case of a course concluded by an examination.
 - bb) In the case of a course concluded by a term grade: the duration of the evaluation activity can be 60 minutes per credit value; in the case of a course concluded by an examination the evaluation activity of the course can be 45 minutes per credit value.
- (3) Diploma work writing course and certain courses, which are not concluded by an examination, such as professional practice, planning exercise or project task, should be evaluated by partial performance assessment.
- (4) Performance assessments described in points b) and c) of Article 27(1) of these regulations can be qualified as optional in the course syllabus. Benefits can be assigned to successful completion of such non-compulsory performance assessments and the result of such non-compulsory assessments can be taken into consideration when granting the signature or forming the term grade or examination grade.
- (5) Performance assessment activities should be scheduled dominantly in the term-time; their retake or improvement can take place until the end of the first week of the examination period.
- (6) Compulsory performance assessment activities in the term-time can take place on workdays between 8 a.m. and 8 p.m. in the time of the course sessions or in different time(s) set in the performance assessment plan in advance. Any other scheduling requires the agreement of the Student Council.
- (7) Performance assessment activities, such as written or oral mid-term tests must not be scheduled to overlap with a session of another subject course of the same semester in the model curriculum.
- (8) The performance assessment plan should be made in the following way: The weekly number of summative performance assessment activities, such as written or oral mid-term tests of the subject courses of the same semester in the model curriculum cannot exceed two in general and four in the last two weeks of the term, and the assessments of the same week must be held on different workdays.
- (9) The performance assessment plan described in paragraph (8) has to be made for each training program regarding the compulsory and obligatory elective courses in the model curriculum.
- (10) The performance assessment plan, which includes the performance assessment activities and the possibilities for their retake and improvement, has to be published at the homepage of the faculty until the end of the first week of the term-time.
- (11) Deviation from the performance assessment plan requires the approval of the committee competent in educational and examinational affairs. In such a case, the students involved must be informed by the subject tutor via NEPTUN one week before the time of the affected performance assessment activity.
- (12) If the student fails to be present on some of the practical sessions, but if these events do not exceed 25% of sessions, the teacher does not have the right to withhold his or her signature to the student. If the student exceeds his or her absence over 25% of all of the practical sessions, then the head of the educational unit defines the conditions of how the teacher gives his or her signature and the possibility of the order of the student's substitution of his or her absence.
- (13) The performance assessment should be evaluated by the summation of the students' accomplishments, and the grade should be formed according to the principles below:
 - a) the performance level (score) required for a satisfactory/pass (2) grade cannot be higher than 50% of the level (score) that can be gained by the complete and excellent performance of all of the compulsory performance assessment activities,
 - b) the student's performance can be marked as: "unfulfilled" if the student did not participate in any of the performance assessment activities or the student's absence exceeded the amount that is determined in the course syllabus.
- (14) If at least 50% of the assessed students were unable to complete the compulsory subject announced in the appropriate semester according to the model curriculum in the given examination period then an investigation may be requested by the Student Council, and conducted by the Vice Rector for educational affairs, and in case the complaint is justified, the Vice Rector initiates an investigation on the possible remedy to the failures. The outcome of the investigation has implications in the following academic year. If the investigation gives rise to a reasonable suspicion of an ethical misconduct, the Vice Rector initiates the proceedings of the committee competent in disciplinary affairs and informs the educational unit concerned.
- (15) The Vice Rector for educational affairs may request a statistical analysis from the educational units concerning the indicator(s) of the teachers' educational and examinational activities.

Article 29 [Signature]

(1) The condition for allowing the student to take the examination of a subject concluded with an examination is that the "signature" acknowledging the completion of the term is recorded by the end of the time-term but no later than by the end of the first week of the examination period.

- (2) The prerequisite for obtaining the signature is that:
 - a) the student attends at least 75% of the practical sessions and seminars of the course, and
 - b) the student attends all the performance assessment activities or their retake opportunities, maximum twice during the term according to the general rules of such assessments.
- (3) Notwithstanding the general rules defined in point a) of paragraph (2), in the case of subjects that are taught in a block system in the 4th and 5th years at the Faculty of General Medicine, the student's absences from lectures and practical sessions are summed up within each block. In these cases the student is obliged to make up for all of those sessions that he/she was absent from, and to this end, the clinic is obliged to give sufficient opportunity for making up even in on-call times overnight or on weekends.
- (4) Attendance requirements lower than those defined in point a) of paragraph (2), and, in the case of divided training programs, the attendance at up to 75% of the lectures may be prescribed in the course syllabus.
- (5) Obligatory attendance cannot be prescribed if the maximum number of registered students set for a course exceeds the capacity of the classroom assigned to the course.
- (6) The students who did not fulfill the requirements to obtain the signature according to the regulations in paragraph (2) are reported to the Dean of the faculty by the head of the educational unit or by the lecturer of the subject in the first week of the exam period. It is the duty of the teacher of the course or the educational administrator of the educational unit to record the refusal of giving the signature to the student in NEPTUN until the second day of the second week of the exam period.
- (7) The student is not allowed to take an examination of a subject, in which he/she has not obtained the signature.
- (8) The signature in the subjects taught in a block system in the 4th and 5th years at the Faculty of General Medicine must be recorded until the first workday following the end of the given completed block.

Article 30 [Rules of Examinations and Final Examinations]

- An examination may consists of the following parts:
 - a) oral assessment of performance,

(1)

- b) written assessment of performance,
- c) accomplishment of practical tasks,
- d) consideration of all or some of the student's contributions in performance assessment activities during the term-time,
- e) or various combinations of points a) to d).
- (2) The examination can be a simple exam or a combined exam. A simple exam consists of one part defined in paragraph (1), whereas a combined exam consists of at least two parts defined in paragraph (1).
- (3) It is the course syllabus that determines which parts defined in paragraph (1) are included by the combined exam; however, the exam shall not be composed of more than three parts.
- (4) It shall be defined in the course syllabus:
 - a) what is the accomplishment level at each part of the exam required for passing the exam,

b) which mid-term performance assessments and how can be taken into account at the evaluation in a combined exam,

c) whether the individual parts of a combined exam can be retaken or improved by the student.

- (5) All of the parts of a combined exam have to be accomplished by the student in the same semester and the parts of the exam have to be taken in the same day, except when the educational unit allows the students not to retake a successful part of a failed exam, in accordance with point c) of paragraph (4).
- (6) Failing an examination, including the failure at a part of an examination except at the one described in point d) of paragraph (1), reduces the number of exam opportunities for the student by one.
- (7) In case of partial inclusion of mid-term results, the result(s) of the the part(s) of the exam that are taken in the exam period should be taken into account as at least 50% of the exam when figuring the grade. The mid-term results included in the exam shall be taken into account for each semester in which the signature entry is valid, unless otherwise stated in the subject program.
- (8) In case of full consideration of the mid-term results, the examination grade is established solely on the basis of mid-term performance. In this case, an opportunity to modify the grade thus obtained must be offered to the student during the exam period, and the way to modify the grade must be described in the subject program.
- (9) An examination sheet must be recorded at the exam, including the partial exams of a complex examination, and it should include:
 - a) indication of the semester of the given academic year,
 - b) the name and code of the subject, or of the curriculum unit,
 - c) the date of the examination,
 - d) the name of the examiner,
 - e) the identification number and signature of the examiner,
 - f) the name and the student identification number of the student who registered for the exam, and
 - g) the evaluation (grade), and the date of the examination.

- (10) An evaluation sheet must also be issued for the parts, which were not accomplished at the examination.
- (11) The examiner instructor records the evaluation of the examination and signs the examination sheet and validates the document by signing it immediately after the examination.
- (12) The examination sheet shall be kept for a period specified by law, but for at least 10 yearsby the educational unit responsible for the subject. The head of the unit is responsible for safekeeping of the examination sheets.
- (13) A final examination is evaluated by a single grade, on a five-point scale.
- (14) In case of a failed combined final examination, only the failed parts of the examination need to be retaken if so provided in the course syllabus.
- (15) If so provided in the course syllabus, the result(s) of successful part(s) of a combined examination, including those taken outside of the academic year (i.e., so called EOAY examination) remain valid until the end of the semester,
- (16) Requirements for a final examination (the type, the topics and the competency items to be evaluated) must be published along with the announcement of the subject and cannot be changed during the given training period.
- (17) The examiners of final examinations are senior instructors, such as professors, associate professors. However, in justified cases and on demand of the head of the educational unit, the Dean may permit the participation of other instructors, researchers, teachers, senior physicians involved in the training. The final examination must be taken before a two-member examination committee if more than one subject is included in the final examination and in case of a retake final examination. The head of the examination committee must be a senior instructor.
- (18) A written (partial) examination is considered to be taken before an examination committee if the test is evaluated by at least two different examiners independently from each other. The result of the (partial) examination is determined by the examination committee.
- (19) If the examination is to be passed before an examination committee, the examination may be held only if both members of the examination committee are present at the examination and at each part of the examination.

Article 31 [Organization of Examinations and Final Examinations]

- (1) Examinations are primarily held during the examination period, except in a block system.
- (2) Examination after the exam period and in the first week of the subsequent semester can be authorized by the committee competent in educational and examinational affairs. The examination thus completed shall be considered to have been taken during the examination period.
- (3) The examinations (final examinations) shall be organized in such a way that every student eligible to take the examination (final examination) shall be able to register to and take the examination (final examination). The students shall be enabled to retake the failed examinations in the same training period.
- (4) Examinations must be held on working days. The (partial) examination shall not begin earlier than 8:00 a.m. and shall end by 8:00 p.m. The duration of the (partial) exam must be held in accordance with the value recorded and published in NEPTUN. It is the responsibility of the relevant educational unit to ensure that the examination is held within the time interval that has been specified in NEPTUN and that the duration of the examination should stay within reasonable limits (up to 5 hours). The organizers of the examination may only deviate from this regulation with the permission of the committee competent in educational and examinational affairs.
- (5) Educational units must provide at least two exam days per week for the oral exam and one exam day per week for the written exam in each course and in each year in every exam period. The exam, final exam can be retaken no sooner than on the first calendar day after the failed exam. A maximum number of students can be set for each examination. The sum of the maximum numbers of students per exam or per a partial examination in the case of a complex exam may not be less than twice the number of students who have registered to the course. The overall maximum number of students of all examinations shall be divided so that at least 10% of the places are offered in every week of the examination period.
- (6) The committee competent in educational and examinational affairs may also allow the announcement of a smaller overall number of places for the examinations than defined in paragraph (5) until the deadline of the announcement of the examinations, if the educational unit so requests. The Vice Dean for Education can approve a smaller number of examinations than defined in paragraph (5) but not less than 4 examination days throughout the entire exam period on the basis of the students' demand in the case of devided training, and simultaneously informing the Student Council. In both cases, care must be taken to avoid conflicts between the exam days of the compulsorysubjects included in the model curriculum of the same semester, and to allow every eligible student to register for and take the examination, as well as to ensure that failed exams can be retaken during the same exam period as many times as is allowed by these regulations.
- (7) The rules and schedule of the examinations must be published two weeks before the beginning of the exam registration period. The announcement must include the dates of the examinations, the names of the contributors, the date(s) of revealing the examination results, and information about the opportunity to retake the exam. The dates of the examinations must be determined in advance for

the entire exam period. The head of the educational unit and the Dean of the faculty are mutually responsible for announcing the examinations and perform the announced examinations.

- (8) After announcement, the dates of the examinations may be modified only with the prior consent of the committee competent in educational and examinational affairs.
- (9) Extra examinations may be announced by the educational unit, and the Dean may also demand it, if necessary.
- (10) The student may not attend and is not allowed to register for the seventh examination (the sixth retake examination) of the given subject after having failed the exam six times during his/her student status.

Article 32 [Rules Applicable at Examinations and Final Examinations]

- (1) An examination (or a partial examination) may be considered to have begun when the examination task (such as a question or a topic) has been given to the student. The examination or a partial examination that has begun can only be ended by an evaluation.
- (2) The student must be given a preparation time (before answering or starting the practical task) adjusted to the nature of the exam in the course of the oral or practical examination. This can only be waived at the request of the student.
- (3) Examinations, final examinations can be held primarily in the university's buildings and sites of the practical trainings, and elsewhere once authorized by the Dean of the faculty that is responsible for education.
- (4) It is the responsibility of the examiner or the chair of the examination committee to ensure that the (partial) examinations are conducted properly in an undisturbed andrelaxed atmosphere.
- (5) If the examination is taken before an examination committee, any member of the committee may pose a question to the student however, the student's performance is evaluated by the chair of the committee while taking the opinion of the committee members into account.
- (6) The announced (partial) examination, final examination must be held if it has been registered for by any eligible student.
- (7) The time of the (partial) examination within the announced oral (partial) examination can be determined by the educational unit or the examiner either for individual students or for groups of students. The examinees must be informed about the time assigned to their examinations in NEPTUN at least 8 hours before the beginning of the examination. In the lack of published appointments, the examination begins at the original time of the examination for all examinees.
- (8) In case of the absence of the appointed examiner, the head of the educational unit must assign a competent substitute examiner or organize a replacement examination without causing any detrimental consequences to the students.
- (9) It is the responsibility of the head of the educational unit to hold those (partial) examinations that have been announced and to provide replacement examination in case the exam is cancelled due to the absence of the examiner. The students may file a complaint regarding any cancelled (final) examination to the committee competent in educational and examinational affairs.
- (10) Certain (partial) examinations may be reserved only for retake exams by the organizing educational unit. These examinations cannot be taken into consideration when calculating the maximum number of examinations and the maximum number of students in accordance with Article 31(6).

Article 33 [Participation in Examinations and Final Examinations]

- (1) A student may only participate in an examination of a subject that he/she has obtained a signature for.
- (2) A student may only take a final examination if he/she has fulfilled the prerequisites and obtained the credits of the subjects linked to the final examination as determined in the model curriculum.
- (3) Students may register to an examination until 6.00 a.m. and they may cancel their registration for an examination until 0:00 a.m. on the day of the given examination via NEPTUN.
- (4) A unique registration period, which must not be closed sooner than 72 hours before the exam, can be set by the educational unit for the oral part of the final examination in NEPTUN system.
- (5) Students willing to retake a failed (partial) exam or to improve the result of a successful (partial) exam of the same examination period should be privileged at the registration to (partial) examinations, which have been formerly announced as retake exams.
- (6) Students are obliged to attend the (partial) examination which they have registered to via NEPTUN. If the student fails to do so, his/ her performance cannot be evaluated, and – unless the absence is excused – a "did not appear" note has to be recorded to the given (partial) exam in NEPTUN. Unexcused absences have to be counted in the maximum number of exam opportunities of the semester, and the student is obliged to pay a missed exam fee and an exam administration fee, which are specified in the Regulations of Refunds and Allowances.
- (7) Students are not allowed to take an examination without identifying themselves. Student may identify themselves at the examination by any suitable document, which contains both a signature and a picture. If the student is unable to verify his/her identity, a "did not appear" note has to be recorded on the examination sheet and in NEPTUN, which does not reduce the number of exam opportunities, yet the student is obliged to to pay an exam administration fee, which is specified in the Regulations of Refunds and Allowances.

- (8) The fees referred to in paragraphs (6) and (7) are prescribed by the Registrar's Department within three days from the student's default.
- (9) The student is obliged to excuse his/her absence from the (partial) examination at the educational unit within 3 workdays personally, in writing, electronically or by proxy. The acceptance of the student's justification is decided upon by the educational unit and, in case of a debate between the student and the educational unit by the committee competent in educational and examinational affairs. If the student excuses his/her absence properly, the examination is considered as though it had not been registered for, and the "did not appear" note is deleted by the educational unit.
- (10) The student who fails an examination, can attempt to complete the exam two more times, i.e. at two retake exams in the same examination period. The student is allowed to have a third retake examination only in one subject per academic year. The student is not allowed to have a fourth retake examination in any subject in the same semester even with special permission.
- (11) The student has the opportunity to improve the result of a successful exam until the end of the exam period. The student must be informed that the result of the examination may be impaired. Additional credit(s) cannot be earned by retaking a successful exam. In case of limited places at the examination, a student registered to retake a failed exam has an advantage over the ones registered to retake a successful exam.

Article 34 [Examination Outside the Academic Year]

- (1) Students of the undivided medical trainings or master's degree trainings in health sciences, who are unable to fulfill the examination requirements arising from their student status during the spring semester's examination period of the academic year may take an examination organized outside the academic year (hereinafter referred to as EOAY). The result of an EOAY shall be considered as that of an examination taken during the spring semester of the academic year. If the institution of higher education has a vacant Hungarian state-funded position, the reclassification decision made by 31 July at the latest shall be reviewed and, if necessary, adjusted in the light of the results of the EOAY. EOAY can be completed during the spring semester of the given academic year in the period specified in paragraph (6).
- (2) In cases of the undivided medical trainings and master's degree trainings in health sciences, the students may take the EOAY described in paragraph (1) in any subject registered for but not completed in the given spring semester, according to the available exam dates, if he/she notifies the Registrar's Department, listing the subjects to be finished with EOAY, until the end of the working day following the last day of the exam period; this, provided that the student has not been dismissed by the end of the spring semester' exam period, including the scenario that the student is exempt from dismissal under the special permission decision of the committee competent in educational and examinational affairs. If the student's dismissal is pending, and the student is eligible for and signed up for EOAY it in due time, the committee competent in educational and examinational affairs shall suspend the proceedings until the results of the EOAY are announced, and then, the light of the results of the EOAY, decides either to cancel the proceedings or to proceed with the dismissal in.
- (3) Taking the examination referred to in paragraph (2) shall not be considered as a course registration.
- (4) In the case of EOAY, during the period specified in paragraph (6), the student may take examinations in any subject as many times as many exam opportunities he/she has left in the given semester.
- (5) If the student passes the exam by EOAY, failure to complete the unit or units affected by the EOAY in the semester shall not be considered as a subject omission.
- (6) The exam date of the EOAY shall be determined in such a way that during the seven working days from the Tuesday of the week preceding the registration week to the Wednesday of the registration week, the student is able to pass the examinations according to Article 33(9), with regard to the general rules on organizing examinations stated in Article 31(6). The exams must be organized in such a way that all the students concerned can register to and take the exam.
- (7) In the case of EOAY, it is not necessary to fulfill the conditions of the subject announcement. If the student does not complete the subject within the EOAY, he/she may take the opportunity of the CV course offered during the semester, provided he/she has remaining exam opportunities, taking into account the difference of all exam opportunities according to Article 33(9) and the failed exams in the framework of EOAY.
- (8) The student may retake the exam failed in the EOAY in the semester of the next announcement of the subject, taking into account the difference between the number of failed examinations in the given subject and the unsuccessful examinations within the EOAY and the number of examinations specified in Article 33(9). The number of retake examinations for the same unit of study shall not exceed the maximum number of failed exams specified in the Act on National Higher Education.
- (9) If a student takes an active semester, taking into account the cases specified in points a) and b) of Article 24(1) (FM and CV courses), he/she may register to elective and obligatory elective subjects of up to 15 credits per semester in the given semester and the following semester.

Article 35 [General Rules for Exam Retake and Replacement Exam]

- (1) The university shall ensure that each student is able to report on his/her knowledge and to retake the successful or unsuccessful academic performance assessment in such a way as to ensure the impartial conduct and assessment of the repeated performance assessment.
- (2) The student may not make use of the possibility of retake or replacement if he/she has not fulfilled the attendance requirements stipulated in this regulation or the course syllabus.
- (3) Unless otherwise provided in this regulation, the use of the first occasion announced by the educational unit for retake and replacement of the assessment of academic performance shall be free of charge for the student.
- (4) In the case of a retake performance evaluation, the results achieved there shall be taken into account unless otherwise specified in the course syllabus or in this regulation.
- (5) The opportunities for retake and replacement of the mid-term performance assessments shall be organized in such a way that the student, while exercising and successfully fulfilling the possibilities specified in Article 36(1)-(2) can
 - a) improve the term grade to a mark different from unsatisfactory (fail), or
 - b) obtain a "signature" entry from the subject to be concluded by an exam.

Article 36 [Retake and Replacement of Mid-term Performance Assessments]

- (1) At least two retake and replacement opportunities must be offered for the mid-term performance assessments in case the term grade is determined on the basis of mid-term tests, or the completion of another mid-term assessment (oral test, presentation, practical performance evaluated with a grade) is a prerequisite for obtaining the practical course mark or for exam eligibility. If the student was unable to meet the course requirements during the retake and replacement opportunities, the student cannot be given a signature for the term.
- (2) If at least "satisfactory/pass" performance at the last assessment or at least "satisfactory/pass" grade at each assessments is prescribed in the requirements of the subject as a condition for getting the signature, then at least two retake / replacement opportunities shall be provided for each performance assessment individually or in combination.
- (3) If the subject concludes with a practical course mark according to the model curriculum, at least one retake opportunity shall be offered if it is feasible by the end of the term-time.
- (4) The knowledge and other competencies required for a retake examination are the same as those marked in the course syllabus for the exam to be retaken. The retake exam shall be evaluated on the same scale as the exam subject to retake.
- (5) If, according to the provision of the course syllabus, a group of performance assessments cannot be retaken or replaced, the (partial) result of this group of academic assessments shall be determined on the basis of the most favorable two-thirds rounded off.

Article 37 [Retake and Replacement of Examinations and Final Examinations]

- (1) The student may modify the result of a previously passed examination by having a retake examination.
- (2) The student can sit the retake examination before a different examiner or examination committee if so authorized by the head of the educational unit on the basis of the student's duly reasoned written or electronic request addressed and submitted to the head of the educational unit no later than three working days before the commencement of the examination. If the head of the educational unit is involved in the examination, the appointment of a different examiner can be requested from the Dean of the faculty responsible for teaching the subject.
- (3) During a given examination period, a second retake examination (i.e. the retake after a retake) shall be taken before an examination committee of at least three members, upon the student's written or electronic request submitted no later than three working days before the commencement of the examination. No more than one member of the examination committee may be an examiner who has graded a former examination of the student as unsatisfactory/fail during a given exam period.
- (4) A written (partial) examination is considered to be taken before an examination committee if the test is evaluated by at least two different examiners independently from each other. The result of the (partial) examination is determined by the examination committee.

8. Recording of Study Assessment and Grades

Article 38 [Recording of Study Assessments and Grades]

- (1) The course teacher, the tutor or the study administrator of the educational unit shall record the term grade in NEPTUN no later than the end of the first week of the examination period of the specific semester. The date of recording the term grade is the date of acquisition.
- (2) In a given semester, the student may only have one grade recorded for a subject assessed with a term grade at the end of the specific semester, and any grade obtained by retake or replacement assessments overrides the previous mark.
- (3) The signatures for subjects concluded with examinations must be record in NEPTUN no later than the end of the first week of the exam period by the course teacher, the tutor or the study administrator of the educational unit. The date of the signature entry is the date of acquisition.
- (4) A student may only have one signature entry in a given semester for each subject ending with examination. Any signature entry obtained or modified following a make up, reptake or correction will override the previous entry.
- (5) After establishing the result of an examination (end-term exam or final exam), but no later than the end of the next working day, the examiner shall record the mark in NEPTUN at the given examination, based on the examination sheet or final examination report. In the case of a combined examination (final exam), the entry shall be made for the examination session at which the grade was established.
- (6) No grade for examination can be recorded in NEPTUN if the student has not taken any examination of the subject in the given semester.
- (7) Any grade, score or result obtained at a midterm or at any examination, including the results of any assessment other than a "diagnostic study assessment/test", offered grades, partial examination grades, as well as the evaluation of any partial written examination or examination session yielding no specific grade on their own, can be communicated to the student confidentially in person or in any other way, so that it cannot be learnt by a third party.

Article 39 [Study Assessment Records]

- (1) Any documents produced by the students during their study as well as any assessments of students' work shall be managed by the educational unit responsible for teaching the given subject. However, the Dean may decide to have these records managed at the faculty level.
- (2) Paper-based documents (classroom tests, homework, written reports, etc.) of the study assessments carried out during the term-time and make up periods can be returned to the student after the assessment or shall be archived by the course leader.
- (3) Documents (grading sheets, study result summaries and records) of study assessments carried out during the term-time and make up periods shall be kept in accordance with the requirements of the Document Management Policy.
- (4) After evaluation, any documents produced during the examination period (e.g. term papers/coursework) and related to the examinations (including final examinations) shall be kept by the course leader.
- (5) Documents related to the evaluation of examinations (e.g. grading sheets, examination reports and final examination reports) and produced during the examination period shall be kept in accordance with the requirements of the Document Management Policy.
- (6) Any documents specified in paragraphs (2) and (4) not returned to the student after the assessment shall be destroyed within one month from the commencement of the next term-time, unless there is a procedure under way regarding the given examination, which may affect the outcome of the examination. In the latter case, the documents specified in paragraphs (2) and (4) shall be destroyed within one month after the final decision regarding the specific case has been issued. The expiry date specified herein does not apply to examination sheets. In any event, the process of records keeping and destroying shall be carried out in a way that prevents the identification of the author of the sorted out document.

Article 40 [Publicity of Assessments]

- (1) Written and practical study assessments (classroom tests, exams, final exams, etc.) are not public, they are attended only by the students and the teaching staff involved.
- (2) Oral study assessments are public within the frame imposed by the venue of the study assessment for the citizens of the university, as defined in paragraph (4). However, at the explicit and justified request of the student, the teacher conducting the study assessment, or, in the case of final examinations or closing exams, the chair of the Examination Board may restrict public access.
- (3) In the case of oral assessments, there must be a third party present in addition to the student and the teacher performing the assessment. This third party may be any of the citizens of the university as defined in paragraph (4).

- (4) In the case of oral study assessments, any of the following persons are allowed to be present during the examination in addition to the student and the teacher performing the assessment:
 - a) university students, PhD course attendants, PhD candidates,
 - b) university teaching staff, retired teaching staff,
 - c) other persons involved in university education (e.g. non-teaching doctors), or
 - d) university citizens not listed above, who attend the examination at the request of the examinee.
- (5) The persons referred to in points a) to c) of paragraph (4), may attend only those examinations at which they, as students, also are assessed or they, as other university citizens, are in charge of any specific exam-related task, provided that their presence does not interfere with the appropriate and professional conduct of the examination, the decision of which is the privilege of the examiner who takes into account all aspects and circumstances of the case.
- (6) University citizens referred to in point d) of paragraph (4) may attend the examination of the student who has requested that, provided that this participation does not interfere with the appropriate and professional conduct of the examination, which is decided by the examiner by taking into account all aspects and circumstances of the case.

Article 41 [Publicity of Study Assessment Results]

- (1) During the term-time,
 - a) if possible, proficiency test results shall be communicated prior to the study activity for which the assessment was made;
 - b) the results of partial study assessments carried out pursuant to points a) or d) of Article 27(5) shall be communicated immediately after the activity was assessed; if the assessment was carried out in accordance with points b) or c) of Article 27(5), the result of the partial study assessment shall be communicated within seven days after the rated activity was performed or the student work to be evaluated was submitted;
 - c) summary assessment results shall be communicated within eight days after completion (submission). Study assessment results shall be directly communicated to the assessed student or recorded and published in NEPTUN in a way as to avoid access by third parties.
- (2) The results of written (partial) examinations and written parts of final examinations shall be communicated directly to the assessed student or recorded in NEPTUN until the end of the second working day following the examination, in a way as to avoid access by any third party.
- (3) Results of oral or practical (partial) examinations, and the results of oral or practical parts of final examinations taken in the exam period shall be communicated to the student immediately after assessment. Oral or practical partial examination results may also be recorded in NEPTUN after the immediate notification.
- (4) There must be at least 48 hours between the publication of study assessment results and the commencement of any associated retake or replacement.
- (5) Revised, checked and evaluated written study assessments shall be kept accessible until the end of the examination period. Students may submit their complaints/objections to the teacher, examiner, course leader or, in exceptional cases, to the head of the educational until the last day of the examination period. In the event of a miscalculation or misevaluation, the teacher shall correct the objected mark of the study assessment.
- (6) The teacher or examiner shall provide the access stipulated under paragraph (5) at occasions announced in advance. The date of access shall be determined so as to have at least 24 hours before the beginning of the retake or replacement of the relevant study assessment.
- (7) If the teacher missed to act in accordance with paragraphs (4) and (6) of this Article, the Dean may oblige him/her to announce another opportunity for retake or replacement.
- (8) During the access provided under paragraph (5):
 - a) the student shall be allowed, without any specific request, to view the correction and evaluation guide for the given study assessment, compare it with the contents of his/her written work and the evaluation given by the teacher, and make notes about his/her coursework/term paper.
 - b) the teacher shall provide detailed answers to the questions asked by the student on professional, correctional, and evaluational issues related to his/her study assessment.
- (9) In order to enforce the provisions of Paragraph (8), the student may request the intervention of the head of the educational unit or Vice Dean in charge of education, or, in the case of the Faculty of Health and Public Services, that of the head of the educational unit responsible for education.
- (10) After the study assessment was finished, the educational unit may publish the Correction and Evaluation Guide on its website.

(11) Study assessment results, including the term grades, end-term examination and final examination grades, as well as the signature entries are confidential personal data. Such data shall only be transmitted in special cases and to specific persons specified in these Regulations and in cases and to persons defined in the relevant laws. For any reasons or to any persons not covered by these Regulations or by law, these data must not be transmitted or disclosed.

Article 42 [Recording and Indicators of Study Assessment Results]

- (1) The student's study results shall be recorded in NEPTUN. Once the examinations have been completed, the results of both the oral and non-oral examinations will appear in the electronic record system on the "Performance Sheet", and NEPTUN will automatically send notifications about these results.
- (2) The teacher shall record the grade in the NEPTUN using the pre-printed grading sheet and make a copy of this sheet for the student who requested to have his/her own copy and authenticate these documents with a signature. If the student has his/her own copy of the grading sheet printed by him/her and signed by the teacher, he/she can verify whether the grade recorded in NEPTUN is the same as the grade specified on the pre-printed grading sheet. If the student does not have the Performance Sheet, in case of discrepancy he/she may verify the grade by comparing the grading sheet (pre-printed, completed and signed by the examiner) with the automatic notification received from NEPTUN.
- (3) Any subsequent verification of the written examination results can be done based on the term paper/coursework, which shall contain the evaluation and the signature of the examiner.
- (4) If the result of the examination was incorrectly recorded in NEPTUN, the student concerned may ask the course teacher or the head of the educational unit to make the necessary corrections by the end of the examination period. The teacher shall verify the student's complaint within 5 working days and make any necessary corrections. Any such requests received after the examination period shall be submitted by the teacher, with his/her correction proposals, to the Dean's Department Manager via the electronic mail system. The student may object in writing, against his/her assessment results recorded in NEPTUN within 14 days after the end of the study period. The objection must be submitted to the Registrar's Department. The objection shall be investigated by the Registrar's Department under the supervision of the Vice Dean in charge of education or, in the case of the Faculty of Health and Public Services by the Dean who shall decide on any possible correction within 5 working days of objection receipt. The student shall be notified on the result of the investigation within the same time limit via the student information system. The student may appeal the examination results within 15 days after notification, by submitting his/her complaint/objection to the Evaluation Review Board with the intermediation of the Registrar's Department.
- (5) Results of the previous semester shall be finalized and closed in NEPTUN by the end of the second week of each term-time.
- (6) One free of charge transcript (i.e. an exact copy of the student's complete, permanent academic record printed from NEPTUN) can be requested by the student in each semester.

9. Credit Recognition

Article 43 [Credit Recognition]

- (1) During credit recognition, for any passed subject if the correspondence (match) is at least 75%, the substitution shall be accepted. If the same indicator is less than 75%, the committee competent in credit recognition may approve the substitution after considering the circumstances, in particular the role of the subject played in the achieving of training objectives, and may also request the opinion of the course leader. In accordance with the nature of credit recognition, the educational unit shall recommend the same decision for students being in the same situation.
- (2) If the match is less than 75%, instead of credit recognition it is possible to recognize as achieved and waive certain requirements of the subject. In such a case the student will be required to take a special examination (i.e. a difference examination that does not include the above-mentioned requirements) before the examination period (during the final three weeks of the study period) or during the examination period. Such subjects shall be registered to by the Registrar's Department for the specific student, but the latter is also required to report to the teacher responsible for the subject of the difference examination within 10 working days of decision receipt.
- (3) A subject identical to an already completed subject cannot be registered to again (except for credit recognition). A subject is different from another subject if the thematic and the knowledge to be acquired are more than 25% different.
- (4) As for the passing of the teaching plan-related requirements, it is allowed to consider only the subjects that are different from all the subjects already taken into consideration for passing.
- (5) Prior to registration/enrollment for a given semester, the student may request credit recognition for the subjects already completed and passed at another faculty or higher education institution in accordance with the credit recognition procedure of the given faculty.

The credit recognition decision shall be taken by the committee competent in credit recognition in accordance with Paragraphs (1) to (4), also taking into account the proposals of the Program Leader (coordinator) or course leader. During the credit recognition process, it is required to consider that the student must complete at least one third of the credit value of the course at the university, including the credits for subjects completed in other courses and accepted during credit recognition, in order to obtain a university degree.

- (6) Any credit recognition based on the specified output requirements of the subject (module) is done solely by comparing the knowledge on which the credit is based. The credit must be recognized if the comparative knowledge gives a match of at least 75%.
- (7) A student who has lost his/her student status and has been re-admitted in a new admission procedure may have his/her credits accepted for the subjects successfully passed in the past by the decision of the committee competent in credit recognition.
- (8) The committee competent in credit recognition will decide on the applications received within the specified deadline so that the student applying for recognition may draw up an individual curriculum for the following semester based on the decision.
- (9) The rules, options and typical modalities of credit recognition, as well as the list of documents required for the procedure, are set out in the credit recognition procedure of the specific faculty. Only applications duly completed and submitted by the deadline set out in this document will be accepted.
- (10) If the substitute subject requested by the student was not completed within the frame of a credit-based education, the credit shall be given for the number of hours indicated in the previous registration course book, taking into account the current ratio of contact and individual lessons in the current course. If neither the credit value nor the number of lessons of the substitute subject are known, the application for credit recognition cannot be effectively judged.
- (11) The faculties of Semmelweis University mutually allow the registration of publicly announced specific subjects with the credit value granted by the announcing faculty, and any subject announced at the Semmelweis University may be registered to and recognized as an elective subject based on the provisions of paragraph (4).
- (12) If a substituting subject can be assigned a credit value appropriate to the faculty curriculum, then the grade associated with the substituting subject must be accepted. If it has multiple grades, its rounded average should be considered and validated.
- (13) The maximum number of credits that can be counted based on work experience is 30.
- (14) The rules governing the credit recognition procedure are set out in the rules of procedure of the committee competent in credit recognition.
- (15) The rules of the credit recognition procedure shall apply mutatis mutandis where the student requests the recognition of achievments from non-formal or informal learning or work experiences.
- (16) The faculty may maintain an equivalence record for credit recognition regarding the particular course(s) it provides, in which the higher education institution, subject name, date of publication, or other relevant information may provide students with prior information on subjects already recognized in previous procedures and subject eligibility. For subjects registered to on the basis of a previous decision, if the subject programs concerned remain unchanged, the committee competent in credit recognition may proceed with a simplified procedure, which may or may not require the opinion of the course director, but shall not be required to do so. These previous decisions do not bind the committee.
- (17) A simplified procedure may also be used where credit recognition is between the old and the new curriculua of the same course and an equivalence table is created with or after the curriculum change.

10. Pre-degree Certificate, Diploma work, Closing Examination

Article 44 [Pre-degree Certificate (Absolutorium)]

- (1) Until gaining the pre-degree certificate in case of (partly) state-funded training in bachelor or master training, in addition to the training period, a state-funded student may have a maximum of 2 active semesters, or a further 4 active semesters in a case of undivided training. Until gaining the pre-degree certificate in case of (partly) state-funded training the possible number of passive semesters are 2-2 in bachelor and master training, and 4 semesters in undivided master training. In justified cases, alongside the previous consent of the head of faculty, for a student undergoing further training may allow to suspend their student status for a different time period applying for the 2011 CCIV. acting in accordance with the provisions of Article 45(1)-(2) of Act I of 1992.
- (2) In order to obtain a pre-degree certificate, the student is required to complete at least one-third of credit value of the degree even in a case of acceptance of the completed credits and previous studies from other higher education institutions, in addition to earlier aquired knowledge recognized as credits – in the given institute, including the aquired and accepted credit value of subjects from other training of the university
- (3) The Registrar's Department issues the pre-degree certificate if the relevant conditions are met, with recording the acquisition in the NEPTUN, and with drawing up that it is signed by the Dean of the faculty according to the student's request.

Article 45 [Thesis]

- (1) In order to obtain their diploma, students are required to write a thesis in bachelor and master training. The aim of the thesis is to promote via independent scientific processing of any problem in a certain disciplinary area, the student's ability of highlighting the essence, to learn using the library and the methods of literature research and to be able to summarize their opinion briefly and clearly, in addition, it may aim to systematically process the possible solutions of the practical problems regarding the specificities of the training, to demonstrate innovative concepts and results.
- (2) The topic supervisor, or in certain cases the consultant leads the writing of the thesis. The topic supervisor is a professor or a researcher of the faculty; or with the Dean's permission, an external professional can be the topic supervisor. An external supervisor may only be functioned with an insider consultant. If the topic supervisor is an external professional, the subject is signed and evaluated by the faculty lecturer and research supervisor at the end of the semester.
- (3) The educational unit of the relevant faculty creates a list of topics related to the thesis, including the names of the consultants. The list of topics has to be announced electronically and on the news table of the educational unit and in a case of bachelor, master or undivided training, at least four semesters prior to the last year of studies, but in a case of a minimum seven-semester-long training at least 2 semesters prior to the last semester of the training, and in a case of a maximum four-semester-long training one semester before the final semester until the last day of the examination period in the fall semester in every academic year. The sudent may choose from any announced topic depending on a certain topic supervisor's capacity. The chosen topic can be different from the announced topics with the consent of the head of the educational unit responsible for the topic. The student has to choose a topic and notify the head of the certain educational unit at least a year prior of the educational unit authorizies the topic, he is responsible of recording it and providing a consultant.
- (4) Preparation for writing the thesis is aided by in the semesters specified in the recommended curriculum, with defined individual and contact lessons – an obligatory elective course ending with an exam grade.
- (5) While writing the thesis, the student must consult with his or her topic consultant in each semester, as many contact hours as is defined in the model curriculum.
- (6) The content of the thesis may be at least 50,000 characters, the maximum content is 100,000 characters whithout spaces. The font to be used is Times New Roman in font size 12. The content includes the tables as well as the references; however, it does not include the figures, footnotes and bibliography. The thesis should be bound in file or book format in 2 copies; and submitted alongside an electronic copy to the educational unit responsible for the training. A certificate of submission is given to the student. The cover of the thesis should include the title of the thesis; the name, the year and the group of the student; in addition to the year of submission and the name and workplace of the consultant. In accordance with the permission of the head of educational unit, the student can write the thesis in any of the languages in which the university provides a program.
- (7) The submission deadline of the thesis may differ for each faculty, and ir must be announced on the webpage of the faculty.
- (8) The thesis has to be submitted for review. The reviewer is invited by the head of the educational unit which announced the topic. The reviewer should be a lecturer with a degree in higher education, researcher or external professional. In bachelor training, the topic supervisor may be asked for review, in duly justified cases. The number of the reviewers is one or two in bachelor training, and at least two in a case of master training. If the topic was not announced by an educational unit of the faculty, the faculty or the faculty's specialist in charge must appoint a professional reviewer, who may be an external specialist or a member of the faculty. The topic supervisor creates an individual review as well. Reviews should be sent to the student/candidate at least 5 days prior to the thesis defence. A grade recommendation for the thesis is given by the reviewer as well as the topic supervisor.
- (9) Evaluation of the thesis is given on a 5-point scale. When rating/grading the thesis, the rate of independent research/work has to be taken into consideration. Defense of the thesis is conducted in front of a 3-member committee of the educational unit, or if the thesis defence is part of the closing exam the Closing Examination Board, the chair of which is the head of the educational unit or a university or college professor, or associate professor appointed by the head of the educational unit. The members of the committee are the consultant and a lecturer of the department. The committee may appoint a third member, who may be an external lecturer, chosen from the private lecturers of the university.
- (10) The review should be written on a special form form of thesis registration and evaluation in two copies. The evaluation includes the review as well as the recommended grade. The student should be informed about the evaluation by sending the second copy of the form of the thesis registration and evaluation form prior to the closing examination, at least 10 workdays before the thesis defense.
- (11) The reviewer poses 2-5 questions on the form of thesis registration and evaluation pertaining to the content of the thesis; The oral description of the thesis of a length prescribed by the committee, the answering of the previously posed and possible further questions denote the defence of the thesis.
- (12) A thesis which is not authorised for defence is marked as "fail". Evaluation of theses which are authorised for defence are assessed by the committee regarding the reviewers' recommendation and the student's performance during the defence according to paragraph (9).

- (13) In a case of one reviewer, the head of the educational unit either authorizes the "fail" evaluation, or appoints a new reviewer. In the case of two reviewers, if only one reviewer gives a "fail" evaluation, the head of the educational unit appoints a new reviewer.
- (14) In a case of a "fail" evaluation, the head of the educational unit notifies the student and informs him/her about the conditions of revision/supplementation. The thesis evaluated as "fail" may only be revised/supplemented once.
- (15) The closing exam after the revision/supplementation of the thesis can be taken only in the subsequent closing exam period by the student
 - a) who did not submit his/her thesis until the deadline;
 - b) whose thesis was evaluated by the reviewer as "fail" with the approval of the head of the educational unit,
 - c) whose thesis was evaluated as "fail" by the newly appointed reviewer according to paragraph (12).
- (16) The conditions for the revision/supplementation of the failed thesis are determined by the head of the relevant educational unit, and it may include a request for further consultations if necessary.
- (17) After the defence, the head of the educational unit gives one copy of the thesis to the student, the other copy and a copy of the report of the defence certifying the evaluations remains at the educational unit. The thesis has to be kept by the educational unit in accordance with the prevailing Document Management Policy.
- (18) An award winning work for the "Rectorial Competition" may be accepted by the Dean as a thesis evaluated with an "excellenet" grade according to the recommendation of the head of the educational unit in case the student requests so in an application previously submitted to the Registrar's Department.
- (19) For students participating in undivided master training, a praised work for the "Rectorial Competition" may be accepted by the Dean as a thesis evaluated with an "excellent" grade according to the recommendation of the head of the educational unit in case the student requests so in an application previously submitted to the Registrar's Department.
- (20) A scientific paper, which has been produced by the student in relation with his/her studies, and has been published as the student's first-authored article in a peer-reviewed journal, may be accepted by the Dean as a thesis in which case, review and evaluation shall be provided according to the general rules.
- (21) Requests regarding the thesis defined in paragraphs (18)-(20) must be submitted to the Registrar's Department by the student until the end of the academic year before the completion of the studies. Exemption from writing the thesis does not mean the exmemption from the defence of the thesis.

Article 46 [Closing Examination (Terminal Board Examination)]

- (1) If the thesis is not accepted, the student/candidate is not eligible for taking the closing exam. The conditions and the earliest deadline of the supplementation are determined by the head of the educational unit in accordance with the opinion of the department.
- (2) The student who has failed to meet his/her payment obligation to the higher educational institution is not eligible for taking the closing exam.
- (3) The student is obliged to register for the closing exam 40 days prior to the first day of the closing exam period determined in the academic calendar, according to the procedure determined for each faculty, in NEPTUN, and in case of the Faculty of Health Sciences and the Faculty of Health and Public Services, at the Registrar's Department. The faculty can prescribe a shorter deadline.
- (4) The closing exam can have several parts according to the curriculum, particularly oral, written and practical parts. The thesis defense is part of the closing exam if the curriculum so determines; however, it is evaluated separately from other parts of the closing exam.
- (5) Differing from paragraph (4), in the Faculty of Health Sciences, the closing exam has
 - a) in case of bachelor training,
 - aa) practical,
 - ab) written (theoretical),
 - ac) oral (theoretical) parts,
 - b) in the case of Nutrition Science master training,
 - ba) professional oral exam from the core subjects,
 - bb) professional oral exam from the differentiated professional subjects,
 - bc) degree thesis defense,
 - c) in the case of the Nursing master training,
 - ca) written theoretical part,
 - cb) written practical part,
 - cc) oral theoretical part,
 - cd) thesis defense.
- (6) At least two closing exam periods per academic year are appointed according to the academic calendar at the Faculty of Medicine and the Faculty of Pharmaceutical Sciences regarding the specifics defined by the National Closing Examination Committees for Medicine and for Pharmaceutical Sciences. Closing exams may only be taken in the appointed closing exam periods.

- (7) Organizing the closing exam is the responsibility of the Dean of the faculty. The number of closing examination boards is determined according to the number of registered students in such way that no more than 10 students may be sorted for one occasion at one Closing Examination Board. This number is 12 at the Faculty of Pharmaceutical Sciences.
- (8) Sorting of the students is based on their registration for the closing exam dates or it is done by the Registrar's Department, in the latter case, when it is justified, a possibility for modifying the date should be provided. In case of multiple Closing Examination Boards on the same closing exam day, the sorting of sudents to individual boards is done according to previously stated professional criteria, or failing that, by a lot drawing. The sorting for the committees should be published at latest on the day of the exam in a way customary at the faculty. Students should be electronically informed about the location of the examination on the preceding day.
- (9) The closing exam should be taken before the Closing Examination Board consisting of a chair and at least two other members. The chair and the members of the committee are appointed by the Dean from the candidates determined by the Faculty Board for up to one academic year. The Closing Examination Board should have at least one member who is a university or college professor, or associate professor, and one member who is not the employee of the university, or who is the lecturer of a different faculty or training program of the university. The mandate of a Closing Examination Board member not including the chair of the board may be valid for the assessment of only a single part of the closing exam.
- (10) Students who miss to take their closing exam, and certify that it was through no fault of their own can be provided a date for a replacement closing exam by the faculty within the specific closing exam period.
- (11) An examination report shall be kept on the practical and theoritical closing examinations. The grade of the written part of the exam shall be recorded in the report of the theoretical exam.
- (12) The members of the committee evaluate the performance of the student with a grade, then in a closed session in case of a debate, with voting they determine the grade of the oral closing exam. In case of a tied vote, the vote of the chair is definitive. In addition, the committee confirms the grade of the practical part of the closing exam and the grade of the thesis.
- (13) The closing exam is succesful if the grade of each part of the closing exam defined in paragraph (4) and the grade of the thesis are at least "satisfactory/pass" (2). A successful closing exam cannot be re-taken.
- (14) The final grade of the closing exam is the arithmetic mean of the grades of all parts of the closing exam. The final grade of the closing exam is anounced by the chair of the Closing Examination Board.
- (15) The grades/evaluation of the closing exam:
 - 2.00 2.90: satisfactory,
 - 2.91 3.50: average,
 - 3.51 4.50: good,
 - 4.51 4.99: excellent,

if the grade of each part is excellent: distinguished.

- (16) If the evaluation of any part is "fail", the student has to retake the part of the exam which was unsuccessful. At the Faculty of Medicine, if the written or the oral part of the closing exam is evaluated as "fail", the student has to retake both parts of the closing exam. This closing exam may be retaken twice only. Retaken closing exams may only be retaken in the following closing exam period. Credit value cannot be attributed to the closing exam. If the student/candidate has used the possibilities to retake any part of the closing exam as defined in this paragraph, and the partial exam remains unsuccessful, the whole closing exam has to be retaken.
- (17) In case of unsuccessful written closing exam, the student cannot take the oral part, although, he/she may take the practical part of the closing exam; if the practical part is successful, this part of the final exam does not have to be retaken. If it is unsuccessful, the sudent cannot take the oral theoretical closing exam.
- (18) If the student has not taken a successful closing exam until the termination of his/her legal relation (student status), he/she may attempt to retake the closing exam in any closing exam period after the termination of his/her legal relation. If the closing exam is taken later, the student cannot be obliged to take any complementary tests; however, the closing exam has to be taken according to the rules regarding the closing examination prescribed in thetraining and output requirements applicable at the time of the exam. Students who started their studies after September 1st 2012 may not take the closing exam after the end of the fifth year from the termination of their student status.

11. The Diploma/Degree

Article 47 [General Regulations Regarding the Diploma/Degree]

- (1) The degree/diploma is an authentic/legal document with the crest of Hungary which contains the name and the identification number of the issuing higher educational institute, the number of the diploma, the name, maiden name, in addition to the place and date of birth of the diploma's owner, the level of education, the given grade and faculty, the name of the qualification, the grade of the degree, the place, month and day of the issue, the classification of the professional qualification according to the Hungarian Qualification Framework, European Qualification Framework, in addition to the period of the training regarding the requirements of training and graduation. Additionally, It has to contain the original signature of the head of the institution the head of the institution is determined in accordance with the Organizational and Operational Regulation and the imprint of the seal of the higher education institute.
- (2) The prerequisite of issuing the diploma, which certifies the end of the higher educational studies is a successful closing exam, in addition to the successful language exam in accordance with the requirements of training and graduation. In order to issue the diploma, the student is obliged to present legal documentation which certifies, that
 - a) a successful general language exam was taken at at least intermadiate "C" level, or complex high intermediate "B2" level in bachelor training,
 - b) a successful state-approved or equal language exam was taken in accordance with the requirements of training and graduation.
- (3) At the Faculty of Pharmaceutical Sciences, a further condition of issuing the diploma is a succesful terminological final language exam in English or German language.
- (4) The diploma must be issued and handed out within 30 days after the legal document of language exam certification defined in paragraph (2) was presented. If the student already presented the certification defined in paragraph (2) at the time of the closing exam, the diploma must be issued within 30 days after the successful closing exam was taken.
- (5) If the diploma is not issued because the language certificate wasn't presented, the higher educational institute provides a certificate. This document does not certify qualification or possession of professional knowledge and only certifies a successful closing exam. The Registrar's Department is responsible for issuing and registering this certificate.
- (6) The diploma must be issued in Hungarian and English, or in Hungarian and Latin, in Hungarian and Nationality language in case of a Nationality language course, Hungarian and the language of the training if the training is not in Hungarian.
- (7) The diploma supplement must be issued, as defined by the European Commission and the European Council, in Hungarian and in English, and in the case of nationality training at the request of the student, in the language of the nationality concerned in bachelor-, master and higher vocational training. The diploma supplement is a legal document. Issuing the supplements and master sheet is the responsibility of the Registrar's Department.
- (8) A diploma issued in bachelor, master, undivided and vocational training entitles the owner to hold a job or pursue an activity as defined by law.
- (9) In a higher-level vocational training, the condition of issuing the diploma is a language exam certification if made compulsory by the requirements of training and graduation.
- (10) The degree levels certified by the university diplomas in English and Latin:
 - a) bachelor level "Bachelor" or "baccalaureus" (abbreviated: BA, BSc),
 - b) master level "Master" or "magister" (abbreviated: MA, MSc).
- (11) Students holding the "master" title use the phrase of "licensed" before the qualification certified by the diploma.
- (12) Persons who completed their studies at the Faculties of Medicine, Dentistry or Pharmaceutical Sciences are entitled to use the title of doctor. Their abbreviations: dr. med., dr. med. dent., dr. pharm.
- (13) At the student's request, after payment of expenses, the university shall issue an ornate diploma, which shall be signed by the Rector of the university, the Dean of the relevant faculty and the chair of the Closing Examination Board.
- (14) The certificate is signed by the Rector or the Dean and the chair of the Closing Examination Board.
- (15) If the student does not possess the language certificate at the time of the closing exam, and thus the diploma is issued after the closing exam period, and the chair of the Closing Examination Board is not emlpoyed by the university at the time of issuing, then, instead of the chair of the Closing Examination Board, the diploma may be signed
 - a) by the Vice Dean at the Faculty of Medicine, the Faculty of Health and Public Services, the Faculty of Dentistry, the Faculty of Pharmaceutical Sciences and the Faculty of Health Sciences,
 - b) by another member of the Closing Examination Board at the András Pető Faculty.
- (16) In case of successful closing exam, the diploma is handed out during a solemn graduation ceremony. The time of the graduation ceremony is determined by the Dean.

Article 48 [Special Regulations Regarding the Diploma and the Qualifications of the Diploma at the Faculty of Medicine, the Faculty of Dentistry and the Faculty of Pharmaceutical Sciences]

- (1) The qualification of the degree (diploma) should be based on the value calculated as described in paragraph (3) and rounded to the nearest hundredth.
 - a) The evaluation of the diploma at all trainings except the undivided master trainings:
 - aa) 4.51 5.00: excellent,
 - ab) 3.51 4.50: good,
 - ac) 2.51 3.50: average,
 - ad) 2.00 2.50: satisfactory;
 - b) at the undivided master trainings:
 - ba) 4.51 5.00: summa cum laude,
 - bb) 3.51 4.00: cum laude,
 - bc) 2.00 3.50: rite.
- (2) The subjects taken into consideration while evaluating the diploma, but which do not end with a final exam are determined by the curriculum.
- (3) Formula for calculating the evaluation of the diploma:

$$XD = \frac{\sum_{n} (X_i) + T + W + O + P}{n+4}$$

XD: the number which is the basis of the evaluation of the diploma;

- $\Sigma_n(X_i)$: the sum of the required final exams and the subjects defined in paragraph (2);
- *n:* the number of the reuired subjects defined in paragraph (2);
- T: the grade (5-point-scale) of the thesis;
- *W*: the grade of the written part of the closing exam;
- O: the grade of the oral part of the closing exam;
- *P:* the grade of the practical part of the closing exam.
- (4) The evaluation of the diploma is calculated by the Registrar's Department.

Article 49 [Special Regulations Regarding the Diploma, and Evaluations of the Diploma at the Faculty of Health Sciences]

- (1) The evaluation of the diploma is based on the arithmetic mean of the following:
 - a) the grades of the individual parts of the closing exam,
 - b) the grade of the thesis,
 - c) the simple arithmetical mean of the grades of the possible final exams,
 - d) the credit weighted average for the whole period of study.
- (2) The 5-point-scale qualification of the diploma is based on the arithmetic mean value rounded to the nearest hundredth. The qualifications:
 - a) 4.51 5.00: excellent,
 - b) 3.51 4.50: good,
 - c) 2.51 3.50: average,
 - d) 2.00 2.50: satisfactory.
- (3) A degree with honors is awarded to a student if he/she has achieved "excellent" grades in all parts of the closing examination, has an "excellent" grade for his/her thesis and all of the final exams, has a credit weighted average of at least 4.00 for the entire study period and has not got any grade below "average".

Article 50 [Special Regulations Regarding the Diploma, and the Evaluation of the Diploma at the Faculty of Health Sciences and Public Services]

- (1) The evaluation of the diploma is calculated by the teaching administrator of the educational unit and it is verified by the Dean's Office.
- (2) The method of calculating the evaluation of the diploma is the following:
 - a) At the program of Science in Health Services Management (BSc), the evaluation is the rounded arithmetic mean of the grades of the synthesizing exams, of the thesis defense and of the two parts of the closing exam.

$XD = \frac{\sum_{n} (X_i) + T + B + H}{n+3}$

- aa) XD: the number which is the basis of the evaluation of the diploma,
- ab) $\Sigma_n(X_i)$: the sum of the grades of the subjects in the model curriculum, which lead to the complex, synthesizing, problem-oriented assessment of the knowledge of several subjects (Introduction to Information Technology III: Computer-networks; Medicine (4)-Clinical Basics, Health Science (7) – Health Management, Digital Healtcare (7) - Integrated Health Systems)
- ac) n: the number of complex exams indicated in the point above,
- ad) T: the grade (5-point-scale) of the thesis,
- ae) B: the grade of the oral exam of the basic subject (part of the closing exam),
- af) H: the grade of the oral exam of Health Informatics (part of the closing exam).

Five-point scale qualification:

- 4.51 5.00: excellent,
- 3.51 4.50: good,
- 2.51 3.50: average,
- 2.00 2.50: satisfactory.
- b) At the Executive Health Services Management Postgraduate Specialization Program, the evaluation of the diploma is based on the weighted mean of these two values: the arithmetic mean of all grades obtained during the entire course of studies (at 60% weight), and the grade of the closing exam (at 40% weight).

Three-point scale qualification:

- 4.51 5.00: excellent,
- 3.51 4.50: good,
- 2.00 3.50: satisfactory.
- c) At the Quality and Patient Safety Management Postgraduate Specialization Program, the grade of the diploma is the rounded arithmetic mean of the grades of the thesis defense and of the closing exam.
 - Evaluation:
 - 4.51 5.00: excellent,
 - 3.51 4.50: good,
 - 2.51 3.50: average,
 - 2.00 2.50: satisfactory.
- d) At the Master Course in Mental Health-Oriented Family Studies, the simple arithmetic mean of the grade of the closing exam (mean of the grade given by the opponent of the thesis, of the grade of the defense, and of the oral exam) and of the credit-weighted mean of all the grades.
 - Evaluation:
 - 4.51 5.00: excellent,
 - 3.51 4.50: good,
 - 2.51 3.50: average,
 - 2.00 2.50: satisfactory.
- e) At the Master of Arts in Social Works (MA), the simple arithmetic mean of the grade of the closing exam (mean of the grade given by the opponent of the thesis, of the grade of the defense, and of the oral exam) and of the credit-weighted mean of all the grades.
 - Evaluation:
 - 4.51 5.00: excellent,
 - 3.51 4.50: good,
 - 2.51 3.50: average,
 - 2.00 2.50: satisfactory.
- f) At the Specialist Training Course in Integrated Parent-Infant Consultation, the simple arithmetic mean of the grade of the closing exam (mean of the grade given by the opponent of the thesis and of the grade of the defense) and of the credit-weighted mean of all the grades.
 - Evaluation:
 - 4.51 5.00: excellent,
 - 3.51 4.50: good,
 - 2.51 3.50: average,
 - 2.00 2.50: satisfactory.

g) At the Specialist Training Course in School Social Work, the simple arithmetic mean of the grade of the closing exam (mean of the grade given by the opponent of the thesis and of the grade of the defense) and of the credit-weighted mean of all the grades. Evaluation:

4.51 - 5.00: excellent,

- 3.51 4.50: good,
- 2.51 3.50: average,
- 2.00 2.50: satisfactory.
- h) At the Specialist Training Course in Communal and Family Meditation (Balassagyarmat), the simple arithmetic mean of the grade of the closing exam (mean of the grades of the examinations, of the grade given by the opponent of the thesis and of the grade of the defense) and of the credit-weighted mean of all the grades.
 - Evaluation:
 - 4.51 5.00: excellent,
 - 3.51 4.50: good,
 - 2.51 3.50: average,
 - 2.00 2.50: satisfactory.
- i) At the Specialized Training Program for Preparation for the Lactation Consultant, the simple arithmetic mean of the grade of the closing exam (the grade of the defense) and of the mean of all the grades.

Evaluation:

- 4.51 5.00: excellent,
- 3.51 4.50: good,
- 2.51 3.50: average,
- 2.00 2.50: satisfactory.
- **j**) At the Special Qualification Program in Mental Health, the simple arithmetic mean of the grade of the closing exam (mean of the grade given by the opponent of the thesis and of the grade of the defense) and of the simple arithmetic mean of the grades of subjects concluded with an exam.
 - Qualification:
 - 4.51 5.00: summa cum laude,
 - 3.51 4.50: cum laude,
 - 2.00 3.50: rite.
- **k**) At the Special Qualification Program in Mental and Spiritual Counseling, the simple arithmetic mean of the grade of the closing exam (mean of the grade given by the opponent of the thesis and of the grade of the defense) and of the credit-weighted mean of all the grades.

Evaluation:

4.51 - 5.00: excellent,

- 3.51 4.50: good,
- 2.51 3.50: average,
- 2.00 2.50: satisfactory.
- (3) The methods for calculation of the evaluation of the diploma are also described in the previous curricula, and in case of discontinued programs, they must be published on the website of the educational unit responsible for teaching.

Article 51 [Special Regulations Regarding the Diploma, and the Evaluation of the Diploma at the András Pető Faculty]

- (1) The evaluation of the diploma is given by the grades of the closing exam, of the final exams and the credit weighted average of complex closing work and the school teaching practice/kindergarten methodological practice (OPGY 303, 304, 305, 306, 307, 308 TPGY 3031, 3041, 3050, 3061, 307, 308).
- (2) According to the mean value calculated as shown above, the evaluations of the diploma are the following: honored: 5.00; excellent: 4.51 4.99; good 3.51 4.50; average: 2.51 3.50; satisfactory 2.00 2.50.
- (3) Diploma with honors is awarded to the student who has "excellent" grades for the closing exam, the result of the complex closing work, the final essay and the school teaching practice and the grades for all final exams are "excellent", and the grades of the other exams are at least average.
- (4) Graduate students may get a diploma with honoursif the student has a high school closing exam, a complex closing work and final exam of "excellent" grade, and a mean of grades of at least 4.51 without any grade below "average", as shown in their teacher training book.
12. Deviation from the Provisions of the Regulation

Article 52 [Excercises of Special Permission]

- (1) During the course of training, the committee competent in educational and examinational affairs may grant a derogation from a provision of these Regulations which does not impose an academic or financial obligation. Special permission can be exercised in relation to the order of study, without affecting the content of the study requirement.
- (2) The special permission defined in paragraph (1) may be provided
 - a) once for subjects in the model curriculum of the 1-4 semesters and once for subjects in the model curriculum of semester 5 and beyond, in the case of undivided training;
 - b) once in the whole training in the cases of basic and divided master courses.
- (3) The special permission not used in the theoretical training, described in point a) of paragraph (1) shall not be transferable to the second half of the training. Special permission not used in the bachelor training is not transferable to the master training.
- (4) The decision on a special permission shall stipulate the terms of the approval and shall state that no further benefits may be granted as special permission during that period.

Article 53 [Vis Maior]

- (1) In cases involving a wide range of students, where special permission could be provided if it was applied for, and also upon ex officio proceedings in cases of vis major, specific derogations from the rules of these Regulations are possible.
- (2) The ex officio proceedings described under paragraph (1) are initiated by the Vice Rector for educational affairs with the consent of the Student Council.
- (3) Where the authority competent for the derogation cannot be determined, the Vice Rector for educational affairs shall act with the consent of the Student Council.

13. Provisions for Students with Disabilities

Article 54 [Provisions Applicable to Students with Disabilities]

- (1) One person may pursue studies in higher education in Hungarian (partly) state-funded training, for a period totaling twelve semesters in undivided, bachelor and master training. Support is limited to a maximum of fourteen semesters if the student is enrolled in fulltime training and the training requirements exceed ten semesters.
- (2) The support period as defined in paragraph (1) may be extended for a student with a disability by up to four semesters by the higher education institution. This preference may be exploited for the achievement of more than one degrees but the period of allowance on this basis may not exceed four semesters.
- (3) Further provisions for students with disabilities are included in the university's Equal Opportunities Regulations.

14. Remedies in Educational Matters and the Obligations of the Institution to Provide Information

Article 55 [Right for Remedy in Educational Affairs]

- (1) The provisions relating to the appeals procedure are set out in Chapter III of the Organizational and Operational Rules of Semmelweis University. Part 7 (Remedies Regulations).
- (2) According to the Act on National Higher Education, all proceedings in the educational affairs of the students, in particular those which fall within the competence of the committee competent in educational and examinational affairs under these Regulations, are considered as first order decisions. In case of doubt, the committee competent in educational and examinational affairs may act if it is necessary to make a decision in a matter of a procedural nature related to the continuation of the student's studies, the progress of his or her studies and the acquisition of knowledge/qualifications, if there are no legal provisions or other bodies responsible for the matter.

Article 56 [The Obligations of the Institution to Provide Information and Consultation]

- (1) The Dean of the faculty ensures that the students starting their studies at the university are given access to the rules of study and examinations as well as the training information before enrollment. The provisions on the content and publication of the study guide are set out in the Act CCIV/2011 on National Higher Education. on the implementation of certain provisions of Act No. (IV.9.) (Hereinafter: NHE Act provisions) and can be found in the homepage of the faculty.
- (2) The rules of study and examination shall be published in English and German as well.
- (3) The university publishes a single study leaflet per academic year in Hungarian, English and German, containing relevant information for the academic year. The faculty may also publish certain information related to the institutional brochure on its own website in addition to the textbook.

15. Final Provisions

Article 57 [Final and Transitional Provisions]

- (1) For matters not covered by these Regulations, the provisions of the Act on National Higher Education and 87/2015. (IV. 09.) Government Decree (NHE Act provisions) and the provisions of other legal acts shall prevail.
- (2) These Regulations shall enter into force on the date of their adoption by the Senate, and shall at the same time be subject to Part III of the Organizational and Operational Rules of the Semmelweis University. Part III/I, III/II, III/II and III/IV. Chapters 1 to 2 are repealed. The Code shall apply for the first time for the fall semester of the 2019/2020 academic year, including the time between the adoption of the Code and, if later, the date of agreement by the Student Council. At the discretion of the Rector or the Vice Rector for educational affairs, or if it is more favorable to the student, the provisions of the Code may be applied to pending matters.
- (3) For the academic year 2019/2020, the specific provisions of these Regulations concerning the organization of exams in the field of blended education shall not apply to the subjects included in the standard curriculum of general medical practitioners for the fifth year.
- (4) Article 18(4) applies to existing multiple entitlements, the invitation must be made within a reasonable time after the entry into force of the bylaws, and may be announced by the university in the form of a notice.
- (5) Where the content of the study obligations are defined in these Regulations, students who commenced their studies prior to the date of entry into force of the Regulations shall continue to be subject to the obligation set out in the Regulations in force at the time of commencement, but the faculty may apply the new study requirements.
- (6) The deadlines passed or nearly passed at the time of entry into force of these regulations, can be replaced individually by new reasonable deadlines by the Rector or the Dean.
- (7) The new obligation sets forth in these regulations for a university body or student shall be fulfilled to the extent expected in the fall semester of the 2019/2020 academic year, with a view to its full implementation.
- (8) When examining the existence of the conditions necessary for granting a special permission, previous special permission should be disregarded if, under these Regulations, the decision could have been taken without exercising a special permission – a case which may fall within the scope of Article 51 only if the Vice Rector for educational affairs or the committee competent in educational and examinational affairs decides individually.
- (9) Curricula and subject programs shall be subject to review, by 30 June 2020, to ensure that they comply with the provisions of these Rgulations. Provisions of previously adopted subject programs, subject requirements systems that are contrary to the provisions of these Regulations shall not be applied or shall be applied to such an extent and in such a manner as to comply with these Regulations.

Rectorial Circular

on the independent work of students and on certain questions concerning lecture and practice policies

In order to meet the requirement for independent student work and to ensure the smooth functioning of lectures and practices, I hereby draw the attention of the students of Semmelweis University to the following:

- I. In the course of testing one's knowledge and practical skills, it is prohibited, under disciplinary liability, to use any unauthorised material, or to secure any illicit advantage. For the purpose of this provision, advantages ensured to disabled students in accordance with legal provisions or university regulations and allowances based upon individual decisions made in accordance with Chapter III Part III of The Rules of Operation and Organisation of Semmelweis University qualify as allowed advantages.
- II. The independent creation of original work, as well as the true and accurate citation, and the precise and complete indication of the sources used are not only scientific requirements, but also obligations arising from legal regulation.

Intellectual property is protected by the laws of Hungary. The content of this protection is defined particularly by the Copyright Act, the acts on inventions and patents, and on trademarks and the Civil Code of Hungary. The intellectual property of another person is only allowed to be used in accordance with these regulations.

All creations of literature, science and art shall fall under copyright protection as defined by Act No LXXVI of 1999 on copyright. According to this act, from a work disclosed to the public any part may be cited by indication of the source and naming the author indicated therein. Such citation shall be true to the original and its scope shall be justified by the nature and purpose of the borrowing work. The free use is permitted only so far as it does not conflict with a normal exploitation of the work and does not unreasonably prejudice the legitimate interests of the author, and it is in compliance with the requirements of fairness and is not designed for a purpose incompatible with the intention of free use.

The consequenses of the abuse of rights relating to intellectual property are provided by law, thus the abuse of these rights may also fall under disciplinary liablity.

III. In the abscence of previous authorization, it is prohibited, under disciplinary liability, to take photos or make video or sound recordings at lectures and practices. In addition, any misuse of the likeness or recorded voice of another person shall be deemed as a violation of inherent rights and may result in other consequences. The disclosure of likeness or recorded voice of another person shall be authorized by that person.

I request all students to take notice of the above.

Attention to Students of Foreign Language Programs at Semmelweis University

In recent years, Semmelweis University has built a valuable student community by maintaining high academic standards and placing much emphasis on the ethical integrity of our education. The overwhelming majority of our students appreciate our efforts. Unfortunately, a small minority does not want to accept our ethical guidelines, and tries to take undue advantage at exams by using unacceptable techniques.

We therefore do implement the following sanctions:

Against students who are found at exams possessing forbidden items, including electrical devices, such as mobile phones, ipods, etc. a disciplinary action will be initiated that can end with immediate discharge with disgrace from Semmelweis University. By implementing this rule, we wish to preserve the academic and material value of the Semmelweis Diploma.

NEPTUN.NET Unified Education System

Summary for Students

At Semmelweis University, the education system NEPTUN.Net is used for performing administrative tasks related to education. The users of the system – registry clerks, faculty secretaries, instructors and students – have different authorities to access the information stored in the system.

For the students of the institution, the system provides the following functions:

- To check their personal data and information related to their studies,
- To register for subjects,
- To register for exams,
- To check grades entered into the system,
- To monitor the grants transferred,
- To get information on their payment obligations,
- To manage their finances,
- To receive messages within the system from registry clerks, secretaries of institutions and instructors.

You get your user ID and password to the NEPTUN.Net system from the Dean's Office or the Registry of the Faculty where you have been admitted. Users with students' rights may only manage their own data. In order to prevent unauthorized access, it is very important that you change your password from time to time. It is recommended that you change the password immediately upon entering the system for the first time. The password should be minimum 6 characters long, consisting of letters, numbers or a mixture of both.

Students can access the NEPTUN.Net system on any computer located in students' terminal rooms (in the Student Centre /NET/ and in the Central Library) or any other computer with Internet access using a browser (Internet Explorer 7 or Mozilla Firefox version 2) from the official university Neptun Portal (http://net.neptun.sote.hu).

(For a detailed description of the Students' WEB please check the Neptun Portal – Support / Neptun usage / Aids by role / Aids for students).

Entering the system

On the Neptun Portal, click on the Student icon to enter. Then choose the server you wish to use. Enter the Neptun code (ID) and the password on the window which appears.

Once you enter you can choose from the following data groups at the top of the page: Personal data, Studies, Subjects, Exams, Finances, Information, Administration

Upon entering the Neptun.Net system, students have to perform the following operations during a term:

Registration Subject registration Exam registration

Registration

You can access the registration function in the, Administration, menu. Here you can register for the next term by clicking on the link "Registration". On the page "Registration requests", when clicking on "New" in the status column of the current semester, a window is displayed where you have to declare whether you choose to register with an "Active" or a "Passive" status. After you have chosen the appropriate option, click on the button "I declare". (Such registration is only available if Registration period is displayed under "Periods" in the "Information" menu! If you have not chosen any course for the semester yet, but you intend to register with an "Active" status, the programme will ask you to make sure whether you really want to continue the registration process. If you choose the option "no" at this stage, this means that registration will not be completed, and before you do so, you can take up your courses. If you choose "OK", you can continue registration. Naturally, you are free to take up courses afterwards.)

Subject registration (choosing subjects, choosing courses)

Choose the link "Subject registration" in the "Subjects" menu.

- 1. Displaying the list of subjects: Select the appropriate semester (e.g. 2020/21/1) and the curriculum, then select "Subject list of the chosen curriculum" under "Subject type" to display obligatory and elective subjects. The option "Other elective subjects" may be used if the institution concerned manages its elective subjects separated from the curricula. If you do not find any subject in this list, this only means that at your institution these elective subjects are also integrated into the curricula. In this case, you should choose the option "Subject list of the chosen curriculum" at this question. By ticking "Show only those subjects that will be launched" you can make sure that only those subjects appear in the displayed subject list which will be launched in the semester selected. You can display the subject list filtered according to the conditions set by clicking on the "List subjects" button.
- 2. Display, search and ordering options in the subject list: On the top of the list you can set the number of subjects to be displayed on one page. If the list is longer than one page, you can use the two-way arrows on the top of the list or the drop-down menu to turn pages. By clicking on the printer icon, you can print the page displayed. When you find the subject required, click on any detail and all details of the selected subject will be displayed in a pop-up window.
- 3. Subject details / Current courses tab: Here you can see the courses launched in the given semester for the selected subject. You can now choose the subject and its course or courses. You can choose the courses by marking the checkbox on the right of the course list, then confirm your choice by clicking on "Save" at the bottom of the page. You have to choose more than one course for the same subject if more than one course type (e.g. theoretical and practical) are announced. In this case, you need to choose one course for each course type. This is not true for exam courses which must be chosen independently in all cases, which means that you cannot choose an exam course and another course type for the same subject at the same time. Course registration will only be successful if:
 - you have fulfilled the requirements for subject and course registration,
 - none of the courses selected is booked out (in the students/limit column the number of students is under the limit),
 - you have selected one course for each course type (e.g. theoretical, practical),
 - it is preliminary or final subject and course registration period,
 - you have not completed the subject so far.

For more information on a given course, click on any detail of the given course in the list to display the course information in a new pop-up window.

- 4. Deregistering subjects: If for any reason you would like to drop a chosen subject, you can do so under "Registered subjects" in the "Subjects" menu. On this page you can see the subjects you have chosen in the current registration period; you can change courses or deregister subjects here. If in any subject line you click on "Deregister subject", the system will first ask whether you really want to drop the given subject and if you answer yes, the subject will be dropped and deleted from the list of registered subjects. Naturally, this means that your registration for the courses of the deregistered subjects is also deleted and you will be informed of this. (Subject deregistration is possible during the preliminary or final subject or course registration period.)
- 5. Changing courses: If you want to change the course(s) you have chosen in a given subject, you can do this by clicking on any detail of the given subject to display the pop-up window "Subject details". Here on the "Current courses" tab in the last column of the list you have to select the course(s) required and unmark the course(s) to be dropped, then confirm the change by clicking on the "Save" button. The system will report on the change or the reasons for potential errors.

Exam registration

You can find "Exam registration" in the "Exams" menu. On this page you can register for exams or cancel your registration. In the exam list, exams which you have already registered for will appear in blue. To cancel an exam registration, go to the "Selected exams" menu.

- 1. List exams: On entering the page for the first time all future exam dates announced in the current semester will appear, but you can filter the list. If you only want to see the exam dates of a given subject, select the subject from the "Subjects" roll-down menu, then click on the button "List exams".
- 2. Exam registration: To register for an exam, click on "Register" in the line of the given date. The programme will report on the success or failure of exam registration.
- 3. Canceling exam registration: If you register for an exam by mistake or you simply change your mind and want to cancel your registration, click on "Cancel" next to the given exam. (Normally this can be done prior to the exam within the cancellation deadline. This deadline varies according to institution: at AOK /Medicine/, FOK /Dentistry/ and ETK, it is 48 hours while at GYTK /Pharmaceutical Sciences/, it is 24 hours.) In such a case, the system attempts to remove you from the given exam date and will report on the success or failure of the operation.
- 4. Payment of retake exam fee: By clicking on "Payment" under "Finances", you will be taken to the page where the list of settled and payable items is displayed. Here you can also fulfill your financial obligations. On the "Payment" tab, click on the "Transcribe item" button and on the appearing "Transcribe item" window, enter the payment title (retake exam), then select the subject for which you would like to transcribe the exam fee from the roll-down list. Finally, click on the "Create item" button. You can take over the invoice of the item created in the Dean's Office. To list current items, select the current semester using the "Semester" roll-down menu under "Filters" on the 1.) "List items" tab. (Items you have displayed are marked as "Own item" in the "Status" column.) To view the details of a given item, click on "Details" in the line of the item concerned.

Message management

During term time, students may receive messages on various topics. This menu can be found on the left-hand side of the page. Here you can see the messages sent to the student by the Dean's Office clerk in charge of his/her year or the instructor of a chosen course. You can view the text of the message on a new window by clicking on the required topic in the list of messages.

The NEPTUN system assists students and university employees in the accurate and effective performance of administrative tasks related to their studies. In order to ensure faultless operation, it is indispensable that authority rules are complied with and that accurate data is provided. Therefore, please note that data changes or wrong data must be corrected within 8 days using "Modify data".

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Assistant professor:	Dr. Mária Ablonczy, Dr. Zita Halász, Dr. Margit Pataki, Dr. Veronika Kovács
Assistant lecturer:	Dr. Noémi Csoszánszki, Dr. Gabriella Filiczki, Dr. Zoltán Jenővári, Dr. László Jókúti, Dr. Zoltán Karádi, Dr. Andrea Luczay, Dr. Gergely Sárközi, Dr. Edit Varga, Dr. Andrea Tölgyesi, Dr. Tamás Bense, Dr. András Kelecsényi, Dr. Boglárka Bánsági (tutor)

Cardiovascular Center – Heart Center Department of Cardiology

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Head of the Department:	Prof. Dr. Béla Merkely M.D., Ph.D., D.Sc.
Professor Emeritus:	Károly Lozsádi M.D., Dr. Mátyás Keltai M.D., Ph.D.
Full professor:	Ferenc Horkay M.D., Ph.D., D.Sc.,István Préda M.D., Ph.D., László Gellér M.D., Ph.D.
Associate professor:	Dr. Dávid Becker, Endre Zima M.D., Ph.D.
Assistant professor:	Margit György M.D.
Assistant lecturer:	Astrid Apor M.D., György Bárczi M.D. (tutor), Gábor Fülöp M.D., Zoltán Jambrik M.D., Levente Molnár M.D., Dóra Paprika M.D., György Szabó M.D.
Clinical fellow:	Elektra Bartha M.D. (consultant), Krisztina Hosszú M.D., Orsolya Kiss M.D., Ph.D., Ibolya Marozsán M.D. (consultant), Andrea Nagy M.D., Attila Róka M.D., Pál Soós M.D., Ph.D. Boglárka Szabó M.D., Zsolt Szelíd M.D., Szabolcs Szilágyi M.D., Andrea Szűcs M.D., Ph.D., Gábor Szűcs M.D., Hajnalka Vágó M.D., Ph.D., Vince Wagner M.D.
Scientific advisor:	Miklós Tóth M.D., Ph.D., D.Sc., Péter Vargha
PhD students:	Balázs Berta M.D., Pál Maurovich Horvat M.D., Valentina Kutyifa M.D., Gabriella Veress M.D.

1083 Budapest, VIII. Balassa u. 6. 2 : 210-0330, 210-0337	
Head of the Department:	Prof. Dr. Dániel Bereczki M.D., Ph.D., D.Sc.
Full professor:	Prof. Dr. Anita Kamondi, Prof. Dr. Mária Judit Molnár,
	Dr. Zsuzsanna Arányi
Professor Emeritus:	Prof. Dr. Mátyás Papp
Associate professor:	Dr. Tibor Kovács, Dr. Csaba Ertsey
Assistant professor:	Dr. Róbert Debreczeni (tutor)
Assistant lecturer:	Dr. Sándor Ilniczky, Dr. Magdolna Simó, Dr. Ildikó Vastagh, Dr. Erika Scheidl (tutor)

Department of Neurosurgery

Office secretary.	Katalili Jalikus
· ·	E-mail: : jankus.katalin@med.semmelweis-univ.hu
Head of the Department:	Prof. Péter Banczerowski, M.D., Ph.D.
Teaching staff leader:	Prof. Péter Banczerowski M.D., Ph.D.
Professor Emeritus:	Prof. István Nyáry M.D., Ph.D.

Background The Department of Neurosurgery was established in 1977 and is operated by the National Institute of Neurosurgery, which is a stand-alone neurosurgical hospital. It has 156 beds in its wards, which includes the only paediatric neurosurgical department in Hungary. The National Institute is the third largest neurosurgical service-provider in Europe.

Profil The Department of Neurosurgery is involved in virtually the entire spectrum of neurosurgical practice. All other specialities needed for modern neurosurgery (e.g. neuroradiology, neuroophthalmology, neurootology, electrophysiology, neuropathology and neurology) are also present, and are organised in a multidisciplinary structure. The biggest neuro-intensive care department, with separate units for paediatric cases, is maintained and operated by the Department.

Education Lectures are given on neurosurgery to medical undergraduates in Hungarian and English. Postgraduate resident training is also provided, in addition to further training courses.

Health Care Annually, around 3500 major operations are performed in five theatres, including endovascular interventions, stereotactic surgery, endoscopic and laser surgery, neuro-implantation, in addition to the so-called classical micro-neurosurgical operations. The outpatient turnover is 50,000. The Department has the highest case mix index in Hungary, indicating the most complicated cases, which makes a unique background for both undergraduate and postgraduate teaching.

Research Multidisciplinary organisations with a high patient turnover are ideal for basic and clinical research. Cerebral vascular malformations, tumours of the base of the skull, pituitary adenomas, functional neurosurgery and interventions, neurooncology, spine surgery as well as intra- and post-operative patient monitoring are the major fields of interest for the Department's 98 staff members (of which 23 are neurosurgeons, including residents).

Department of Orthopedics

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Head of the Department: Professor Emeritus: Full professor: Associate professor: Assistant professor: Assistant lecturer: Prof. Dr. György Szőke M.D., Ph.D., D.Sc. Prof. Dr. György Bender Prof. Dr. Miklós Szendrői Dr. Anikó Faluhelyi, Dr. József Lakatos, Dr. Ferenc Mády, Dr. Imre Antal, Dr. István Böröcz, Dr. László Sólyom, Dr. Sándor Kiss Dr. Zoltán Bejek, Dr. Tamás Terebessy, Dr. Géza Kordás, Dr. Gergely Holnapy (tutor)

Department of Psychiatry and Psychotherapy

1083 Budapest, VIII. Balassa u. 6. 210-0330	
Head of the Department:	Prof. Dr. János Réthelyi M.D., Ph.D.
Full professor:	Prof. Dr., Gábor Faludi, Prof. Dr. Dóra Perczel-Forintos
Professor Emeritus:	Prof. Dr. László Tringer, Prof. Dr. István Bitter
Associate professor:	Dr Brigitta Baran, Dr. Pál Czobor, Dr. Lajos Simon, Dr. Judit Tolna, Dr. Zsolt Unoka (tutor for the fourth year), Dr. Zoltán Hidasi (tutor for dentistry students)
Assistant professor:	Dr. Gábor Csukly, Dr. Xénia Gonda, Dr. Éva Jekkel, Dr. Beatrix Mersich, Dr. Erika Szily (tutor for the sixth year), Dr. Bálint Szuromi
Assistant lecturer:	Dr. Judit Benkovits, Dr. Kinga Farkas, Dr. Máté Fullajtár, Dr. Ádám Menus, Dr. Attila Pulay, Dr. Imola Seres (tutor for the fifth year), Dr. László Tombor
Clinical senior specialist:	Dr. Éva Csibri (part time), Dr. Andrea Sárosi
Clinical specialist:	Dr. Csilla Bolyós (part time), Dr. Brigitta Blancz, Dr. Péter Döme, Dr. Luca Egerváry, Dr. Mónika Eleméry, Dr. György Freschl, Dr. Judit Lazáry, Dr. Krisztina Seregi
Clinical doctor:	Dr. Lívia Balogh
Residents:	Dr. Anna Báthory, Dr. Nóra Brindza, Dr. Bodnár Katalin, Dr. Klára Csizinszky, Dr. Bálint Hajduska-Dér, Dr. Levente Hermán, Dr. Péter Oczella, Dr. Attila Simor, Dr. Szilvia Somogyi, Dr. Ádám Ferenc Szabó, Dr. Andrea Szegő, Dr. Péter Szocsics, Dr. Katalin Szőcs, Dr. Dominika Tóth, Dr. István Vályi-Nagy, Dr. Réka Zsigmond
Psychologist:	Gabriella Kamilla Balogh, Gergely Bíró, Tamás Halmai, Eszter Tóth
External teachers with contract in the English program:	Dr. Judit Ágnes Balázs, Dr. Gábor Gazdag

Department of Pulmonology

Prof. Dr. Veronika Müller M.D., Ph.D.
Prof. Dr. Ildikó Horváth, Prof. Dr. Lilla Tamási, Prof. Dr. György Losonczy
Prof. Dr. Imre Hutás, Prof. Dr. Endre Vastag
Dr. Ákos Somoskövi, Dr. Gábor Horváth (tutor), Dr. Gabriella Gálffy, Dr. Anikó Bohács
Dr. Zoltán Bártfai, Dr. Zoltán Süttő, Dr. Klára Szondy, Dr. Erika Vajda, Dr. Katalin Várdi Visy, Dr. András Wollák, Dr. Gabriella Zsámboki
Dr. Judit Füzy, Dr. Ildikó Géczi, Dr. Tamás Komáromi, Dr. Csaba Máthé, Dr. Gabriella Muraközy, Dr. Andrea Nagy, Dr. Zsuzsanna Orosz

Department of Radiology

1082 Budapest, VIII. Üllői út 78/A. 🖀: 210-0300	
Head of the Department:	Prof. Dr. Viktor Bérczi M.D., Ph.D., D.Sc.
Full Professor:	Prof. Dr. Kálmán Hüttl
Associate professor:	Dr. Zoltán Vígváry, Dr. Zsolt Tarján, Dr. Magdolna Dank, Dr. Kinga Karlinger, Dr. Ádám Mester, Dr. László Dávid Tárnoki (tutor), Dr. Ádám Domonkos Tárnoki
Assistant professor:	Dr. Zsuzsa Dömötöri, Dr. Katalin Kiss, Dr. Géza Tóth, Dr. Klára Szalai, Dr. László Duffek, Dr. Béla Kári, Dr. László Torgyik
Clinical chief doctor:	Dr. Attila Kollár
Clinical doctor:	Dr. Balázs Futácsi
Assistant lecturer:	Dr. Erika Borbényi, Dr. Szabolcs Farkas, Dr. Péter Magyar, Dr. Tamás Györke, Dr. Gyöngyvér Szentmártoni, Dr. Júlia Szilvási, Dr. Éva Zergényi
Senior resident:	Dr. Pál Batta, Dr. Anikó Bőgér, Dr. Gábor Erdei, Dr. Ernő Frank, Dr. Ágnes Stefán, Dr. Andrea Vágó

I. Department of Surgery

1082 Budapest, VIII. Üllői út 78. 🖀: 313-5216	
Head of the Department:	Prof. Dr. Attila Szijártó M.D., Ph.D.
Full professor:	Prof. Dr. Tibor Tihanyi, Prof. Dr. László Harsányi
Professor Emerita, Professor Emeritus:	Prof. Dr. Katalin Darvas, Prof. Dr. Lajos Flautner, Prof. Dr. Péter Kupcsulik
Associate professor:	Dr. Péter Kokas, Dr. István Pulay, Dr. Mária Tarjányi, Dr. Ambrus Magyar, Dr. János Horányi, Dr. Ákos Szűcs (tutor),
Assistant professor::	Dr. Krisztina Pinkola, Dr. Marianna Borsodi, Dr. Zsolt Csapó, Dr. Péter Lukovich
Assistant lecturer:	Dr. Bálint Hargitai, Dr. András Nagy, Dr. Edina Nagy, Dr. András Papp, Dr. László Regáli (tutor), Dr. Hedvig Sas

II. Department of Surgery

1125 Budapest, XII. Kútvölgyi út 4. 2335-1100/57351 Fax: 375-4291

Head of the Department: Full professor: Tutor: **Dr. Gábor István** M.D., Ph.D. Prof. Dr. Pál Ondrejka Dr. György Ledniczky

Department of Transplantation and Surgery

1082 Budapest, VIII. Baross u. 23. 267-6000; 459-1500/54321 Fax: 317-2166

Head of the Department: Tutor: **Prof. Dr. László Kóbori** M.D., Ph.D. Dr. Balázs Rózsa

I. Department of Surgery Department Section of Surgery

1096 Budapest, IX. Nagyvárad tér 1.
215-1489; 459-1500/54321 Fax: 317-2166
Head (assigned) of the Department: Prof. Dr. László Harsányi M.D., Ph.D.

Department of Surgical Research and Techniques

1089 Budapest, VIII. Nagyvárad tér 4. 28: 459-1500/56569 Fax: 459-1500/56574

Head of the Department:Prof. Dr. Andrea Ferencz M.D., Ph.D.Tutor:Dr. Györgyi Szabó

Department of Vascular Surgery

1122 Budapest, XII. Városmajor u. 68.2: 458-6700 Fax: 458-6746E-mail: titkar@erseb.sote.huHead of the Department:Tutor:

Prof. Dr. László Entz M.D., Ph.D. Dr. Zsuzsanna Járányi

Department of Ophthalmology

1085 Budapest, VIII. Mária u. 39. 2 : 266-0513/54500	
Head of the Department:	Prof. Dr. Zoltán Zsolt Nagy M.D., Ph.D., D.Sc.
Full professor:	Prof. Dr. János Németh M.D., Ph.D., D.Sc., Prof. Dr. Gábor Holló
Associate professor:	Dr. Zsuzsanna Récsán (Program Director for Dentistry), Dr. András Papp
Assistant professor:	Dr. Mária Bausz, Dr. Mónika Ecsedy, Dr. Ágnes Füst, Dr. Krisztina Knézy, Dr. Illés Kovács (tutor for Dentistry Dr. Olga Lukáts), Dr. Anna Szamosi, Dr. Zsuzsanna Szepessy, Dr. Jeannette Tóth, Dr. Rita Vámos, Dr. Miklós Resch (tutor)
Assistant lecturer:	Dr. György Barcsay, Dr. Béla Csákány, Dr. Judit Dohán, Dr. Zsuzsanna Géhl, Dr. Péter Kóthy, Dr. Ákos Kusnyerik, Dr. Erika Maka, Dr. Otto Maneschg, Dr. András Schneider, Dr. Irén Szalai, Dr. Antal Szabó

Department of Obstetrics and Gynecology

1088 Budapest, VIII. Baross u. 27. 266-0473 1082 Budapest, VIII. Üllői út 78/a. 21: 313-7856	
Head of the Department:	Prof. Dr. Nándor Ács M.D., Ph.D.
Full professor:	Prof. Dr. János Rigó, Prof. Dr. Attila Pajor, 🦳 Prof. Dr. Ferenc Bánhidy, Prof. Dr. Júlia Hajdú
Professor Emeritus:	Prof. Dr. Sándor Csömör, Prof. Dr. Zoltán Papp
Associate professor:	Dr. Zsolt Melczer, Dr. Sándor Valent, Dr. András Nobilis, Dr. Péter Patkós, Dr. András Szánthó, Dr. Zsolt Csapó, Dr. Emma C. Molnár, Dr. Éva Görbe, Dr. János Urbancsek, Dr. Anna Beke, Dr. Csaba Papp, Dr. István Szabó, Dr. Ernő Tóth-Pál, Dr. Bálint Nagy, Dr. Petronella Hupuczi, Dr. József Gábor Joó (tutor), Dr. Gyula Richárd Nagy (tutor)
Assistant professor:	Dr. Sándor Konrád, Dr. János Hidvégi, Dr. Márta Lipták, Dr. Péter Somos, Dr. István Varga, Dr. László Csabay, Dr. Mihály Silhavy, Dr. György Szendei, Dr. Márta Gávai, Dr. Ágnes Harmath, Dr. Péterné Sembery, Dr. Nóra Dévényi, Dr. Katalin Szirmai, Dr. Zoltán Magyar, Dr. Artúr Beke, Dr. László Fedák, Dr. Attila Demeter, Dr. Zsolt Ádám, Dr. Ervin Hruby, dr. Judit Jeager,
Assistant lecturer:	Dr. András Újházy, Dr. Zorán Belics, Dr. Ákos Csaba, Dr. Barbara Kőhalmi, Dr. Norbert Sipos, Dr. Tamás Bőze, Dr. Zoltán Bán, Dr. Anikó Boda, Dr. Éva Csatlós, Dr. Zoltán Garamvölgyi, Dr. István Karasznai, Dr. Péter Fancsovits, Dr. Tibor Fekete, Dr. Gábor Mezei, Dr. Ákos Murber, Dr. Levente Lázár, Dr. Nándor Than, Dr Adrienn Horváth, Dr. Attila Rab, Dr. Gabriella Demeter, Dr. Lilla Sassi, Dr. Amrita Halmos, Dr. Szabolcs Máté, Dr. Zsanett Szigeti, Dr. Zoltán Derzsy, Dr. Erik Hauzman, Dr. Barbara Pete

Department of Transfusion Medicine

1089 Budapest VIII., Nagyvárad tér 4., 16th floor 2:459-1500/56157 Appointed Head of the Department: **Prof. Dr. Attila Tordai** M.D., Ph.D., D.Sc.

Department of Medical Imaging

1082 Budapest VIII., Üllői út 78/A **2**: 210-0307

Head of the Department: Dr. Pál Maurovich-Horvat M.D., Ph.D., M.P.H. Tutor: Dr. Lajos Kozák

Department of Traumatology

1145 Budapest, XIV., Uzsoki u. 29-41. (2nd floor, room 223) **2**: 06 1 467-3851; 06 20 825 - 8680 E-mail: trauma office@med.semmelweis-univ.hu

Head of the Department:	Prof. Dr. László Hangody M.D., Ph.D., D.Sc.
Full professor:	Prof. Dr. András Sárváry, Prof. Dr. Tibor Mózes
Assistant professor:	Dr. Miklós Szebeny, Dr. István Baráth
Lecturer:	Dr. Gergely Pánics
Clinical specialist:	Dr. Wille Jörg (German coordinator), Dr. Miklós Szebeny
Assistant lecturer:	Dr. Tamás Gál (English coordinator), Dr. Ágnes Berta (tutor)
Administrator:	Klára Seregi

Department of Urology

1082 Budapest, VIII. Üllői út 78/B. 🖀: 210-0330	
Head of the Department:	Prof. Dr. Péter Nyirády M.D., Ph.D.
Full professor:	Prof. Dr. Imre Romics, Prof. Dr. Zsolt Kelemen
Associate professor:	Dr. Antal Hamvas, Dr. József Pánovics,
	Dr. Attila Keszthelyi
Assistant professor:	Dr. Sándor Lovász, Dr. Miklós Szűcs, Dr. Krisztina Szabó, Dr. Lajos Joós
Assistant lecturer:	Dr. Stelios Mavrogenis, Dr. András Rusz, Dr. Attila Majoros, Dr. Péter Riesz,
	Dr. Erzsébet Pénzes, Dr. Gergely Bánfi
Clinical doctor:	Dr. András Horváth (tutor)

Department of Laboratory Medicine

1089 Budapest, VIII. Nagyvárad tér 4., floor XIV. 🖀: 210-0278 / 56318 Head of the Department: Prof. Dr. Barna Vásárhelyi M.D., Ph.D., D.Sc. Prof. Dr. Antal Szabó Ph.D., D.Sc.

Tutor:

Department of Military-, Disaster- and Order Enforcement Medicine

1134 Budapest, XIII. Róbert Károly krt. 44. 2: 465-1914; Fax: 465-1896 E-mail: katasztrofa@med.semmelweis-univ.hu

Head of the Department:	Prof. Dr. János Gál
Deputy head of Department:	Dr. György Orgován associate professor
Academic advisor:	Prof. Dr. Péter Sótonyi rector emeritus, Dr. László Svéd
Executive of educational affairs:	Dr. László Liptay
Clinical specialist:	Dr. Attila Faggyas, Dr. Gábor Orosz
International affairs:	Balázs Marczin
Head lecturer:	Mrs. Klára Szalay Nagy

The department was founded on July 1st, 1970 (EüM 43/1969) - first under the name of Department of Military Medicine (as part of the Institution of Medical Training), then as the Institution of Military Medicine, and later as the Institution of Military and Disaster-Medicine. From 2001 it was named ÁOK (Faculty of Medicine) Department of Military and Disaster Medicine, Semmelweis University. The name has undergone further changes since July 1st, 2004 as university reorganization affected and integrated a number of sub-divisions (the former Department of Oxyology and the Department Group of Emergency Care Training) into this department. Since March 27th, 2014, by legislation of the senate (40/2014), the present name of the institution is the **Department of Military-, Disaster- and Order Enforcement Medicine.** It is currently located at the Medical Centre, Hungarian Defence Forces complex, where the functionality of the institution is provided by a series of separate contracts of cooperation.

PROFESSIONAL PROFILE

- Coordination, education and science-related questions regarding military and disaster medicine
- Maintaining an established and widely expanding network of local and international cooperation in the fields of military, disaster, and order enforcement medicine
- Continuing the long-running collaboration between the NATO Centre of Excellence for Military Medicine and Semmelweis University
- Contract-governed scientific collaboration between departments of the National University of Public Services and Semmelweis University
- The observing and analysing of disasters either occurring in the present or that are historically documented throughout the World and application of the findings under Hungarian circumstances
- Establishing training programmes related to the department's field and organising such courses for the doctors and professionals, both civilian and military-employed.
- Providing the graduate education course "The Medical Fundamentals of Disaster Resolution" in Hungarian, English and German languages
- The education of trainee specialists at both theoretical and technical levels, coordination of these projects
- Preparation of candidates for the Military-, Disaster and Order Enforcement exam
- Hosting Qualification Examinations and organising the related preparation course

Faculty of Dentistry

Department of Prosthodontics

1088 Budapest, VIII. Szentkirály 2 : 318-0011	i u. 47.
Head of the Department:	Prof. Dr. Péter Hermann D.M.D., M.Sc., Ph.D.
Professor Emeritus:	Prof. Dr. Pál Fejérdy
Associate professor:	Dr. Péter Kivovics, Dr. András Kóbor, Dr. Melinda Madléna Dr. Tibor Károly Fábián, Dr. Zsuzsa Szántó,
	Dr. Judit Borbély (tutor 1 st year)
Assistant professor:	Dr. János Gerle, Dr. László Kádár, Dr. Endre Somogyi,
	Dr. Katalin Károlyházy (tutor 5 th year)
Assistant lecturer:	Dr. Péter Faluhelyi, Dr. Marianna Jáhn (tutor 4th year), Dr. Katalin Kalocsai, Dr. Mercédesz Linninger, Dr. Krisztina Mikulás
	Dr. Zsuzsanna Tóth, Dr. Pál Sajgó, Dr. Katalin Nemes,
	Dr. Dénes Palaszkó (tutor 2 nd year, 3 rd year 2 nd semester)
Clinical specialist:	Dr. Péter Schmidt (tutor)

Independent Section of Radiology

1088 Budapest, VIII. Szentkir	ályi u. 47.
🖀: 459-1500 ext 59128	
Head of the Department:	Prof. Dr. C

Prof. Dr. Csaba Dobó Nagy D. M. D.

Department of Pedodontics and Orthodontics

1088 Budapest, VIII. Szentkirályi u. 4. 🕿: 318-0011	7.
Head (assigned) of the Department:	Dr. Noémi Katinka Rózsa D.M.D., Ph.D., M.Sc.
Professor Emerita:	Prof. Dr. Ildikó Tarján
Associate professor:	Dr. Katalin Gábris
Assistant professor:	Dr. Miklós Kaán, Dr. Gergely Balaton, Dr. Ibolya Kéri
Assistant lecturer:	Dr. Mária Budai, Dr. Beáta Szádeczky, Dr. Adrienn Barta,
	Dr. Attila Soós, Dr. Kinga Deseő

Department of Conservative Dentistry

1088 Budapest, VIII. Szentkirályi u. 2 : 318-0011	47.
Head of the Department:	Dr. Zsuzsanna Tóth D.M.D., Ph.D.
Professor Emeritus:	Prof. Dr. Árpád Fazekas
Associate professor:	Dr. Károly Bartha, Dr. Zsolt Lohinai (tutor),
	Dr. med. habil. Melinda Madléna
Assistant professor:	Dr. Júlia Nemes, Dr. János Vág, Dr. Milán Gyurkovics, Dr. Enikő Szabó
Assistant lecturer:	Dr. Anna Herczegh, Dr. Krisztina Árendás, Dr. Réka Fazekas, Dr. Sándor Mikó, Dr. Andrea Demeter, Dr. Zsolt Nagy, Dr. Sarolta Pozsgay, Dr. Györgyi Szekeres, Dr. Gergely Pataky, Dr. Edit Tóbiás, Dr. Izabella Nagy, Dr. Eszter Szalay

Department of Oral Biology

1089 Budapest, VIII. Nagyvárad tér 4. 2 : 210-4415	
Head of the Department:	Prof. Dr. Gábor Varga Ph.D., D.Sc.
Full professor:	Prof. Dr. György Simon
Professor Emeritus:	Prof. Dr. Tivadar Zelles
Associate professor:	Dr. József Blazsek, Dr. Beáta Kerémi (tutor – 2 nd semester)
Assistant professor:	Dr. Kristóf Kádár (tutor – 1 st semester)

Department of Oral Diagnostics

 1088 Budapest, VIII. Szentkirályi u. 47.

 2: 459-1500/59161, 317-1044, fax: 459-1500/59165

 Email: oral@fok.usn.hu

 Head of the Department:

 Prof. Dr. Csaba

Prof. Dr. Csaba Dobó Nagy D.M.D.

Department of Oro-Maxillofacial Surgery and Stomatology

1085 Budapest, VIII. Mária u. 52. 266-0457, fax: 266-0456 Email: titkarsag.arcallcsont@dent.semmelweis-univ.hu

Head of the Department:	Dr. Zsolt Németh D.M.D., Ph.D., med. habil.	
Tutor:	Dr. Attila Szűcs associate professor, Ph.D.	
Full professor:	Prof. Dr. Zsuzsanna Suba, Prof. Dr. József Lajos Barabás	
Professor Emeritus:	Prof. Dr. György Szabó, Prof. Dr. Tamás Divinyi	
Associate professor:	Dr. Árpád Joób-Fancsaly, Dr. Márta Ujpál	
Assistant professor:	Dr. Sándor Bogdán, Dr. Tamás Huszár	
Associate lecturer:	Dr. Ferenc Koppány, Dr. Kinga Körmöczi, Dr. Mihály Vaszilkó	
Clinical doctors:	Dr. József Béla Barabás, Dr. Péter Barabás, Dr. Kinga Bérczy, Dr. Gergely Csókay, Dr. Katalin Csurgay, Dr. Iván Decker, Dr. Fanni Sára Kálmán, Dr. György Komlós, Dr. Zsófia Rónaszegi-Somogyi, Dr. Tatjana Skolnyik, Dr. Ilona Szmirnova, Dr. Szonja Vingeder	

Department of Periodontology

1085 Budapest, VIII. Szentkirályi u. 47. 2 : 318-0011		
Head of the Department:	Prof. Dr. Péter Windisch D.M.D., D.Sc	
Professor Emeritus:	Prof. Dr. István Gera	
Full professor:	Dr. Ferenc Dőri	
Associate professor:	Dr. Bálint Molnár	
Assistant professor:	Dr. Attila Horváth	

Department of General Dental Preclinical Practice

Budapest 1088, Szentkirályi u. 47. 2: 459-1472; 459-1500/59112; 59322

Head and tutor of the Department:	Prof. Dr. Krisztina Márton D.M.D., Ph.D
Assistant lecturer:	Dr. Anna Dézsi
Clinical specialist:	Dr. Zoltán Kovács, Dr. Tamás Demeter (tutor)
Resident:	Dr. Alexandra Kovács

Department in Community Dentistry

1085 Budapest, VIII. Mikszáth Kálmán tér 5. **2**: 317-6600, 317-2222; 60749

Head of the Department:

Dr. Péter Kivovics D.M.D., Ph.D.

Faculty of Pharmaceutical Sciences

University Pharmacy, Department of Pharmacy Administration

1092 Budapest, IX. Hőgyes Endre u. 9. 2: 476-3600 Head of the Department: Full professor: Associate professor: Assistant professor: Assistant lecturer:

Prof. Dr. Romána Zelkó dr. pharm., Ph.D., D.Sc. Prof. Dr. Zoltán Vincze Ph.D. Dr. Lajos Gergó, Dr. Balázs Hankó, Dr. Ágnes Mészáros (tutor) Dr. Mária Nikolics, Dr. Andrea Meskó (tutor), Dr. Judit Balogh Dr. Mónika Hantos

Dr. Anna Bucsy-Sólyomváry (English coordinator), Dr. András Darcsi

Institute of Pharmacognosy

1085 Budapest, VIII. Üllői út 26. 266-0120, 317-2979 Head of the Department:

Head of the Department: Full professor: Professor honorary: Associate professor: Assistant professor: Assistant lecturer: Scientific advisor: Research fellow:

Department of Pharmaceutics

1092 Budapest, IX. Hőgyes Endre u. 7. 217-0914

Head of the Department:	Prof. Dr. István Antal Ph.D.
Professor Emeritus:	Dr. Imre Klebovich
Associate professor:	Dr. Krisztina Ludányi
Assistant professor:	Dr. Emese Bertalan-Balogh (tutor of the 3rd, 4th and 5th years), Dr. Lívia Budai, Dr. Marianna Budai, Dr. Nikolett Kállai-Szabó, Dr. Mária Hajdú
Senior research scientist:	Dr. Borbála Dalmadi-Kiss
Assistant lecturer:	Dr. Viktor Fülöp, Dr. Miléna Lengyel, Dr. Nóra Mike-Kaszás, Dr. Noémi Niczinger, Dr. Zsófia Edit Pápay

Department of Pharmaceutical Chemistry

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Head of the Department:	Dr. Péter Horváth Ph.D.
Full professor:	Prof. Dr. Krisztina Takács-Novák (tutor)
Emeritus Professor:	Prof. Dr. Béla Noszál
Associate professor:	Dr. Károly Mazák, Dr. Márta Mazák-Kraszni, Dr. László Őrfi, Dr. Gergely Völgyi (tutor)
Assistant lecturer:	Dr. Gergő Tóth

Dr. Szabolcs Béni Ph.D.

Prof. Dr. Anna Blázovics

Dr. Andrea Böszörményi

Prof. Dr. Ágnes Kéry Dr. László Kursinszki

Prof. Dr. Ágnes Kéry

Dr. Eszter Riethmüller

Department of Pharmacodynamics

1089 Budapest, VIII. Nagyvárad tér 4. 21: 1445 Budapest, Pf. 370. Secretariat 22: 459-1500/56217, 210-4411 Email: titkarsag.gyhat@pharma.semmelweis-univ.hu Website: http://semmelweis.hu/gyogyszerhatastan/en/

Head of Department	Dr. Tamás Tábi Ph.D.	💻 tabi.tamas@pharma.semmelweis-univ.hu
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The Department of Pharmacodynamics at the Faculty of Pharmaceutical Sciences was founded in 1979. The Department is responsible for the teaching of three obligatory subjects; the Pharmacology and Toxicology, the Basic Medical Pathophysiology, and the Drug Therapy in the undergraduate pharmacy program. We also theach elective subject and take part in the postgraduate education of pharmacists.

The Department is located on the 8th floor of the Nagyvárad Tér building (NET) of the University, but some of our offices and laboratories can be found on the groundfloor, on the 3rd floor and on the 11th floor.

Pharmacology and toxicology

This page contains informations for 7th and 8th semester pharmacy students of the English Program about *pharmacology and toxicology*. The thought in 112 lessons of lectures and 56 lessons of practice over two semesters on the basis of internationally recognized textbooks. The mechanism of action and pharmacokinetic properties of drugs as well as their clinical indications and adverse effects are emphasized. In the toxicology part in addition to the toxic effect of various drugs, environmental toxicology and the most common acute and chronic poisonings are disscussed.

Requirements: Weekly 4 lessons of lectures and 2 lessons of practice in both semesters (7th and 8th). Exams: Practical mark (2 credit points) based on 2 midterm written exams in both semesters. Oral semifinal exam (4 credit points) at the end of 7th semester. Oral final exam (4 credit points) at the end of 8th semester. Education materials published on the MOODLE site!

Basic medical pathophysiology

This page contains informations for 7th and 8th semester pharmacy students of the English Program about Basic medical pathophysiology. The tought in 56 lessons of lectures over 2 semesters. The program is based on the special demands of pharmacy students. Pathophysiologic basis of the common disorders is discussed to help the understanding the principals of (pharmaco)therapy.

Teacher and tutor: Prof. Kornélia Tekes

Requirements: Weekly 2 lessons of lectures in both semesters (7th and 8th).

Exams: Writen semifinal exam (2 credit points) at the end of 7th semester. Oral final exam (2 credit points) at the end of 8th semester.

Drug therapy

This page contains informations for 9th semester pharmacy students of the English Program about Drug therapy. The subject is tought in 24 lessons and 24 lectures of practices. Evidence based pharmacotherapy of the most common disorders and the adverse effects and interactions of the used drugs are discussed. Information about the over-the-counter medications and treatment of chronic disorders are specially emphasized.

Requirements: Weekly 2 lessons of lectures and 2 lessons of practices in the 9th semester. Exam: semifinal exam (4 credit points) at the end of 9th semester.

MTA-SE Neuropsychopharmacology and Neurochemistry Research Group

Duration of the project: 07.01.2013-06.30.2018

Link: http://semmelweis.hu/gyogyszerhatastan/mta-se-research-group/

The MTA-SE Neuropsychopharmacology and Neurochemistry Research Group supported by the Hungarian Academy of Sciences examines the different interactions of genetic and environmental factors involved in the development of depression using genomic and imaging methods.

NAP-2-SE New Antidepressant Target Research Group

Duration of the project: 2017.12.01.-2021.11.30.

Link: http://semmelweis.hu/gyogyszerhatastan/nap-2-research-groups/nap-2-se-new-antidepressant-target-research-group/ Supported by the National Research, Development and Innovation Office and as a part of the Hungarian Brain Research Program 2.0 the research group tries to identify new drug targets for the treatment of depression using genome-wide geneenvironment interaction analysis (GEWIs).

The project based on the results of the previous NAP-A-SE New Antidepressant Target Research Group.

SE-NAP 2 Genetic Brain Imaging Migraine Research Group

Duration of the project: 12.01.2017. – 11.30.2021.

Link: http://semmelweis.hu/gyogyszerhatastan/nap-2-research-groups/se-nap-2-genetic-brain-imaging-migraine-research-group/ Supported by the National Research, Development and Innovation Office and as a part of the Hungarian Brain Research Program 2.0. the research group is investigating the neural response (brain activity) and genetics of people with migraine, tension headache and in healthy control subjects to identify biomarkers of migraine and new drug targets.

The project based on the results of the previous MTA-SE-NAP B Genetic Brain Imaging Migraine Research Group.

Department of Organic Chemistry

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Semmelweis University

The Department of Organic Chemistry was founded in 1957 and its first head was Prof. Ottó Clauder. The infrastructure of the Department (the students' and tutors' laboratories, the equipment for preparative work and the library) was gradually built up and finally a spectroscopic unit was established. In 1977, Prof. László Szabó took over as head of the Department and after it, in 1997 Dr. Ákos Kocsis was appointed as acting director. After that from 1997 Prof. Péter Mátyus was the head of the Department. Since 2016 to June 2017 Dr. Gábor Krajsovszky was the acting director. The present head of the Department is Dr. István Mándity.

In the following post the aim and structure of the teaching and research activities are summarized.

The aim of the education in organic chemistry is to create an organic chemical basis for subsequent subjects in the curriculum of students at the Faculty of Pharmaceutical Sciences. To attain this goal, besides the main lectures (112 hours in the 3rd and 4th semesters) and parallel laboratory practicals (110 hours) in organic chemistry, the Department offers a choice of a special course to its students (*Drug Syntheses*, and *Named Reaction in Organic Chemistry*), and meanwhile, continuous enlargement

of number of special courses is planned. The available methods based on Computational Chemistry and Molecular Modeling have been involved in the official education material since 1998. The teaching activities at the Department also include the introduction of selected students into research in organic and medicinal chemistry, the direction of diploma work and participation in the postgraduate (Ph.D.) education. The Department takes part in several international research and educational cooperation programmes (such as ERASMUS).

The Department additionally plays an important role in the postgraduate education of pharmacists, as organizer of the Medicinal Chemistry Programme, and offers a two-year post-graduate programme in Drug Research and Development.

The main research fields at the Department were the synthesis and chemical properties of heterocycles, including some natural products. In the last few years, important results have been achieved in the fields of synthesis strategies, including palladium-catalysed cross-coupling reactions of pyridazines and uracils, and mechanistic studies and the synthetic development of certain thermal rearrangement reactions. Another research field was at the Department involves medicinal chemistry with the design and synthesis of antiarrhythmic compounds, ligands of α -adrenoceptors and inhibitors of semicarbazide-sensitive amine-oxidase.

The Department cooperated in both research and education with several academic (e.g. the Semmelweis University Department of Pharmacodynamics, Department of Pharmacology and Pharmacotherapy, Department of Ophthalmology, and II. Department of Internal Medicine; Peter Pazmany Catholic University Faculty of Information Technology, the University of Debrecen, Pécs, and Szeged; the Hungarian Academy of Sciences Chemical Research Centre; the University of Vienna, Palermo, Cagliari, Universidad de CEU San Pablo (Madrid), National University Singapore); and industrial (Richter Gedeon, EGIS, Pannonpharma) organizations.

The main research profiles in the Department are involving primarily – preserving the departmental traditions at least partially – heterocyclic syntheses, preparation of compounds with chloride ion transporter effect, peptide chemistry, chemistry of bifunctional compounds, introduction of processes of "green chemistry" (such as use of solvents carbon dioxide neutral, elaboration of organic chemical reactions taking place in water, application of continuous-flow chemical technologies). The research work is facilitated by separation, spectroscopic and computational methods.
Institute of Clinical Experimental Research – Teaches at the Faculty of Pharmaceutical Sciences

Prof. Dr. Zoltán Benyó M.D, Ph.D., D.Sc.
Prof. Dr. Péter Sándor,
Dr. Tamás Ivanics, Dr. Zsuzsanna Miklós (tutor)

Institute of Digital Health Sciences

1094 Budapest, Ferenc tér 15. floor II.	
Head of Department:	Dr. Miklós Szócska Ph.D.
Professor Emeritus:	Dr. habil Elek Dinya Ph.D.
Associate professor:	Dr. Zoltán Ádám Tamus Ph.D.
Assistant professor lecturer:	Péter Dombai, Dr. Tamás Iváncsy Ph.D., Zoltán Sándor,
	Tamás Tóth, Dr. Gergely Zajzon
Tutor:	Mr. Gergely Marosi

Centre of Physical Education and Sport Sciences

 1107 Budapest, X. Zágrábi út 14.

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 Director:
 Kornélia Várszegi

Sport establishments: Sports Ground and Gymnastic Hall

Budapest, X. Zágrábi út 14. Phone/fax: 262-5529, 264-1408

Fencing Hall

Budapest, V. Semmelweis u. 2. **2**: 267-0377

National Ambulance Service

1134 Budapest, XIII. Róbert Károly krt. 77. 2: 350-3737, 350-0388; 350-6931

Director-General:

Dr. Gábor Gőbl M. D.

Dr. László Gorove (tutor), Dr. Judit Schönborn (tutor), Dr. István Hornyák (tutor), Dr. Imre Engelbrecht (tutor)

Division of Foreign Languages and Communication – Faculty of Health Sciences

Katalin Zöldi Kovács Ph.D. Alexandra Bakó

Language Communication Center

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Central Library

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General Director:	Péter Szluka
Science secretary:	Zsuzsa Margittai

Directorate for Safety Technology - Department for Disaster Management and Civil Protection

1083 Budapest, VIII. Illés u. 15. 213-7961; ext 60601, 60579, 60594

Director:	István Mészáros
Supervisor:	Pál Kocsik M.Sc.
Registrar:	Girusné Erzsébet Lovász

FACULTY OF MEDICINE BASIC MODULE



Faculty of Medicine 1st year

STUDY PROGRAMME

First year in the 2020/2021 academic year

1st Semester

	hours				
course name	lecture (h/week)	pratice (h/week)	credit	prerequisite(s)	examination
Medical Chemistry	3	2	5	-	semi-final
Cell Science	1	2	3	-	semi-final
Macroscopic Anatomy I.	1	6	7	-	semi-final
Medical Biophysics I.	1,5	2,5	4	-	semi-final
Medical Sociology – Health Care (for 1st half of the class)	1	1	2	-	semi-final
Medical Communication	1	1	2	-	semi-final
Medical Terminology (Latin)	28 hours prac	ctice/ semester	2	-	pract. mark
First Aid	0,5	1	1	-	pract. mark
Hungarian Medical Terminology I.	0	4	4	-	pract. mark
Physical Education (PE) I.	0	1	0	-	signature

2nd Semester

	hours					
course name	lecture (h/week)	pratice (h/week)	credit	prerequisite(s)	examination	
Medical Biochemistry I.	3	2	5	Medical Chemistry	semi-final	
Macroscopic Anatomy II.	2	7	7 9 Macroscopic Anatomy I.		final	
Microscopic Anatomy and Embryology I.	2	3	5	Cell Science	semi-final	
Medical Biophysics II.	1,5	2,5	4	Medical Biophysics I.	final	
Medical Sociology – Health Care (for2nd half of the class)*	1	1	2	-	semi-final	
Introduction to Patient Care	0	2	2	Medical Sociology – Health Care*, Medical Communication	semi-final	
Hungarian Medical Terminology II.	0	4	2	Hungarian Medical Terminology I.	pract. mark	
PE II.	0	1	0	PE I.	signature	
Introduction to Medical Informatics (obligatory elective subject)	0	1	1	-	pract. mark	
Summer Practice - Nursing	1 m	onth	1	Medical Communication	pract. mark	

*Simultaneous taking of the courses.

LIST OF TEXTBOOKS (The list may change!)

- 1 McMinn and Abrahams' Clinical Atlas of Human Anatomy with STUDENT CONSULT Online Access, 7th Edition By Abrahams, Spratt, Loukas & van Schoor ISBN-13: 9780723436973 Publication Date: 22/03/2013
- 2 Sobotta Atlas of Human Anatomy (Package), 15th English ed. Musculoskeletal system, internal organs, head, neck, neuroanatomy, By Waschke & Paulsen, ISBN-13: 9780702052507 Publication Date: 25/06/2013
- 3 Gray's Anatomy for students with STUDENT CONSULT Online Access, 3rd Edition by R. Drake, A. W. Vogl, A. Mitchel Elsevier; 03/04/2014; ISBN 9780702051319
- 4 C.Rosse-P.Gaddum-Rosse: Hollinshead's Textbook of Anatomy. Lippincott-Raven. 4th ed. 1997. ISBN 0-397-51256-2
- 5 Stevens & Lowe's Human Histology, Elsevier, 4th ed. 2015 ISBN 978-0-723435020
- 6 Wheater's Functional Histology, A Text and Colour Atlas, 6th Edition by B Young, G O'Dowd and P Woodford Churchill Livingstone, Edinburgh, 2013, ISBN 9780702047473
- 7 Histology: A Text and Atlas: With Correlated Cell and Molecular Biology; 7th Edition by MH Ross and W Pawlina; Wolters Kluwer 2015, ISBN 9781451187427
- 8 Langmann's Medical Embryology, 13th Edition by TW Sadler, Wolters Kluwer 2014, ISBN 9781469897806
- 9 Ebbing, D.D.-Grammon, S.D: General Chemistry. 9th ed. 2009. Houghton Mifflin Co. Boston. ISBN 10:0-618-85478-6 / 13:978-0-618-85478-7
- 10 Harper's Illustrated Biochemistry, 30th edition, Lange, ISBN-10: 0071825347
- 11 Seminar manuals: published on homepage: semmelweis.hu/biokemia/
- 12 Tóth: Concise Inorganic Chemistry for Medical Students. Bp. Semmelweis Kiadó
- 13 Laboratory Manual; Medical Chemistry and Biochemistry. Bp. Semmelweis Kiadó
- 14 Bauer-Csermely-Hrabák: Principles of Organic Chemistry (ed. A. Hrabák) Bp. Semmelweis Kiadó
- 15 Hrabák: Selected Collection of Chemical Calculations and Biochemical Exercises. Bp. Semmelweis Kiadó
- 16 Garzó-Müllner-Sasvári: Bioorganic compounds. Bp. Semmelweis Kiadó
- 17 Damjanovich Fidy Szöllősi (eds) Medical Biophysics, Medicine, Budapest, 2009. ISBN 978-963-226-127-0
- 18 Miklós Kellermayer: Medical Biophysics Practices. Semmelweis Publishers, Budapest, 2015. ISBN 978-963-331-349-7.
- 19 1st semester: Gyöngyösi L. & Hetesy B., 2012. Jó reggelt! Bp. Semmelweis Egyetem Egészségtudományi Kar (available at Vas u. 17. Bookshop)
- 20 2nd-3rd semesters: Gyöngyösi L. & Hetesy B., 2011. Jó napot kívánok! Bp. Semmelweis Egyetem Egészségtudományi Kar (available at Vas u. 17. Bookshop)
- 21 Alberts et al.: Essential Cell Biology. Garland Science/Taylor & Francis Group Publ. 2013. (4th edition, ISBN: 9780815344544)
- 22 Anne-Marie Barry, Chris Yuill: Understanding the Sociology of Health: An Introduction. Sage, London, 2016.

Recommended textbooks:

- 1 Gray's Anatomy. The Anatomical Basis of Clinical Practice; 41st edition by S.Standring: 2015 ISBN : 9780702052309
- 2 RMH McMinn: Last's Anatomy, Regional and Applied. Churchill Livingstone, Edinburgh 1990. ISBN 0-443-03484-4
- 3 A.L. Kierszenbaum Histology and Cell Biology: An Introduction to Pathology 3rd Edition, Paperback with STUDENT CONSULT Online Access and E-Book ISBN: 9780323085885 Copyright: 2012
- 4 Junqueira's Basic Histology: Text and Atlas; 13th Edition by Anthony Mescher, New York, McGraw-Hill Medical, 01/03/2013 ISBN13 9780071780339
- 5 W.Kahle-H.Leonhardt-W.Platzer: Color Atlas and Textbook of Human Anatomy (in 3 volumes) 3rd revised ed. Thieme Inc. New York, 1986.
- 6 Human Anatomy, Color Atlas and Textbook, 6th Edition by J Gosling, P Harris, J Humpherson, I Whitmore and P Willan; Elsevier, 2016 , ISBN 9780723438274
- 7 Stryer: Biochemistry. 4th ed. 1995. ISBN 0-7167-2009-4
- 8 Zumdahl: Chemical Principles. 3rd ed. 1998. Houghton-Mifflin Co. Boston. ISBN 0-395-83995-5
- 9 First Aid Manual: The Authorised Manual of St. John Ambulance, St. Andrew's Ambulance Association and the British Red Cross by the British Red Cross Society published on 21/03/2011 by Dorling Kindersley Publishers Ltd ISBN 9781405362146
- 10 Cooper-Hausman: The Cell: A Molecular Approach, 5th Edition, Sinauer Associates, 2006, ISBN 0-87893-300-X
- 11 Graham Scambler: Sociology as Applied to Medicine. 6th edition. 2008, Saunders Elsevier, London
- 12 Belák E. Medical Terminology for Beginners (earlier title: Medical Latin), Bp. Semmelweis Kiadó

MACROSCOPIC ANATOMY I.

Department of Anatomy, Histology & Embryology

Course Director: Dr. Andrea D. Székely Dr. Sándor Katz

Credit value : 7 Number of lessons per week: 7 lectures: 1 practical course: 6 seminars: 0

Subject type: compulsory course Subject code: AOKANT667_1A Name of the course leader: Dr. Szél Ágoston (full professor)

Objectives of the subject, its place in the medical curriculum:

Demonstration of the macroscopical composition of the human body specifically to provide the future clinicians/medical doctors with a valid body of information with relevance to clinically significant morphological structures. Teaching is done in the form of lectures and dissection classes.

Place where the subject is taught (address of the auditorium, seminar room, etc.):

Semmelweis University, Department of Anatomy, Histology and Embryology Budapest 1094, Tűzoltó utca 58.

Successful completion of the subject results in the acquisition of the following competencies:

Understanding the macroscopical composition of the human body together with the position and topographical relation of organs. Clear understanding of structure and function. Ability to perform basic preparatory tasks during dissection. Identification of general directions/ landmarks on the cadaver together with the recognition of significant organs/body parts. Acquiring knowledge of surface features and/or sectional anatomy forming basis for clinical diagnostics (palpation, auscultation, etc.) and the use of radiological imaging methods.

Course prerequisites:

none (subject is offered in the 1st semester)

Number of students required for the course (minimum, maximum) and method of selecting students):

obligatory for all registered students, on the basis of registration via the NEPTUN system

How to apply for the course:

Via the NEPTUN system.

Detailed curriculum:

List of lectures

1. week:	General introduction, terminology
2. week:	Joints and movements of the shoulder and shoulder girdle,
3. week:	Joints and movements of the elbow
4. week:	Joints and movements of the hand
5. week:	Pelvis. Joints and movements of the hip
6. week:	Joints and movements of the knee
7. week :	Joints and movements of the foot
8. week:	Composition of thorax, diaphragm
9. week:	Composition of the abdominal wall. Inguinal and femoral canals
10. week:	Composition and movements of the vertebral column
11. week:	General composition of the skull. Sphenoid, ethmoid. Cavities of the viscerocranium
12. week:	Temporomandibular joint, muscles of mastication. Neck muscles and movements, cervical fasciae
13. week:	Oral cavity, palate, faucial isthmus, pharynx
14. week:	Nasal cavity, paranasal sinuses, larynx

Topics for the dissection classes

1-4. weeks:	Bones, joints and muscles of the upper limb. Dissection of the upper limb.
5-7. weeks:	Bones, joints and muscles of the lower limb. Dissection of the lower limb. Cadaver dissection
8-10. weeks:	Cadaver dissection: limbs, superficial layers of te trunk, inspection of the structure of the body wall on prosected specimens (torso).
11-14. weeks:	Inspection of the bony skull together with head and neck prosections. Dissection of head and neck regions.

Other subjects concerning the border issues of the given subject (both compulsory and optional courses). Possible overlaps of themes: Microscopic Anatomy and Embryology I - II.

Special study work required to successfully complete the course:

All students are required to *demonstrate their knowledge and motivated practical work* by the completion and demonstration of a dissected specimen or region once during the two semesters of the Academic year.

Requirements for participation in classes and the possibility to make up for absences:

Active participation in practical lessons is obligatory. Students should attend at least 75% of the scheduled hours, absences therefore are limited in **25%**. Attendance will be recorded in the dissection room classes.

Methods to assess knowledge acquisition during term time:

During the semester, both practical and theoretical knowledge will regularly be evaluated. Attendance is obligatory at the two mid-term tests (held approximately on weeks 7 and 12). Anatomy mid-terms may be oral or written (computer based) exams. Students absent from the mid-term test should reattend at one of the two further occasions or their semester will not be accepted. The time and topics of midterm tests will be announced in the departmental homepage at the beginning of the semester (http://semmelweis.hu/anatomia).

All students are required to *demonstrate their knowledge and motivated practical work* by the completion and demonstration of a dissected specimen or region once during the two semesters of the Academic year.

Requirements for signature:

Active participation in at least 75% of dissection room sessions, including the midterm tests (irrespective of the result) is obligatory for every student.

Type of examination:

Semifinal (written and oral) examination, topics: subject matter of the semester.

The examination starts with a written pretest (e-learning module "Moodle") to be followed by an oral test in Macroscopic Anatomy (identification of structures on true anatomical specimens) including relevent theoretical questions from the subject matter of the semester. Examiners are delegated by the Course Director with the consent of the Head of Department.

Requirements of the examination:

During the semifinal examination the knowledge of students will be tested. Semifinal examinations consist of written (theoretical) and oral (practical) parts

Topic list for the semifinal examination:

Macroscopic Anatomy I.

Musculoskeletal Anatomy

- · General osteology, classification of bones
- Continuous connections of bones. Classification of joints; components, movements and mechanisms
- General myology
- · Structure of the vertebral column, the gross anatomy of the muscles acting upon it
- Movements and muscles of the head&neck (atlantooccipital and atlantoaxial joints)
- Joints of the shoulder girdle, the gross anatomy of the muscles acting upon them
- Shoulder joint, the gross anatomy of the muscles acting upon it
- Axillary fossa, quadrangular and triangular spaces
- Muscle compartments and cross section of the arm
- Elbow joint, the gross anatomy of the muscles acting upon it. Cubital fossa
- Muscles and cross section of the forearm
- Structure and movements of the radiocarpal joint, gross anatomy of the muscles acting upon it
- · Osteofibrous spaces and muscle compartments of the hand, tendinous sheaths
- Carpometacarpal, metacarpophalangeal and interphalangeal joints of the thumb and fingers, the gross anatomy of the muscles concerned with the movements
- · Osteofibrous structure of the thoracic cage (bones, joints, ligaments, movements)
- Thoracic muscles
- Diaphragm
- Muscles and spaces of the abdominal wall, rectus sheath
- Composition of the pelvis (bones, ligaments and membranes)
- Muscles of the buttock, the posterior abdominal wall and the pelvis (external and internal muscles of the hip)
- Inguinal canal, femoral canal
- Subinguinal hiatus, vascular and muscular compartments; adductor canal, femoral canal
- · Hip joint and the gross anatomy of the muscles concerned with the movements
- · Osteofibrous compartments, muscles and cross section of the thigh
- Knee joint and the gross anatomy of the muscles concerned with the movements. Popliteal fossa
- Osteofibrous compartments, muscles and the cross section of the leg
- Ankle joint together with the gross anatomy of the muscles acting upon it
- Subtalar and talocalcaneonavicular joints, the muscles acting upon them
- Osteofibrous compartments and structure of the foot, arches of the foot
- Bones, spaces and connections of the skull, external and internal skull bases

- Neurocranium, components and cavities (anterior, middle and posterior cranial fossae)
- Viscerocranium, components and cavities (walls and connections of the nasal cavity, orbit, oral cavity, pterygopalatine and infratemporal fossae)
- Temporomandibular joint and the gross anatomy of the muscles of mastication
- Superficial muscles of the neck, muscle triangles
- · Deep muscles of the neck and the laminae of the cervical fascia
- Muscles of facial expression

Internal organs of the head & neck region

- Oral cavity (divisions, boundaries)
- Floor of mouth, sulcus lateralis linguae
- Macroscopy of the tongue
- Types and morphology of teeth, blood supply and innervation
- Tooth development
- Salivary glands together with topography
- Faucial isthmus, palate. Tonsils
- Pharynx and parapharyngeal spaces
- Blood supply and innervation of pharynx
- Pharyngeal muscles
- Nose, nasal cavity (boundaries, nasal meatus, vessels)
- Paranasal sinuses (connections, vessels)
- Larynx (shape, position, muscles, vessels, nerves)
- Skeleton and joints of larynx together with the fibroelastic membranes, mucous membrane
- Common and external carotid arteries and their branches. Maxillary artery and its branches
- Venous drainage of face and neck
- Lymph nodes and lymphatic vessels of the head&neck
- Axillary artery and branches. Arteries and veins of the arm, forearm, and hand
- Arteries and veins of the lower limb
- · Lymph nodes and lymphatic drainage of the upper and lower limbs

Further topics with relevence to the musculoskeletal system

- Lymphatic drainage of the thoracic wall including the mamma
- Dorsal branches of the spinal nerves, intercostal nerves
- Cervical plexus, brachial plexus, lumbar plexus, sacral plexus.
- Innervation of limbs
- Innervation of the trunk
- Cutaneous innervation

Method and type of evaluation:

Semifinal examinations are composed of written theoretical and oral practical parts. The written theoretical examination is done using an e-learning module while the practical examination is conducted in the dissection room on real prosected cadaver specimen.

Examiners are delegated by the Course Director with the consent of the Head of Department.

Students are given separate marks for each part of the examination. Unsuccessful partial examinations result in the failure of the semifinal examination. When failing at the practical part, the written test will not have to be repeated in case the result was a 4 or a 5 only. Upon the termination of the examination the Chairman of the Examination Committee composes the final mark from the partial marks earned in the written and practical parts.

How to register for the examination?

Via the NEPTUN system.

Possibilities for exam retake:

According the Study and Examination Policy

Printed, electronic and online notes, textbooks, guides and literature (URL address for online material) to aid the acquisition of the material:

Recommended textbooks

- 1. Sobotta Atlas of Human Anatomy, 15th English ed. Musculoskeletal system, internal organs, head, neck, neuroanatomy, By Waschke & Paulsen, ISBN-13: 9780702052507 2013
- 2. Gray's Anatomy for students with STUDENT CONSULT Online Access, 3rd Edition by R. Drake, A. W. Vogl, A. Mitchel, Elsevier; 2014; ISBN 9780702051319
- 3. THIEME Atlas of Anatomy, General Anatomy and Musculoskeletal System, 2014 by Schuenke, ISBN: 9781604069228
- 4. THIEME Atlas of Anatomy, Head, Neck and Neuroanatomy, 2016 by Schuenke, ISBN: 9781626231207
- 5. THIEME Atlas of Anatomy, Internal Organs, 2016 by Schuenke, ISBN: 9781626231665
- 6. McMinn and Abrahams' Clinical Atlas of Human Anatomy with STUDENT CONSULT Online Access, 7th Edition By Abrahams, Spratt, Loukas & van Schoor ISBN-13: 9780723436973, 2013
- 7. Netter: Atlas of Human Anatomy, Including Student Consult Interactive Ancillaries and Guides, 6th Edition, 2014.
- 8. Human Anatomy, Color Atlas and Textbook, 6th Edition by J Gosling, P Harris, J Humpherson, I Whitmore and P Willan; ISBN 9780723438274 Elsevier, 2016.
- 9. Functional Anatomy, Histology and Embryology for medical and dental students by M. Réthelyi and J. Szentágothai, Medicina, 2018.
- 10. Gray's Anatomy. The Anatomical Basis of Clinical Practice; 41st edition by S. Standring: 2015 ISBN : 9780702052309
- 11. Netter's Clinical Anatomy with Online Access, 3rd Edition, by J. Hansen, 2014, eBook ISBN: 9781455770632 eBook ISBN: 9780323312899 014
- 12. Anatomy, A Photographic Atlas, 8th Edition by Rohen, Yokochi; Wolters Kluwer, 2016, ISBN: 978-1-4963-0870-2
- 13. Bräuer: Sobotta Flashcards (Muscles; Bones, Ligaments, and Joints) URBFI, 2013.
- 14. RMH McMinn: Last's Anatomy, Regional and Applied. Churchill Livingstone, Edinburgh 1990. ISBN 0-443-03484-4
- 15. Regional Anatomy, by T Tömböl, Medicina 2008, ISBN 963 242 186 8
- 16. Sectional Anatomy Workbook, by A. Nemeskéri; István Apáthy's Foundation, 2001.
- 17. Neuroanatomy An Illustrated Colour Text, 4th Edition by Crossman & Neary Publication Date: 13/04/2010 ISBN-13: 9780702030864

Further study aids:

To be downloaded from the homepage of the Department of Anatomy, Histology and Embryology (http://semmelweis.hu/anatomia) or from Knowledgebase on the Library homepage: (https://lib.semmelweis.hu/knowledge_base).

MACROSCOPIC ANATOMY II.

Credit value: 9

Number of lessons per week: 9 lecture: 2 practical course: 7 seminar: 0 Type of the course: compulsory course

Subject code: AOKANT667_2A Name of the course leader: Dr. Szél Ágoston

Objectives of the subject, its place in the medical curriculum:

Demonstration of the macroscopical composition of the human body specifically to provide the future clinicians/medical doctors with a valid body of information with relevance to clinically significant morphological structures. Teaching is done in the form of lectures and dissection classes.

Place where the subject is taught (address of the auditorium, seminar room, etc.):

Semmelweis University, Department of Anatomy, Histology and Embryology Budapest 1094, Tűzoltó utca 58.

Successful completion of the subject results in the acquisition of the following competencies:

Understanding the macroscopical composition of the human body together with the position and topographical relation of organs. Clear understanding of structure and function. Ability to perform basic preparatory tasks during dissection. Identification of general directions/ landmarks on the cadaver together with the recognition of significant organs/body parts. Acquiring knowledge of surface features and/or sectional anatomy forming basis for clinical diagnostics (palpation, auscultation, etc.) and the use of radiological imaging methods.

Course prerequisites:

Macroscopic Anatomy I. Number of students required for the course (minimum, maximum) and method of selecting students: Obligatory for all registered students, on the basis of registration via the NEPTUN system

How to apply for the course:

Via the NEPTUN system.

Detailed curriculum:

List of lectures

1. week:	Thoracic cavity, mediastinum. Morphology of the esophagus, trachea and the lung. Pleura. Chambers of the heart, external features. Structure of heart wall, valves, fibrous skeleton
2. week:	Cardiac vessels, conducting system. Surface projection. Auscultation points. Pericardium. Stomach and small intestines (duodenum, jejunum, ileum)
3. week:	Liver, gall bladder, pancreas, spleen. Large intestine, rectum
4. week:	Peritoneum, peritoneal recesses, peritoneal relations of abdominal organs. Morphology of the kidney, capsules of the kidney, ureter, urinary bladder.
5. week:	Organs, vessels and nerves of the retroperitoneum Morphology and coats of the testicle
6. week:	Morphology of the epididymis, spermatic cord, seminal vesicle and prostate Morphology of penis and male urethra. Male perineum

7. week:	Ovary, Fallopian tube and uterus Vagina, female perineum, external genital organs
8. week:	Blood supply and lymphatic drainage of the abdomen and lesser pelvis Introduction to the study of the nervous system. Meninges, hemispheres, CSF, lateral ventricles
9. week:	Diencephalon, 3rd ventricle. Brain stem, cerebellum, 4th ventricle
10. week:	Spinal cord, spinal segment. Spinal nerves, nerve plexuses Intracranial topography
11. week:	Cranial nerve nuclei Olfactory nerve (CN 1), optic nerve (CN 2). Orbit
12. week:	Extraocular muscles and eye movements. Protective and lacrimal apparatus of the eye Oculomotor nerve (CN 3), trochlear nerve (CN 4), abducent nerve (CN 6)
13. week:	Trigeminal nerve (CN 5) Facial nerve (CN 7)
14. week:	Glossopharyngeal nerve (CN 9), vagus nerve (CN 10), accessory nerve (CN 11), hypoglossal nerve (CN 12) Sympathetic and parasympathetic nervous systems

Topics of dissection classes

1-3. weeks:	Opening of the thorax, dissection of the thoracic cavity.
4-7. weeks:	Opening of the abdominal cavity, dissection /inspection of the abdominal organs
8-9. weeks:	Dissection/ inspection of the perineum together with organs of the lesser pelvis.
10-12. weeks:	Dissection/ inspection of the brain and spinal cord.
13-14. weeks:	Dissection of head and neck regions, inspection of prosections

Other subjects concerning the border issues of the given subject (both compulsory and optional courses). Possible overlaps of themes: Microscopic Anatomy and Embryology I - II..

Special study work required to successfully complete the course:

All students are required to *demonstrate their knowledge and motivated practical work* by the completion and demonstration of a dissected specimen or region once during the two semesters of the Academic year.

Requirements for participation in classes and the possibility to make up for absences:

Active participation in practical lessons is obligatory. Students should attend at least 75% of the scheduled hours, absences therefore are limited in **25%**. Attendance will be recorded in the dissection room classes.

Methods to assess knowledge acquisition during term time:

During the semester, both practical and theoretical knowledge will regularly be evaluated. Attendance is obligatory at the two mid-term tests (held approximately on weeks 7 and 12). Anatomy mid-terms may be oral or written (computer based) exams. Students absent from the mid-term test should reattend at one of the two further occasions or their semester will not be accepted. The time and topics of midterm tests will be announced in the departmental homepage at the beginning of the semester (http://semmelweis.hu/anatomia).

All students are required to *demonstrate their knowledge and motivated practical work* by the completion and demonstration of a dissected specimen or region once during the two semesters of the Academic year.

Requirements for signature:

Active participation in at least 75% of dissection room sessions, including the midterm tests (irrespective of the result) is obligatory for every student. Active participation in dissection room sessions is obligatory for every student. Students should attend at least 75% of the scheduled hours to gain a signature proving the validity of the semester. Absences are therefore limited in **25%**. Attendance will be recorded in the dissection room classes.

Type of examination:

Final (written and oral) examination, topics: subject matter of the subjects Macroscopic Anatomy I-II. Final examinations consist of written (theoretical) and oral (practical) parts

The examination starts with a written pretest (e-learning module "Moodle") to be followed by an oral test in Macroscopic Anatomy (identification of structures on true anatomical specimens) including relevent theoretical questions from the subject matter of the semester. Examiners are delegated by the Course Director with the consent of the Head of Department.

Requirements of the examination:

During the final examination the knowledge of students will be tested. Final examinations are composed of written and oral parts including practical and theoretical questions.

Topic list for the semifinal examination:

Macroscopic Anatomy I.

(see there)

Macroscopic Anatomy II.

- Circulatory system
- Shape, external features of heart
- Chambers of heart
- Endocardium, ostia, valves of heart
- Skeleton of heart, anuli fibrosi
- Structure of heart wall
- · Pulse generating and conducting system of heart
- Pericardium
- Position and surface projections of heart
- Percussion and auscultation (area of cardiac dullness, heart sounds)
- · Radiology of heart
- Pulmonary circulation
- · Ascending aorta, arch of aorta and its branches
- · Subclavian artery and its branches
- Thoracic aorta and its branches
- Abdominal aorta and its branches
- Celiac trunk and its branches
- Superior mesenteric artery and its branches
- Inferior mesenteric artery and its branches
- External and internal iliac arteries and their branches
- Internal pudendal artery and its branches
- Superior vena cava and its tributaries
- Inferior vena cava and its tributaries
- · Azygos and hemiazygos veins and their tributaries
- Portal vein and its tributaries, portocaval anastomoses
- Lymphatic drainage of the abdominal and pelvic organs
- Thoracic duct, right lymphatic trunk

Digestive system

- Description and topography of the esophagus
- Stomach (shape, position, parts, blood supply and innervation). Peritoneal relations
- Duodenum (shape, position, divisions, vessels)
- Jejunum-ileum (shape, position, vessels)
- Large intestine (shape, position, vessels)
- Rectum, anal canal (shape, position, vessels)
- Liver (shape, position, peritoneal relations, vessels)
- Gall bladder and biliary passages (anatomy)
- Pancreas (shape, position, vessels)
- · Peritoneum, greater and lesser omentum, mesentery, omental bursa

Respiratory system and thoracic relations

- Trachea and bronchial tree
- Lung (shape, parts, surfaces, hilum)
- Lung (position, topography, vessels, nerves)
- Surface projection of pleura and lung
- Pleura, pleural cavity
- Mediastinum (divisions and content)

Urogenital system

- Kidney (shape, position, hilum, sinus, capsules, vascular architecture)
- Renal pelvis and calyces. Ureter
- Urinary bladder (shape, position, muscles, vessels)
- Female urethra
- Male urethra, bulbourethral gland
- Testis (shape, position, vessels). Scrotum, coats of testis
- Epididymis, vas (ductus) deferens, spermatic cord
- Seminal vesicle, prostate
- Penis (shape, position, mechanism of erection, vessels, nerves)
- Pelvic floor, male perineum (connective tissue spaces)
- Hernia canals (inguinal and femoral)
- Ovary (shape, position, vessels)
- Uterine tube (shape, position, vessels)
- Uterus (shape, parts, position, supporting structures, vessels) Broad ligament
- Vagina, female perineum (connective tissue spaces)
- External female genital organs (mons pubis, labia, vestibule of vagina, greater vestibular gland, vessels)

Macroscopy of the nervous system

- Intracranial topography Dura mater, dural sinuses
- Arachnoid mater, pia mater, cisterns, CSF circulation
- · Description and meninges of the spinal cord
- Brain stem (medulla oblongata, pons, midbrain)
- Cerebellum
- Diencephalon (parts, blood supply). Thalamus, hypothalamus
- Lateral ventricles, III. ventricle, IV. ventricle
- Hemispheres
- Internal carotid artery (course, parts and branches)
- Vertebral artery (course and branches)
- Circle of Willis
- Veins of the brain
- Cranial nerve nuclei, macroscopy of cranial nerves together with the brain, dural and skull exits
- Branches of cranial nerves (CN 3, CN 4, CN 5, CN 6, CN 7, CN 9, CN 10, CN 11, CN 12)

- General composition of the autonomic nervous system
- Sympathetic nervous system (cranial, cervical, thoracic and lumbar parts)
- Sympathetic trunk
- Parasympathetic system (cranial and sacral parts)
- Topography of the orbit. Extraocular muscles. Eye movements.
- Eyelids, conjunctiva, fasciae of the orbit, lacrimal apparatus

Method and type of evaluation:

Final examinations are composed of written theoretical and oral practical parts. The written theoretical examination is done using an e-learning module while the practical examination is conducted in the dissection room on real prosected cadaver specimen.

Examiners are delegated by the Course Director with the consent of the Head of Department.

Students are given separate marks for each part of the examination. Unsuccessful partial examinations result in the failure of the final examination. When failing at the practical part, the written test will not have to be repeated in case the result was a 4 or a 5 only. Upon the termination of the examination the Chairman of the Examination Committee composes the final mark from the partial marks earned in the written and practical parts.

How to register for the examination?

Via the NEPTUN system.

Possibilities for exam retake:

According the Study and Examination Policy

Printed, electronic and online notes, textbooks, guides and literature (URL address for online material) to aid the acquisition of the material:

Recommended textbooks

- 1. Sobotta Atlas of Human Anatomy, 15th English ed. Musculoskeletal system, internal organs, head, neck, neuroanatomy, By Waschke & Paulsen, ISBN-13: 9780702052507 2013
- 2. Gray's Anatomy for students with STUDENT CONSULT Online Access, 3rd Edition by R. Drake, A. W. Vogl, A. Mitchel, Elsevier; 2014; ISBN 9780702051319
- 3. THIEME Atlas of Anatomy, General Anatomy and Musculoskeletal System, 2014 by Schuenke, ISBN: 9781604069228
- 4. THIEME Atlas of Anatomy, Head, Neck and Neuroanatomy, 2016 by Schuenke, ISBN: 9781626231207
- 5. THIEME Atlas of Anatomy, Internal Organs, 2016 by Schuenke, ISBN: 9781626231665
- 6. McMinn and Abrahams' Clinical Atlas of Human Anatomy with STUDENT CONSULT Online Access, 7th Edition By Abrahams, Spratt, Loukas & van Schoor ISBN-13: 9780723436973, 2013
- 7. Netter: Atlas of Human Anatomy, Including Student Consult Interactive Ancillaries and Guides, 6th Edition, 2014.
- 8. Human Anatomy, Color Atlas and Textbook, 6th Edition by J Gosling, P Harris, J Humpherson, I Whitmore and P Willan; ISBN 9780723438274 Elsevier, 2016.
- 9. Functional Anatomy, Histology and Embryology for medical and dental students by M. Réthelyi and J. Szentágothai, Medicina, 2018.
- 10. Gray's Anatomy. The Anatomical Basis of Clinical Practice; 41st edition by S. Standring: 2015 ISBN : 9780702052309
- 11. Netter's Clinical Anatomy with Online Access, 3rd Edition, by J. Hansen, 2014, eBook ISBN: 9781455770632 eBook ISBN: 9780323312899 014
- 12. Anatomy, A Photographic Atlas, 8th Edition by Rohen, Yokochi; Wolters Kluwer, 2016, ISBN: 978-1-4963-0870-2
- 13. Bräuer: Sobotta Flashcards (Muscles; Bones, Ligaments, and Joints) URBFI, 2013.
- 14. RMH McMinn: Last's Anatomy, Regional and Applied. Churchill Livingstone, Edinburgh 1990. ISBN 0-443-03484-4
- 15. Regional Anatomy, by T Tömböl, Medicina 2008, ISBN 963 242 186 8
- 16. Sectional Anatomy Workbook, by A. Nemeskéri; István Apáthy's Foundation, 2001.
- 17. Neuroanatomy An Illustrated Colour Text, 4th Edition by Crossman & Neary Publication Date: 13/04/2010 ISBN-13: 97807020308

Further study aids:

To be downloaded from the homepage of the Department of Anatomy, Histology and Embryology (http://semmelweis.hu/anatomia) or from Knowledgebase on the Library homepage: (https://lib.semmelweis.hu/knowledge_base).

MICROSCOPIC ANATOMY AND EMBRYOLOGY I.

Department of Anatomy, Histology & Embryology

Course Director: Dr. Andrea D. Székely Dr. Sándor Katz

Credit value: 5

Number of lessons per week: 5 lectures: 2 practical course: 3 seminars: 0

Type of the course: compulsory course

Subject code: AOKANT674_1A Name of the course leader: Dr. Szél Ágoston (full professor)

Objectives of the subject, its place in the medical curriculum:

Demonstration of the fine structure of cells and tissues composing the organs of the human body specifically to provide the future clinicians/ medical doctors with a valid body of information describing the microscopical elements of clinically significant morphological structures (including cell biology, general histology and the histology of organs).

General embryology demonstrates the steps of the formation of a new human being together with the stages of intrauterine development, including the clinically relevant aspects of the development of organ systems. Teaching is done in the form of lectures and histology laboratory classes

Place where the subject is taught (address of the auditorium, seminar room, etc.):

Semmelweis University, Department of Anatomy, Histology and Embryology Budapest 1094, Tűzoltó utca 58.

Successful completion of the subject results in the acquisition of the following competencies:

Understanding the microscopical composition of the human body together with the understanding of human development in order to draw parallels with macroscopical anatomy. Clear understanding of histological structure and function. Ability to identify basic structural elements within the tissue specimen. Identification of general directions/landmarks within digitized tissue slides.

Course prerequisites:

Cell sciences, cell biology

Number of students required for the course (minimum, maximum) and method of selecting students):

obligatory for all registered students, on the basis of registration via the NEPTUN system How to apply for the course: Via the NEPTUN system.

Detailed curriculum:

List of lectures

1. week:	Epithelial tissues, cell contacts, intercellular connections Glandular epithelium
2. week:	Connective tissue cells and fibres. Extracellular matrix Blood. Corpuscular elements. Red bone marrow, erythropoiesis, Formation of leukocytes
3. week:	Supporting tissues (cartilage, bone) Ossification, bone remodelling
4. week:	Muscle tissues Histology of vessels
5. week:	Histology of the tongue and teeth Histology of the airways
6 . week:	Gametes, fertilization, cleavage, blastulation Implantation. Placenta, placental circulation, fetal membranes
7. week:	Histology of the esophagus and stomach Microscopical anatomy of the small and large intestines
8. week:	Molecular basis for gastrulation. Formation, differentiation and derivatives of the germinal layers Neurulation, folding of the embryo. Body axes, left-right lateralization, asymmety
9. week:	Histology of the liver and pancreas Pharyngeal arches, development of the foregut
10. week:	Development of the face, malformations Development of the midgut and hindgut
11. week:	Miscroscopical anatomy of urinary organs Development of the urinary system
12. week:	Histology of the male and female genital systems Development of the genital system
13. week:	Development of the peritoneum (peritoneal relations) Development of the heart
14. week:	Development of arteries and veins Development of the respiratory system. Fetal circulation

Histology laboratories

1. week:	Introduction, epithelial tissues
2. week:	Connective tissue cells and fibres. Blood
3. week:	Cartilage, bone
4. week:	Smooth,skeletal and cardiac muscle types
5. week:	1. Midterm. Lip, tongue, lingual papillae. Tooth bud
6. week:	Larynx, trachea, lung
7. week:	Esophagus, stomach

8. week:	Duodenum, jejunum, ileum, colon
9. week:	Liver, gall bladder, pancreas
10. week:	Urinary system
11. week:	Male genital system I.
12. week:	Male genital system II.
13. week:	2. Midterm. Female genital system
14. week:	Embryology consultation

Other subjects concerning the border issues of the given subject (both compulsory and optional courses). Possible overlaps of themes:

Macroscopic Anatomy I - II. Cell sciences, cell biology Certain chapters of Biochemistry and/or Physiology

Special study work required to successfully complete the course:

none

Requirements for participation in classes and the possibility to make up for absences:

Active participation in histology laboratory classes is obligatory for every student. Students should attend at least 75% of the scheduled hours to gain a signature proving the validity of the semester. Absences are therefore limited in **25%**. Attendance will be recorded in the histology laboratory classes.

Methods to assess knowledge acquisition during term time:

The knowledge of students will be checked in midterm tests (held prospectively in weeks 5 and 13). written (electronic) test. Attendance is obligatory at the two midterm tests. Students absent from the tests should reattend at one of the offered retakes. Histology and Embryology midterms are written (Moodle) examinations organised as e-learning type examination where a valid SeKa account (including user name&-password) is required.

The time and topics of midterm tests will be announced in the departmental homepage at the beginning of the semester (http://semmelweis. hu/anatomia).

Requirements for signature:

Active participation in at least 75% of dissection room sessions, including the midterm tests (irrespective of the result) is obligatory for every student.

Type of examination:

Semifinal (written and oral) examination, topics: subject matter of the semester (Microscopic Anatomy and Embryology I.). Semifinal examinations consist of written theoretical and oral practical parts.

1. Written pretest (e-learning module)

2. Microscopic Anatomy - identification of structures on digitized tissue slides - including relevent theoretical questions from the subject matter of the semester

Requirements of the examination:

During the semifinal examination the knowledge of students will be tested. Semifinal examinations are composed of written (theoretical) and oral (practical) parts with the latter being conducted with the use of digitized histological tissue slides.

Topic list for the semifinal examination:

Microscopic Anatomy and Embryology I.

General Histology

- Concept of basic tissues
- Definition and classification of epithelial tissue
- Simple epithelia
- Stratified epithelia
- Membrane specializations of epithelia
- Glandular epithelia
- Pigment epithelium, sensory neuroepithelium
- Cells of connective tissue
- Ground substance and fibres of connective tissue
- Types of connective tissue
- Blood and the corpuscular elements of blood
- Histology of the bone marrow, maturation of erythrocytes and platelets
- Differentiation of granulocytes, lymphocytes and monocytes
- Histology of cartilage
- Histology of the bone tissue
- Intramembranous ossification
- Endochondral ossification
- Growth and remodeling of bone
- Smooth muscle and myoepithelial cells
- Skeletal muscle tissue
- Cardiac muscle tissue
- Nervous tissue

Histology of organs

- · Histological structure of arteries and arterioles
- Composition of capillaries and veins
- Wall structure of hollow organs
- Histology of the lip, tongue and teeth
- Structure of the esophagus
- Histology of the airways (epiglottis, larynx, trachea, lung)
- Histology of the stomach
- Structure of the small and large intestines
- Histology of the liver and biliary passages including the gall bladder
- Histology of the pancreas
- Histology of the kidney and the urinary passages (ureter, urinary bladder)
- Histology of the testicles togeteher with the epididymis
- Histology of the prostate, seminal vesicle, spermatic cord
- Histology of the penis
- · Histology of the ovary, uterine tube; corpus luteum
- Histology of the uterus
- Histology of the vagina
- Placenta, umbilical cord

General Embryology

- Spermatogenesis, spermiogenesis
- Oogenesis
- Fertilization, cleavage of the zygote

- Blastocyst formation; the bilaminar embryonic disc
- Implantation
- Formation of body axes, parts of the early embryo (yolk sac, amnion, chorion, body stalk)
- Gastrulation
- · Formation of the intraembryonic mesoderm; the notochord
- Neurulation (neural tube and neural crest)
- · Derivatives of ectoderm, endoderm and mesoderm
- Folding of the embryo
- The structure and function of the placenta
- Development of the fetal membranes (chorion and amnion), umbilical cord
- Twin formation

Development of internal organs

- Development of the primitive vascular systems
- Development of the heart
- Development of arteries
- Development of veins (inferior vena cava, portal vein, suprior vena cava, azygos and hemiazygos)
- Fetal circulation
- Face development (oral and nasal cavities)
- · Development and differentiation of the foregut
- Derivatives of pharyngeal pouches and grooves
- Derivatives of pharyngeal arches
- · Development of the tongue, tooth development
- · Development and differentiation of the midgut
- Development and differentiation of the hindgut
- · Formation of the liver and pancreas
- Development of the peritoneum
- · Development of the lower airways including the lungs
- · Development of the diaphragm, divisioning of the body cavities
- Kidney development
- Development of the urinary passages
- · Gonadal development, formation and migration of primordial stem cells
- Development of the male genital tract
- · Development of the female genital tract
- Development of the male/female external genitals

Method and type of evaluation:

Semifinal examinations are composed of written theoretical and oral practical parts. The written theoretical examination is done using an e-learning module while the practical examination is conducted with the help of digitized histological tissue slides.

Examiners are delegated by the Course Director with the consent of the Head of Department.

Students are given separate marks for each part of the examination. Unsuccessful partial examinations result in the failure of the semifinal examination. When failing at the practical part, the written test will not have to be repeated in case the result was a 4 or a 5 only. Upon the termination of the examination the Chairman of the Examination Committee composes the final mark from the partial marks earned in the written and practical parts.

How to register for the examination?

Via the NEPTUN system

Possibilities for exam retake:

According the Study and Examination Policy

Printed, electronic and online notes, textbooks, guides and literature (URL address for online material) to aid the acquisition of the material:

List of textbooks

- 1. Langmann's Medical Embryology, 13th Edition by TW Sadler, Wolters Kluwer, ISBN 9781469897806, 2014
- 2. Histology: A Text and Atlas: With Correlated Cell and Molecular Biology; 7th Edition by MH Ross and W Pawlina; Wolters Kluwer 2015, ISBN 9781451187427
- 3. Wheater's Functional Histology, A Text and Colour Atlas, 6th Edition by B Young, G O'Dowd and P Woodford Churchill Livingstone, Edinburgh, 2013, ISBN 9780702047473
- 4. Stevens & Lowe's Human Histology, Elsevier, 4th edISBN 978-0-723435020, 2015.
- 5. Functional Anatomy, Histology and Embryology for medical and dental students by M. Réthelyi and J. Szentágothai, Medicina, 2018.
- 6.
- 7. The Developing Human Clinically Oriented Embryology, 10th ed. by KL Moore, TVN Persaud and M Torchia, Saunders, 2015; ISBN 9780323313384
- 8. Histology Manual 1-3. by A. Nemeskéri and K. Kocsis: István Apáthy's Foundation, 2019.
- 9. A. L. Kierszenbaum Histology and Cell Biology: An Introduction to Pathology, 4th Edition, Paperback with STUDENT CONSULT Online Access and E-Book ISBN: 9780323085885:, 2015
- 10. Junqueira's Basic Histology: Text and Atlas; 13th Edition by Anthony Mescher, New York, McGraw-Hill Medical, 01/03/2013 ISBN13 978007178033

Further study aids:

To be downloaded from the homepage of the Department of Anatomy, Histology and Embryology (http://semmelweis.hu/anatomia) or from Knowledgebase on the Library homepage: (https://lib.semmelweis.hu/knowledge_base).

CELL SCIENCE

Department of Genetics, Cell- and Immunobiology

Address: NET Building, H-1089 Budapest, Nagyvárad tér 4.

Course director: *Edit Buzás* MD, DSc Course coordinator: *Orsolya Láng* MD, PhD Credit: 3

Lectures (1 hours per week):

- 1. Cell theory. Model cells in Medicine
- 2. Cell membrane
- 3. Structure and function of nucleus
- 4. Endoplasmic reticulum
- 5. Golgi complex, vesicular transport and secretion
- 6. Endocytosis. Autophagy
- 7. Cell adhesion and cell junctions
- 8. Cytoskeleton
- 9. Cellular movement
- 10. Structure and function of mitochondria and peroxisomes
- 11. Cell communication. Extracellular vesicles.
- 12. Cell cycle and mitosis
- 13. Stem cells and differentiation
- 14. Cellular aging and cell death

The order of topics may vary

Practices (2 hours per week):

- 1. The light microscope
- 2. The general cell structure. Light microscopic microtechnique
- 3. The electron microscope. Cell membrane
- 4. The interphase nucleus. Cyto(histo)chemistry
- 5. Immunohistochemistry. Super-resolution microscopy
- 6. Cell and tissue culture
- 7. Endoplasmic reticulum
- 8. Golgi complex and secretion
- 9. Endocytosis and lysosomes
- 10. Cell surface differentiation, enzyme-histochemistry
- 11. Store and supply of energy. Mitochondria. Peroxisome.
- 12. Mitosis
- 13. Meiosis
- 14. Cell death (necrosis and apoptosis)

Course requirements: Students must participate at least 75% of the classes. More than three absences from the practice or more than three absences from the lecture invalidate the semester, no signature is given. There are no extra practices.

The course ends with a written exam. It contains multiple choice, essays, drawings, etc. covering both theoretical and practical part of the subject. Further details will be announced at the website of the department (http://gsi.semmelweis.hu).

Core text: Alberts et al. Essential Cell Biology (4th edition) Garland Science ISBN-13: 978-0815344544 ISBN-10: 0815344546 Lecture and practice presentations and additional texts are available on the homepage: http://gsi.semmelweis.hu (The user name and password is on course datasheet of the Neptun)

MEDICAL BIOPHYSICS I.

Tutor: Dr. István Voszka

First Semester

Week Lecture (1.5 hours per week)

1 Radiations (basic concepts) Laboratory safety rules Properties of electromagnetic radiations; 2 Resonance wave and corpuscular nature 3 Attenuation of radiation Emission spectroscopy. Light sources 4 Luminescence and its applications Spectrophotometry 5 Lasers and their medical applications Optical lenses; light microscope Thermal radiation, thermography. Detection of nuclear radiations 6 Biological effects of light 7 Production and spectrum of X-radiation Oscilloscope Cyclotron; Linear accelerator; 8 Attenuation of X-radiation, interactions Special light microscopes X-ray diagnostics 9 Atomic structure; Radioactive decay law Optics of the eye Gamma-radiation and its detection 10 Radiotherapy, radiosurgery; Polarimeter Isotope diagnostics 11 SPECT, PET Coulter counter Beta-radiation, beta-decay Alpha-radiation, alpha-decay 12 Determination of skin-impedance Interaction with matter 13 Dosimetry Concentration determination with refractometer 14 Radiation protection; estimation of risk Repetition

Laboratory (2,5 hours per week)

MEDICAL BIOPHYSICS II.

Second Semester

Week Lecture (1,5 hours per week)

- 1 Bonds and their significance in macromolecular structure; Boltzmann distribution, examples
- 2 Liquid crystals, membranes
- 3 Electronic properties of condensed materials (solids, macromolecules)
- 4 Ultrasound properties, generation of ultrasound
- 5 Ultrasonography, Doppler methods
- 6 Methods for structure examination
- 7 Basic concepts of Thermodynamics, First law
- 8 General description of transport phenomena, Onsager's equation, examples
- 9 Diffusion; transport across membrane
- 10 Resting potential and its local changes
- 11 Action potential, properties, interpretation
- 12 General characteristics of sensory function, hearing, vision
- 13 Biophysics of muscle function
- 14 Motor proteins

Laboratory (2,5 hours per week)

The attenuation of gamma-radiation

Dosimetry Amplifier

Gamma energy determination Pulse generators (e.g. pacemaker, defibrillator) Sine wave oscillators (high frequency heat therapy, ultrasound) Audiometry Isotope diagnostics

Densitography (CT) Flow of fluids. Electric model of vascular circulation Electrocardiography Diffusion

Sensory function Repetition

MEDICAL CHEMISTRY

Department of Medical Chemistry, Molecularbiology and Pathobiochemistry

Lectures and practical lessons

Lectures and laboratory lessons are held every week; detailed schedules can be found under corresponding tabs.

Prerequisites for acknowledging the semester

(1) Participation in the laboratory practicals is compulsory; students are obliged to sign the attendance sheets at the end of each lab lesson. In case of more than three absences from the labs for any reason, the semester cannot be acknowledged and the student is not going to be allowed to sit for the semifinal exam. Missed practicals can be completed only in the same week with another group; certificate of participation issued by the host teacher needs to be presented by the student to his/her own teacher.(2) It is compulsory to pass both midterm examinations.

Midterm examinations

Two midterm written examinations will be held in weeks 6 and 13 of the semester, respectively, during lab lessons. Midterm tests consist of four theoretical questions (10 points each) and four problems (calculations; 10 points each). The material of midterm I covers that of lectures delivered in the first 5 weeks, while midterm II is based on the lecture material of weeks 6-12. Midterm tests will be marked by your own lab teacher.

Grading of midterms:

0 – 40 points: 1 (fail)

41 - 50 points: 2 (pass)

51 - 60 points: 3 (fair)

61 – 70 points: 4 (good)

71 or more points: 5 (excellent)

Passing both midterms is a prerequisite for acknowledgement of the semester. Failed midterms might be retaken twice at your own lab teacher. Retakes cannot be performed later than 14th December.

Semifinal examination

Only those students who have fulfilled both acknowledgement criteria, thus obtained an official electronic Neptun signature, are entitled to sit for the semifinal exam.

The semifinal is an oral exam conducted by a two-member examination committee.

Students take one topic from each of the following groups of topics:

I. Problems (calculations)

II. General and inorganic chemistry 1

III. General and inorganic chemistry 2

IV. Organic chemistry

V. Labs

Students having achieved an average of 4.5 or 5.0 of midterm marks will take only 3 topics from groups II, III and IV.

Exemption from attending the course

Students who learned general, inorganic and organic chemistry at university levels prior to the commencement of their studies at Semmelweis University might be exempted from attending the Medical Chemistry course. Students are kindly asked to present their official documents (academical transcripts and a detailed syllabus on the courses they have completed) to the tutor (Gergely Keszler, EOK building, room 2.132).

Registration and modification of examination dates

Electronically, via the Semmelweis University Neptune System.

Retakes are not possible within 3 days following the exam.

All our examination rules comply with the official examination regulations of the Semmelweis University.

Recommended textbooks

- 1. General chemistry:
- 2. Ebbing-Gammon: General Chemistry, latest edition
- 3. Organic chemistry:
- 4. Hrabák-Csermely-Bauer: Principles of Organic Chemistry (2nd edition, 2007, editor: A. Hrabák)
- 5. Sasvári: Bioorganic compounds
- 6. Inorganic chemistry:
- 7. Tóth: Concise inorganic chemistry for medical students
- 8. Lab lessons:
- 9. Hrabák: Laboratory Manual Medical Chemistry, Biochemistry and Molecular Biology (fourth edition, 2015)
- 10. Hrabák: Selected Collection of Chemical Calculations and Biochemical Exercises (latest edition)

Description of the curriculum

The principal aim of the course is to prepare students for the understanding of Biochemistry and Molecular Biology. This requires a firm knowledge of the foundations of general, organic and inorganic chemistry.

The Medical Chemistry course encompasses the following chapters of Chemistry:

I. General Chemistry

Structure of atoms, ions and molecules. Chemical bonds

Relation of atomic radius, ionization energy, electron affinity and electronegativity to the periodic table. Ionic bond, ion radius, ions. Covalent bonding, s and p bonds, hybrid orbitals, hybridization of carbon. Electron pair repulsion, geometry of molecules, bond angle. Molecular orbital theory.

Polar covalent bonds. Molecules composed of more than two atoms. Coordinative bond. Structure and geometry of ions. Metallic bonding. Interactions between molecules: electrostatic interactions, van der Waals and hydrogen bonds. Structure of water, its properties. Physical states. Types of crystals, characteristic crystal lattices.

Solutions, laws of aqueous solutions, their biological and medical aspects

Solute, solvent, solution. The solution process. Solubility of ions in water, dissociation. Enthalpy of hydration. Concentration, % and molar concentration, normality, molality, molar fraction. Saturated solutions. Solubility, partition, solubility product. Demonstration on calculation problems. Laws of dilute solutions. Vapor pressure, freezing point, boiling point of pure solvents. Vapor pressure of solutions, Raoult's law. Freezing point depression and boiling point elevation of aqueous solutions. Osmotic pressure, dependence on temperature, solute concentration and ionic dissociation. Biological and medical importance of osmosis.

Electrolytes

Electrolytes, degree of dissociation and the ionization constant, their correlation. Conductance of electrolytes, specific and equivalent conductance of strong and weak electrolytes. Acid-base theories. The Arrhenius theory. Classification of acids and bases, their anhydrides. The Bronsted-Lowry concept. The Lewis concept (e.g. coordination compounds). Acidic strenght and the molecular structure. The ionization of water. Water product, definition of pH and pOH. The pH scale. Calculation of pH for strong electrolytes. The effect of strong acids and bases on the ionization of weak acids and bases, respectively. The effect of strong acids and bases on the salts of weak acids and bases. Buffers, calculation of pH of buffers. Buffers of polyprotic acids. Buffers of physiological importance. The carbonic acid/hydrogencarbonate buffer. Buffer capacity. Acid-base indicators. Titration curves of strong and weak electrolytes. The selection of indicator for titrations. The amphoteric character. Basic and acidic salts. Double salts, complexes. Geometry of complexes, chelates. Reaction of salts with water (hydrolysis).

Electrochemistry

Redox processes. Oxidation number, its definition. redox equations. The electrode potential, its explanation. Normal and standard potentials. Galvanic cells, Nernst equation. Concentration cells, the principle of electrometric pH measurement. Non-polarizable electrodes, their utilization in practice. Biological redox potential, redox electrodes. The application of redoxi potential for biological processes, the principle of mitochondrial energy production. Electrolysis.

Thermodynamics

Chemical thermodynamics. Internal energy and enthalpy, reaction heat, standard enthalpy. Hess' law. Combustion heat, atomic and molecular enthalpy of formation. Bonding energy. The I. and II. laws of thermodynamics, entropy, free energy and free enthalpy. Relation between electromotive force and free enthalpy change. Exergonic and endergonic processes. The equilibrium constant. The direction of the processes and its relation to free energy change.

Chemical kinetics

Reaction kinetics, rate of reaction, order and molecularity. Half-time of reactions. The van't Hoff rule. Activated complex, transition state, activation energy. The Arrhenius equation. Catalysis, catalysts. Reversible processes, the law of mass action, equilibrium constant and its relation to free energy change. Consecutive reactions, the importance of rate-limiting steps in metabolic processes.

II. Inorganic chemistry

Properties of non-metals

Group of halogens, their biological significance. Oxygen group, oxygen, free radicals containing oxygen, air, air pollution, ozone. Sulfur, its compounds. The nitrogen group. Nitrogen, its important inorganic compounds. Nitrogen cycle. Phosphorus and its compounds. Carbon group, carbon and its important inorganic compounds. The air polluting effect of carbon dioxide. Hydrogen and noble gases. Inorganic compounds of medical importance.

Properties of metals

Alkali metals and their compounds. Alkali earth metals and their compounds, the biological significance of calcium and magnesium. Earth metals. Heavy metals and their biological importance. Precious metals. Medically important metals and metal-containing compounds.

III. Organic chemistry

General properties of organic compounds

Introduction, definition of organic compounds, their composition. Homologous series, constitution, constitution isomerism. Classification according to carbon skeletons and functional groups. Characterization of bondings in organic compounds, bonding energy, distance of atoms, dipole moment. Apolar and polar character, inductive and inductomeric, mezomeric and electromeric effects. The vectorial character of dipole moment. Optical isomerism: structural principles of rotation. Chirality, chiral carbon atoms, configuration, enantiomers. Principle of relative and absolute configuration. Projected formulas. Compounds with more than one chiral center: diastereomerism, mezo-forms. Separation of optical isomers.

Classification of hydrocarbons based on their carbon backbone

Alkanes, cycloalkanes, their homologous series. Steric forms, conformations, conformational isomerism. Physicochemical properties of paraffines. Steric structure of cycloalkanes. Alkenes, their homologous series. Constitutional and configurational isomerism. Chemical properties of alkenes, possible mechanisms of addition reactions. Hydrocarbones containing more double bonds, delocalization of p-electrons in compounds containing conjugated double bonds. Acetylene: physicochemical properties. Aromatic hydrocarbons: homologous series, isomerism. The explanation of the aromatic character by the electronic structure. Chemical behavior of benzene and its homologues. Substitution, oxidation, reduction, direction rules in repeated substitutions. General characterization of heteroaromatic compounds, important heteroaromatic compounds.

Functional groups. Classification and chemical characterization of compounds containing various functional groups Classification of organic compounds according to their functional groups.

1. Halogenated hydrocarbons, their physicochemical properties.

- 2. Organic compounds containing hydroxyl groups. Classification. Alcohols, physical properties, chemical reactions. Enols and phenols, their chemical reactions. Synthesis of ethers, their reactions.
- 3. Oxo compounds: classification, nomenclature, physical properties. Chemical reactions of aldehydes and ketones, nucleophilic addition reactions. Condensation reactions of oxo-compounds, oxidation reduction, substitution on the carbon chain.
- 4. Carboxylic acids and their derivatives. Classification, nomenclature, their synthesis, physical properties. The explanation of the acidic character of carboxylic group, the effects of substituents on the acidic character. Chemical reactions of monoprotic carboxylic acids, formation of esters, haloids, amides and anhydrides. Substitution of the carbon chain: synthesis of halogenated, hydroxy-, keto- and amino acids. Acidic character of dicarboxylix acids, important reactions. Chemical reactions of hydroxy- and ketoacids. Important representatives of dicarboxylic, hydroxy- and ketoacids.
- 5. Organic compounds containing sulfur: thiols, thiophenols and thioethers, their synthesis and physicochemical properties.
- 6. Organic compounds containing nitrogen: classification, physicochemical properties of nitro compounds. Amines, classification, synthesis, basicity. Important chemical reactions of amines (e.g. Schiff base formations). Amides of carbonic acids.

MEDICAL BIOCHEMISTRY I.

Department of Medical Biochemistry

Credits: 5 Total number of hours: 70; lectures (hours): 42; practices (hours): 28 Type of the course: <u>obligatory</u> Academic year: 2019/2020 Code of the course Name of Head of the Department: Professor László Csanády M.D. Ph.D. D.Sc. Contact details: H-1094 Budapest, Tűzoltó u. 37-47. tel: +36-1-459-1500#60010 e-mail: csanady.laszlo@med.semmelweis-univ.hu

Position: Temporary Head of Department

Date of Habilitation: 2013 Its number: 341

Aim of the course:

The aim of this course is to examine biologically important molecules - namely amino acids, carbohydrates, lipids and nucleotides - identify their contributions to metabolic processes emphasized from a medical point of view, examine the structure and function of proteins, and address mechanisms of catalysis performed by enzymes. Furthermore, three basic biochemistry modules are outlined: The enzymology module, encompassing general principles of enzyme kinetics and how enzymes influence efficiency and controllability of chemical processes in biological systems, as well as how they affect structure and regulation of metabolic pathways; the bioenergetics module, addressing the relationships between mass-energy conversions in the human body emphasizing nutrional aspects, also elaborating on thermodynamic aspects of metabolism; and the 'first' intermediary metabolism module, presenting the salient features of carbohydrate and lipid metabolism which are essential for understanding physiological and pathological processes of the human body. During practices, students apply the theoretical knowledge acquired at lectures as part of case-oriented discussions in an effort to interpret - from a molecular point of view - medically relevant conditions.

Location of the course (lecture hall, practice room, etc.):

Premises located in the Basic Medical Sciences building (laboratory rooms located on the first floor and lecture halls located on the ground floor).

Upon the successful completion of the curriculum, the student should be able to:

Identify biochemical structures, know and understand the reactions in which medically important molecules participate; know and understand inter-organ biochemical processes; know and understand integrated metabolic functions of the human body. Overall, such knowledge is essential for understanding physiological and pathological processes and, consequently, for making sound medical decisions.

Prerequisite (s) for admission to the course: Medical Chemistry

Terms and Conditions for Starting Student Course (Minimum, Maximum), Student Selection Method: Not applicable for compulsory subjects

How to apply for the course: Application is through the Neptun online system

The course in thematic details:

Lectures: weekly 2x70 min (3 hours)

Lecturers: Prof. Ádám Veronika (ÁV), Prof. Csanády László (CSL), Prof. Kolev Kraszimir (KK), *Dr. Komorowicz Erzsébet* (KE), Dr. Szöllősi András (SZA), Dr. Törőcsik Beáta (TB), Prof. Tretter László (TL)

Practices (P): 2 hours every week

Week	Lectures	Practices (P): 2 hours every week
1	The role of proteins in the living world. The chemical structure of proteinogenic amino acids. The peptide bond. The primary, secondary and tertiary structure of proteins. The quaternary structure of proteins. The biochemical basis of protein-nucleic acid interactions. Covalent modifications of proteins. (CSL, SZA)	P: Structural and chemical characteristics of amino acids; pH and temperature dependent properties.
2	Preprotein forms of proteins, e.g. procollagen-collagen. Comparison of the structure-function aspects of myoglobin and haemoglobin. Thermodynamic and structural aspects of enzyme function. Fundamentals of enzyme kinetics. Regulation of enzyme activity. Enzymes as components of physiological systems. Mechanisms of serine proteases. (CSL, SZA, KK, TL)	P: Current protein diagnostic and structural test methods and their medical applications.
3	Kinetic models of enzymatic function. Michaelis-Menten kinetics. Significance of the Michaelis constant (Km). Inhibition of enzymatic reactions. Importance of inhibitor types in drug design. Allostery and cooperativity in enzymatic reactions. Levels of regulation of enzymatic reactions: compartmentalization, altering gene expression, reversible modification of the catalytic activity of enzymes. Enzymatic control by proteolytic activity. (KK, TL)	P: Interpretation of pathological conditions stemming from alterations in protein structure, elucidated by atomic resolution techniques
4	 Structure and kinetics of metabolic pathways. Principles of metabolic control. Strategies for identifying enzymes as drug targets. (KK, TL) The thermodynamics of biochemical pathways. Reversible and irreversible reactions. The coupling of endergonic and exergonic reactions in the human body. High energy compounds. The central role of ATP in the energetics of cells. Reducing equivalents. (TL) 	P: Quantitative characterization of enzyme functions and its importance in the interpretation of pathophysiological conditions.
5	Substrate-level phosphorylation as a means of ATP synthesis. Reactions and control of the citric acid cycle. Sources of citrate. The pyruvate dehydrogenase complex. The synthesis of ATP. ATP production by oxidative phosphorylation in mitochondria. Redox reactions of terminal oxidation (electron transport chain, ETC). The enzyme complexes of ETC. (TL)	P: Identification of metabolic pathways.
6	Exergonic reactions in the ETC and production of ATP. The mechanism of operation of ATP synthase. The regulation of ATP production by the energy demand of cells. The P/O ratio. Inhibitors of oxidative phosphorylation. Uncoupling agents. Heat production in special tissues. (TL) Carbohydrates. Digestion and absorption of carbohydrates, cellular glucose uptake, glucose transporters. (AV, BT)	P: Bioenergetics
7	Glycolysis Metabolism of fructose and galactose, pathological aspects. Regulation of glycolysis and gluconeogenesis. (AV, BT)	P: Carbohydrates in the diet. Food fibers and additives.
8	Gluconeogenesis. Cori-cycle. Metabolism of glycogen. Mobilization of glycogen in liver and muscle. Blood glucose level and its regulation: hyperglycaemia. Insulin release, insulin receptors. Phosphorylation cascade. Lactate synthesis. Effects of glucagon. (AV, BT)	P: Lactic acidosis
9	Blood glucose level and its regulation II; hyperglycemia. Biochemistry of diabetes mellitus (DM) type I and type II (AV, TB)	P: Fructose intolerance; McArdle's disease
10	Metabolism of lipids – overview. Absorption of lipids. Metabolism of chylomicrons. Mobilization of fatty acids in adipose tissue, its regulation. Transport in the circulation. Free fatty acids, VLDL, IDL. (AV, TB)	P: Structure and function of the most important lipids in the body and in the diet.
11	Oxidation of fatty acids. Ketone bodies. Synthesis of fatty acids. Biosynthesis of triacylglycerol, phospholipids, their regulation. (KK, KE, TL)	P: Membrane-forming lipids and their pathologies. Precursor molecules for signal transduction.

Week	Lectures	Practices (P): 2 hours every week
12	Characterization and classification of reactions in biotransformation. Phase I and Phase II reactions. Clinical significance of induction. Role of biotransformation in drug metabolism and detoxification. Pathobiochemical effects of alcohol metabolism. Metabolism of cholesterol, cholesterol transport in circulation. (KK, KE, TL)	P: Tissue-specific aspects of lipoprotein lipase (LPL); LPL deficiency.
13	Biosynthesis and metabolism of bile acids, the importance of bile acids in lipid digestion. Cholesterol uptake and release by cells. Synthesis of steroidal hormones in the adrenal cortex. Synthesis of glucocorticoids. Biochemical background of adrenal cortex layers. Synthesis of mineralocorticoids, its regulation, prereceptor specificity. Effects of cortisol, regulation of cortisol synthesis. Androgen production of the adrenal cortex. (KK, KE, TL)	P: The role of biotransformation reactions in drug metabolism and detoxification. Biotransformation and chemical carcinogenesis.
14	Synthesis of sex hormones. Ovarian cyclic hormone production. Biosynthesis of progesterone and estradiol in the placenta. Synthesis of testosterone in the testis, formation and importance of dihydrotestosterone. Eicosanoids: synthesis of prostaglandins, thromboxanes and leukotrienes (cyclooxygenase and lipoxygenase pathway). (KK, KE)	P: Signal transduction of insulin

Potential overlap(s) with other topics: none

Requirement for special study: not applicable

Policy regarding attending practice; policy regarding absences: Practices are mandatory. It is not possible to make up for missed practices. In case of absences amounting to more than 3 practices, the semester is not acknowledged. Arriving to a practice with a delay of more than 10 minutes is considered an absence.

Means of assessing acquired knowledge during the semester: not applicable

Requirement for acknowledging the semester, and for allowing the student to take the semi-final exam: In case of absences amounting to more than 10.5 hours, the semester is not acknowledged.

Exam Type: Colloquium (semi-final), Form: written test exam, based on material of the official textboox, lectures and practices published at the department's website (http://semmelweis.hu/biokemia/en/).

Exam Requirements: The material for the written test exam is the material of the lectures and practices in the subject, with the corresponding textbook chapters.

Types and modes of grading:

The competition is held on week 13, and the structure of the competition is the same as that of the semi-final. The grade of the semi-final exam is based on:

Written test:

This test consists of multiple choice questions (MCQs) from which max 65 points can be obtained.

Grade calculation of the semi-final exam: 60-65: grade 5 (excellent) 49-59: grade 4 (good) 41- 48: grade 3 (satisfactory) 33-40: grade 2 (pass) If 39 and below, then the grade of the semi-final exam is 'fail'.

How to apply for the exam: The exam dates are announced on the 12th week of the semester. We provide at least one exam date each week. Applications are made in the Neptun system in accordance with the University Study and Exam Rules.

Opportunities to repeat the exam: an exam can be re-taken only after two calendar days.

Printed, electronic and online notes, textbooks, tutorials, and literature for online learning (html for online material):

Harper's Biochemistry (30th edition, or latest)

Online material published in the department's website (http://sem-melweis.hu/biokemia/en/)

MEDICAL SOCIOLOGY – Health Care

Semester: half class in the first semester and half class in the second semester

Institute of Behavioural Sciences

Type of the course: compulsory code: AOKMAG425_1A credit: 2 Course leader: Dr. József Kovács Groups 1-8 in the first semester, groups 9-16 in the second semester

Course objectives:

By the mid to late 20th century, the biomedical model in medicine was replaced by the biopsychosocial model. There are biological, psychological and social factors in the background of illness. This is the approach we take in this course in looking at various aspects of health, illness and medical work. Our aim is to introduce future medical doctors to the social factors they must be familiar with in working with patients. Topics include social stratification and health inequalities, the principles of health care systems, medicalisation and the changing medical profession, illness behaviour, intercultural issues in health care as well as the challenges of digital health.

Course Syllabus:

- 1. Introduction to medical sociology, basic concepts and principles. (lecture)
- 2. Health and illness in society, a historical transformation of mortality and morbidity patterns. (lecture)
- 3. Social stratification, social inequalities and health (lecture)
- 4. Intercultural healthcare (lecture)
- 5. The challenges of digital health (lecture)
- 6. Globalisation and therapy choice (Lecture)
- 7. Midterm examination (Lecture)
- 8. Preparation for project work and for health care system workshop (practical)
- 9. Health care systems workshop (practical)
- 10. Global poverty and inequalities, Inequalities and health- social class (practical)
- 11. Inequalities and health: age, ethnicity and gender (practical)
- 12. The doctor- patient relationship in the 21st century (practical)
- 13. Illness behaviour (practical)
- 14. project work evaluation (practical)

Participation and making up for absences:

No less than 75% of all classes must be attended. One practical absence can be made up by undertaking an extra task set by the practical leader or by participating in the practical with another group.

Justification of the absence in the lectures and examinations:

Medical certificate

Checks during the semester (reports, written checks):

Written midterm test in week 7 on the materials covered in the lectures. The midterm will consist of multiple choice questions and a case analysis. This is 50% of the final grade. The lecture notes are made available on (www.magtud.hu).

- 1. project task in the practicals. This is 40 % of the grade
- 2. Written exam in the examination period (40%)
- 3. Bonus points will be given for extra tasks 10 points

Requirements for the signature at the end of the semester:

Participating in 75% of the classes. Passing the midterm in week 7 (with retake possibilities) Doing the project work

Method of the calculation of marks:

Participating in 75% of th classes and doing the project task in the practicals Grades: 0-50 points – 1 51- 60 points -2 61-74 points -3 75-84 points -4 85 points and over 5

Type of the exam: written, semi-final

Requirements for the exam:

The material needed to study will be made available on the departmental homepage.

Application for the exam: Neptun

Changing the application for the exam: Neptun

Justification of the absence from the exam: Medical certificate

Course and recommended text books:

Applied Sociology of Health and Illness: A Problem Based Learning Approach by Costas S. Constantinou ISBN 9781908911940

MEDICAL COMMUNICATION

Institute of Behavioural Sciences

Name of the course leader: Prof. Dr. József Kovács

Credit value: 2 credits Total number of hours: 28 lectures: 14 practices: 14 seminars: 0 Subject type: compulsory course Subject code: AOKMAG670_1A

Objectives of the subject, its place in the medical curriculum:

Proper communication is an essential element of effective healing. Good communication helps to form a trusting relationship between the physician and the patient, it allows the doctor to gather effectively the information that underpins the diagnosis, and it improves the patient's cooperation and adherence with treatments. The aim of education is partly to teach communication techniques that can make the daily tasks of doctors more effective: listening to, interviewing, informing and promoting cooperation of the patients. The subjects of education are also elements of the everyday doctor-patient relationship, which have recently come to the fore, such as e.g shared decision making, suggestive effects of medical communication, communication aspects of patient safety.

In addition to describing the general regularities of medical communication, the course also presents the specialities of communication in various areas of the health care. Thus, we deal with the peculiarities of communication with children or the elderly, discussion about sexual topics and the cultural competence of the doctor. In our education, we place great emphasis on the difficult issues of the doctor-patient relationship, so we deal with the communication of bad news and the prevention and management of aggression.

The main goal of the course is to teach special communication knowledge to medical students that can help them create proper doctor-patient relationship and improve their effectiveness in medical practice.

Place where the subject is taught (address of the auditorium, seminar room, etc.):

SU NET and EOK buildings

Successful completion of the subject results in the acquisition of the following competencies:

Upon successful completion of the subject, the students will be able to

- effectively gather information to make a diagnosis by using appropriate questioning techniques;
- use communication techniques that facilitate the understanding and remembering during patient information;
- know and apply specific communication techniques to express their attention and empathy;
- use several communication techniques to improve the patient's therapeutic cooperation;
- inform the patient about the possible risks of the treatments in accordance with the legal regulation, in an objective, yet non-alarming way;
- can activate the patient in order to become a partner in his own treatment as much as possible, and empower the patient himself to contribute as much as possible to his own recovery or improvement of his condition;
- have effective methods to facilitate lifestyle change;
- be aware of the suggestive effects that doctor's communication can have; be able to use communication methods that put the positive effects of the doctor's words at the service of cooperation and healing;
- be able to communicate in a way that suits the individual characteristics of the patient (age, different social and cultural backgrounds, different levels of health understanding, possible mental disorders or disabilities);
- be able to communicate on intimate issues without embarassment;
- know and be able to use communication methods to manage tensions and conflicts;
- breaking bad news in a compassionate way (eg news of incurable disease, news of death, news of congenital malformation);
- can effectively use modern technology for the purposes of medical communication;
- know and be able to use communication tools that increase patient safety.

Course prerequisites:

There are no prerequisites.

Number of students required for the course (minimum, maximum) and method of selecting students:

The completion of the course is compulsory for all students. Course is taught only in the first semester of the academic year, all students can register for the course. The recommended maximum number of students for practice is 15 students per group.

How to apply for the course:

Through the Neptun system.

Detailed curriculum:

(Theoretical and practical lessons shall be given separately by numbering the lessons (by weeks). Please provide the names of the teachers of the lectures and practical lessons and indicate guest lecturers. Do not use attachments! Always attach a CV for guest lecturers!)

LECTURES: Week 1-7

Week 1:	Introduction. Communication difficulties and possible solutions in the everyday medical practice.
Week 2.	Promoting behavior change. The development of the patient-physician collaboration.
Week 3.	Communication about functional complaints.
Week 4.	The specialties of age in medical communication.
Week 5.	Suggestive communication in medical practice.
Week 6.	Breaking bad news. Disclosing medical errors.
Week 7.	E-health: use of technological tools in health communication.

Practice: Week 8-14 (see times, venues and teachers to be announced)

Week 8. Seminar. Communication in everyday life and in the medical practice.

Week 9. Seminar. The active listening. Communication aspects in empathy.

Week 10. Patient information, patient education.

Week 11. Seminar. Promoting lifestyle change. suggestive communication techniques, motivational interview, shared decision-making.

Week 12. Seminar. Communicating bad news (practice). Communicating with depressed patients. Recognizing the risk of suicide.

Week 13. Seminar. Communication with tense, hostile patients, strategies to prevent violence. Communicating about intimate issues.

Week 14.: Seminar. The cultural competence of the doctor. Communicating about complementary and alternative therapies.

Lecturers: Dr. Stauder Adrienne, Dr. Kollár János, Dr. Tóth Mónika Ditta, who are employees of Semmelweis University

Other subjects concerning the border issues of the given subject (both compulsory and optional courses!). Possible overlaps of themes:

- The Sociology of Healthcare and Medicine (possible overlap: the impact of modern technology on medical communication)
- Medical Psychology, Psychiatry (possible overlap: relationship and communication with people with mental disorders.)
- Bioethics (possible overlap: medical communication deals with the implementation in everyday practice of principles described in bioethics.)

Special study work required to successfully complete the course:

(E.g. field exercises, medical case analysis, test preparation, etc.) no special study work required

Requirements for participation in classes and the possibility to make up for absences:

The participation at minimum 75% of the practice seminars is the prerequisite of the signature.

It is possible to make up for ONE absence by participating in another seminar group the same week (only once in a semester, upon agreement with both teachers!)

Methods to assess knowledge acquisition during term time:

(E.g. homework, reports, mid-term test, end-term test, etc., the possibility of replacement and improvement of test results) There is no assessment during the term time.

Requirements for signature:

The participation at minimum 75% of the practice seminars is the prerequisite of the signature.

Type of examination: semi-final

Requirements of the examination:

(In case of a theoretical examination, please provide the topic list; in case of a practical exam, specify the topics and the method of the exam)

Exam topics list A:

- 1. The significance of medical communication. Misconceptions and facts about medical communication.
- 2. Doctor-patient consultation.
- 3. Promoting lifestyle change: the 5A and 5R methods; the transtheoretical model of behavior change.
- 4. Promoting lifestyle change: motivational interviewing.
- 5. Communication options for developing health literacy.
- 6. Communicating risks of treatments.
- 7. Shared decision making.
- 8. Suggestive communication in medical practice.
- 9. Communication with children.
- 10. Communication with older people. Communication with elderly having age-related mental disorders.
- 11. Cultural competence of the physician.

Exam topics list "B"

- 12. Communication about functional symptoms
- 13. Communication with patients using complementary and alternative treatments.
- 14. Communicating about intimate issues.
- 15. Communication with tense, hostile people.
- 16. Communication with depressed patients. Recognizing the risk of suicide.
- 17. Communication with patients having anxiety symptoms or addictions.
- 18. Breaking bad news.
- 19. Communication aspects of patient safety.
- 20. Communication with people living with disabilities.
- 21. Communication with the victims of abuse.
- 22. E-health: use of t technological tools in health communication.
Method and type of evaluation:

(Method of calculating the final mark based on the theoretical and practical examination. How the mid-term test results are taken into account in the final mark.)

Final mark is based on an oral exam. Two topics – one from A list and one from B list should be reported on, at least at satisfactory (2) level. The average of the marks given for each topic gives the final mark.

How to register for the examination?:

Through the Neptun system.

Possibilities for exam retake:

Through the Neptun system

Printed, electronic and online notes, textbooks, guides and literature (URL address for online material) to aid the acquisition of the material:

The oral exam is based on the course text book and the lecture handouts posted on the website.

Course text book:

Pilling, János: Medical Communication in practice. Medicina, Budapest, 2020.

Recommended text books:

Washer, P. (2009): Clinical Communication Skills. (Oxford Core texts). Oxford University Press.

McCorry, L.K. & Mason, J. (2011): Communication skills for the healthcare professionals. Lippincott Williams & Wilkins, Baltimore Tamparo, C.D & Lindh, W.Q (2017): Therapeutic communication for health care professionals. Cengage Learning, Boston Hugman, B. (2009): Healthcare communication. Pharmaceutical Press, London

INTRODUCTION TO MEDICAL INFORMATICS

Name of the educational organizational unit: SE EKK

Type of the subject: 1 practice / week code: AOVINF244_1A credit value: 1 Name of the lecturer of the subject: Dr. Miklós Szócska

Teachers:

Dr. Tamás Iváncsy (PhD, lecturer) Dr. Ádám Zoltán Tamus (PhD, associate professor) Tamás Tóth (assistant lecturer) Zoltán Sándor (assistant lecturer) Péter Dombai (lecturer)

Administrator: Ms. Dóra Bacsa

Term: spring

The exercise of the subject in the in the realization of the aim of the education:

To introduce the students to the medical application of informatics, the characteristics of modern, integrated information systems with respect to quantitative aspects and to decision demands of the modern sciences. The medical informatics leans on methods of mathematics, statistics and computer sciences and it also includes from the different engineering, management and informatics procedures.

Select the desired course in Neptun when registering to the subject! Changing topics/groups is possible only according to the rules of the registration in Neptun! You must attend the course you have selected in Neptun!

OPTIONAL courses:

I. SCIENTIFIC COMMUNICATION COURSE

The course gives an introduction to the paper based and oral publications and presentations. The students have to find a medical problem (a topic) to work out during the course.

- 1. Creation and retrieval of medical knowledge. Finding and studying scientific publications via the electronic library of the university.
- 2. Structure of a scientific publication. The importance and meaning of the sections of the paper. Structure of an oral presentation.
- 3. Scientific publication in practice: finding and evaluating information and creating paper and presentation on the selected topic.

II. DATABASES COURSE

The course gives an introduction to structuring and retrieving data using databases. The students perform practical examples of data management and query using a current software solution.

- 1. Introduction to database theory and data modelling principles (the application, logical and physical models, basic concepts and objects).
- 2. Data handling in practice: planning a relational database, managing tables and fields
- 3. Information retrieval from databases: the role and structure of queries, performing basic queries
- 4. Data management via user interfaces basic concepts and principles

III. BIOMEDICAL SIGNAL PROCESSING COURSE

The students learn about the basics of biomedical signals, their acquisition, digital storage and processing. They perform practical analysis of selected signal examples.

- 1. Introduction to biomedical signal processing, objectives of signal analysis, Components of human-instrument system
- 2. Examples of biomedical signals (electrical and mechanical signals), and transducers.
- 3. The basics of signal processing, the digitalizing (sampling, Shannon-theory, quantization).
- 4. Analysis of a phonocardiogram (heart sound, calculation of the pulse, murmurs). Spectral analysis.
- 5. Analysis of ECG signal. Basics of removing noise and artefacts.

IV. PRESENTATION TOOLS

The course provides an overview of visual representation of medical information for various audience. The students learn the use of several related tools, and work up a selected topic.

- 1. Introduction to presentation techniques: How to make a good presentation? technical and non-technical skills, best practices
- 2. Types of medical information, online information sources
- 3. Visual representation of information: word cloud, infographic etc.
- 4. Online tools for creating and sharing presentations

Requirements of participation of the lessons and the possibility of substitution of the absence:

According to rules of the Studies and Exam Code. Attendance on at least 3 of the 4 practices is mandatory.

The mode of the certificate in case of absence from the lessons:

According to rules of the Studies and Exam Code. No certificate accepted.

The requirements of signature at the end of the term (including also the number and the type of the students' exercises which are solved individual by them)

Attendance on at least 3 of the 4 practices is mandatory The mode of acquisition of the mark: Practical exercise

List of lecture notes, course books, study-aids and literature which can be used to acquisition of the syllabus:

The educational materials are available at http://dei-cloud.semmelweis.hu

Username and password is announced at the first practice.

INTRODUCTION TO PATIENT CARE

Institute:	Department of Family Medicine
Lecturer:	Prof. László Kalabay MD PhD
Tutor:	Dr. Péter Torzsa

Practice: 2 hours per week Credit: 2 Examination: semi-final

Second Semester

Thematic:

- An overview of medical profession.
- Formation of the consciousness of profession, personal careers.
- The attitude of the medical doctor. Communication with colleagues and the members of the medical staff.
- An overview of different levels of health care.
- The organization, function activity of the clinical department and general medicine praxis.
- Characteristics of the clinical work.
- Overview of the scientific activity of the clinical department. Raising interest on joining to it.

FIRST AID

Tutor: Dr. István Hornyák

Topics

- Principles of first aid. Recognition of an emergency. Assessment of the scene. Dangerous scene. Safety measurements on the scene. Call for an ambulance. Emotional viewpoints of managing emergencies.
- Assessment of the patient. Responsiveness unresponsiveness. Assessment of the responsive patient: complaints, signs for the severe condition. Positioning of the patient in specific conditions.
- The unconscious patient. Airway management. Assessment of the vital signs. Recovery position.
- Heart attack. Sudden death. Chain of survival. Assessment of vital signs.
- BLS (Basic Life Support)
- BLS
- AED (Automated External Defibrillator). PAD (Public Access Defibrillation)
- BLS + AED (management of situations)
- BLS + AED (Management of situations)
- Chocking. Drowning. Electrocution.
- Injuries. Extrication of the patient: Rautek maneuvers. Helmet removal. Mobilization and immobilization of injured patients.
- Bleeding control. Bandages. Burns. Shock.
- Fractures, dislocation, sprain. Slings.
- Stroke. Convulsions. Diabetes mellitus: Hypoglycaemia. Shortness of breath. BLS
- Poisoning. Drugs. Drunkenness.
- BLS

Note: Participation at 75% of practices is necessary. Compensation of absences is possible in subsequent practices.

Development in learning skills will be controlled all the time during the practices in the semester.

Mode of certifying absences: oral - referring to practices.

Requirements: The student should be able to recognize emergencies, and call for help start with BLS + AED provide airway management in unconscious patients provide first aid for patients complaining for chest-pain, shortness of breath, signs for hypoglycaemia and having suffered from fainting, shock condition, convulsion, injuries.

The performance of the above mentioned requirements at the last practice will be evaluated with "accepted" or "not accepted".

MEDICAL TERMINOLOGY (Latin)

Responsible organisational unit:

Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:

Zöldi Kovács Katalin PhD, Head of the Division

Lectores 10 in total; Practicals 28 in total

Assessment: 3 written tests

Role of subject in fulfilling the aim of training:

Students get familiarized with the Latin and Greek terminology of medicine in order to facilitate the acquisition of other subjects. Special focus is dedicated to anatomy, physiology, pathology and pharmaceutics. Furthermore, the course provides an introduction into general scientific terminology.

Brief description of subject:

The main aim of the subject is:

- 1. to acquire a knowledge of about 500-600 Latin words and phrases as a minimum vocabulary (basic vocabulary of medical and scientific language),
- 2. the correct application of
 - a) anatomical names,
 - b) names of diseases
 - c) names of drugs,
- 3. to understand diagnoses and prescriptions;
- 4. to learn about abbreviations used in prescriptions.
- 5. to be able to make a clear distinction between medical terms of English and Latin/Greek.

Course content of practical lessons:

1. Grammar:

Nouns: the 5 Declensions

Adjectives - construction of the most important attributive structures with the vocabulary of anatomy, clinical subjects and of pharmaceutics. *Prepositions* (in anatomical, clinical and pharmaceutical phrases)

Numerals: Usage on prescriptions.

2. Texts containing:

a) anatomical names;

b) clinical and patho-anatomical diagnoses;

- c) prescriptions
- 3. Vocabulary

Latin and bilingual (Greek-Latin) nouns, adjectives, numerals and prepositions used in anatomy, the clinical subjects and pharmaceutics; Course material, recommended text book(s), professional literature and supplementary reading(s)

Belák E. Medical Terminology for Beginners (earlier title: Medical Latin), Budapest: Semmelweis Kiadó.

HUNGARIAN MEDICAL TERMINOLOGY I.

Responsible organisational unit:

Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:

Zöldi Kovács Katalin PhD, Head of the Division 4 lessons per week, 4 credits, Assessment: end-term written and oral exam

Role of subject in fulfilling the aim of training:

The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective communication in the language they use during their field practice both in their everyday life //survival language// and in their academic studies. Raising students' awareness of cultural differences is one of our top priorities.

Brief description of subject:

The first three modules are dedicated to learning basic general vocabulary and grammar. In the first module students acquire basic structures and the vocabulary for everyday topics / e.g. shopping, food, housing etc./, language for "survival.". The course places special emphasis on phrases essential for everyday communications, e.g. introductions, greetings, getting/giving information etc. Grammar is of less importance in this phase of language studies.

Course content of practical lessons:		Lesson 29-30:	I would like a tea
Lesson 1-2:	The alphabet	Lesson 31-32:	Shopping for food
Lesson 3-4:	Greetings	Lesson 33-34:	Ordering food- in a café
Lesson 5-6:	Where are you from?	Lesson 35-36:	Rooms in the flat
Lesson 7-8:	Introducing people	Lesson 37-38:	Furniture in the rooms
Lesson 9-10:	Numbers-phone numbers	Lesson 39-40:	Where are the furniture?
Lesson 11-12:	What time is it?	Lesson 41-42:	As a guest
Lesson 13-14:	Practising telling the time	Lesson 11-12:	At a party
Lesson 15-16:	Days	Lesson 43-44:	Where can I find the library?
Lesson 17-18:	When do you study?	Lesson 45-46:	When shall we meet?
Lesson 19-20:	What is it? - food	Lesson 47-48:	Asking for information, setting programs
Lesson 21-22:	Consolidation	Lesson 49-50:	Places in the city
Lesson 23-24:	Test 1 + situations	Lesson 51-52:	Consolidation
Lesson 25-26:	What is the food like? - adjectives	Lesson 53-54:	Test 2 + situations and communication practice
Lesson 27-28:	What do you think of English tea?- giving opinions	Lesson 55-56:	Assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)

Gyöngyösi Lívia - Hetesy Bálint. Hungarian language: Jó reggelt! Semmelweis Egyetem Egészségtudományi Kar, 2010.

HUNGARIAN MEDICAL TERMINOLOGY II.

Responsible organisational unit:

Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:

Zöldi Kovács Katalin PhD, Head of the Division

4 lessons per week, 2 credits,

Assessment: midterm (written) and endterm (written and oral) tests

Role of subject in fulfilling the aim of training:

The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective communication in the language they use during their field practice both in their everyday life /'survival language'/ and in their academic studies. Raising students' awareness of cultural differences is one of our top priorities.

Brief description of subject:

The first three modules are dedicated to learning basic general vocabulary and grammar. In the second module students acquire basic structures and the vocabulary for everyday topics (e.g. family, relatives, at the doctor's etc.) language for "survival". The course places special emphasis on phrases essential for everyday communications, e.g. likes, dislikes, offering help, etc. Grammar is of less importance in this phase of language studies.

Course content of practical lessons:

Lesson 1-4:	Forming questions
Lesson 5-6:	Plural forms
Lesson 7-8:	What do you like doing in your free time?
Lesson 9-10:	I would like to
Lesson 11-12:	Communication skills
Lesson 13-14:	A date – what do you like?
Lesson 15-16:	I like dancing, swimming etc.
Lesson 17-18:	I can ride a bike, drive etc.
Lesson 19-20:	Communication practice
Lesson 21-22:	Can I help you? In a clothes shop
Lesson 23-24:	Can I give you something else?
Lesson 25-26:	Communication practice
Lesson 27-28:	Consolidation
Lesson 29-30:	Test 1 + situations
Lesson 31-32:	I have a headache – at the doctor
Lesson 33-34:	At the chemist's
Lesson 35-36:	Communication practice – at the doctor, at the chemist's
Lesson 37-38:	My family, family members
Lesson 39-40:	Family relations
Lesson 41-44:	Communication practice- introducing your family
Lesson 45-48:	My boss' wife – social relations
Lesson 49-50:	Consolidation
Lesson 51-54:	Test 2 – situations, communication practice
Lesson 55-56:	Assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)

Gyöngyösi Lívia - Hetesy Bálint. Hungarian language: Jó napot kívánok! Semmelweis Egyetem Egészségtudományi Kar, 2011.

PHYSICAL EDUCATION I.

Department of Physical Education

Type of Subject: Compulsory Code of Subject: AOKTSI009_1A Credit: 0 Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:

One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):

Reduced to bi-weekly scheduled double-classes (90min.).

I. St. year I. semester:

1 – 2 weeks:	General information Accident, fire and environmental education. The mid-year adoption requirements, the construction of classes and the presentation of the university recreational and sports opportunities for extra – curricular activities. The purpose and practice of the warm-up, such as preventing sport injuries. Common warm-up. Free exercises.
3 – 4 weeks:	Stamina Development Preferably outdoors, on grass ground running, with the aim of developing good running and breathing techniques.
5 – 6 weeks:	Coordination enhancing exercises Various arm and leg exercises in place and in motion (walking, running, jumping, etc.)
7 – 8 week:	Balls skill development Introducing the most popular ball-games (football, basketball, handball, volleyball). Exercising technical and tactical elements of the games.
9 – 10 weeks:	Strengthening exercises Hand-wait exercises in walking, running and jumping stationary.
11 – 12 weeks:	Posture improving exercises Core muscle strengthening exercises in various positions.
13 – 14 weeks:	Stretching exercises and it's relaxing effects The physiological background of stretching and it's practical role and importance in everyday activities.

Requirements to participate in the sessions and the potential for absences:

Active participation in sport classes.

The method of proof for the workshops and the exam absence:

The absence can not be proved, should make up for the lost lessons

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type): Active participation in six classes approved by the staff.

How to prove absence regarding the exam:

Absence must be retaken!

PHYSICAL EDUCATION II.

Type of Subject: Compulsory Code of Subject: AOKTS1009_2A Credit: 0 Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:

One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):

Reduced to bi-weekly scheduled double-classes (90min.).

I. St. year II. semester:

1 – 2 weeks:	General information Accident, fire and environmental knowledge. Requirement for acceptance of the semester system, the structure of the classes and the presentation of the university recreational sports opportunities for extra -curricular activities. Theory and practical application of the warm-up as a sports injury risk significantly reducing factor. Common to the bench. Free exercises.
3 – 4 weeks:	Stamina Development Moderate – intensity continuous running load. Skipping exercises, practice free base form of gymnastic exercises.
5 – 6 weeks:	Coordination enhancing exercises The Floorball – learning the basic technical and tactical aspects of the game to improve hand-eye coordination.
7 – 8 week:	Strengthening exercises Using medicine-balls focusing on different muscle groups.
9 – 10 weeks:	Ball games Basketball – skill improving exercises (dribblings, throws, passes, etc.)
11 – 12 weeks:	Posture improving exercises Wall-bar exercises (pull-ups, crunches, etc)
13 – 14 weeks:	Stretching exercises Stretching exercises in pairs using sitting, standing, recumbent positions.

Requirements to participate in the sessions and the potential for absences:

Active participation in sport classes.

The method of proof for the workshops and the exam absence:

The absence can not be proved, should make up for the lost lessons.

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type): Active participation in six classes approved by the staff.

How to prove absence regarding the exam:

Absence must be retaken!

COMPULSORY SUMMER PRACTICE

SUMMER (NURSING) PRACTICE

Credit point: 1 Total hours: 160 practice Type of course: compulsory Course code: AOKNSG676 1M

Aim of the course, its position in the medical curriculum:

Introduction of the structure of the clinic/hospital and the operating of the given ward. Learning the process of patient care and nursing through practical training. Learning basic skills of everyday nursing tasks, which will be used during further medical practice and after completion of the medical training.

Acquired competences after successfully completing the course:

Ability to assess basic nursing needs of the patient.

Ability to detect, observe, and document patient's vital signs (pulse, blood pressure, respiration, temperature).

Ability to administer subcutaneous and intramuscular injection, collect blood, place venous cannula under supervision, recognise minor complications.

Knowledge of basic skills of resuscitation.

Student enrolment requirements (minimum, maximum), method of student selection:

Number of attending students as given by the practical site. Valid Occupational Medical Examination certificate, certificate of occupational, fire, and environment protection training.

How to apply for course:

After applying on the NEPTUN site, contact clinical head nurse of the practical site/in case of a hospital contact hospital nursing board, regarding the beginning of the practice.

Detailed syllabus:

1st week:	Introduction to the operating of the ward. Observing nursing activities, assessment and documentation of nursing needs, and patient's environment. Actively taking part in everyday nursing care of patients with the support of nurses. Observing and acquiring communication skills with patients. Observing laboratory and other examination procedures, as well as preparation of patient for surgery/examination. Learning the use of personal protective equipment, as well as hygienic and antiseptic hand washing. Learning basic skills, protocol, and ward devices for resuscitation.
2nd week:	Independent nursing care patient admission, measurement of weight, height, blood pressure, pulse, temperature, respiration, blood glucose, assessment of needs, documentation. Development of patient's environment. Assistance with performance of ECG. Observe administration of medication, blood collection, administration of injection, placement of venous cannula, infusion and transfusion therapy, assistance in preparation, recognition of minor local complications. Administration of sub-cutaneous and intramuscular injection under supervision of nurse.
3rd week	Blood collection, administering injection, placement of venous cannula under supervision of purse. Continuous practice of

3rd week: Blood collection, administering injection, placement of venous cannula under supervision of nurse. Continuous practice of knowledge acquired during the first two weeks.

4th week: Continuous practice of knowledge acquired during the first three weeks.

Requirements for participation in classes and opportunities to make up for absences:

Two classes may be missed, further absences cannot be made up.

The criteria for end-of-term signatures:

Regular attendance of the practical. According to the Studies and Exams Code, the criteria for obtaining signature is at least 75% participation in the practical.

Type of exam:

practical

Exam requirements:

Student chooses one task from the list of given tasks, and performs the given task in practice. In connection with the task the student assesses the patient's nursing care needs, and detects, observes, and documents vital signs (pulse, blood pressure, temperature, respiration).

Method and type of class marks:

Criteria for obtaining a signature is regular attendance of the practical, for the performance of the chosen item a mark is given: passed with excellence (5) - passed (3) - not passed (1).

How to apply for the exam:

The practical exam takes place on the last day of the practice.

Opportunity to repeat the exam:

The practical exam can be repeated two times.

The list of printed, electronic and online notes, textbooks, study aids and literature to be used to learn the curriculum (in case of online sources, html address):

Recommended literature:

Bokor, Nándor: Általános ápolástan és gondozástan (Medicina 2013.) Oláh, András (ed). Az ápolástudomány tankönyve http://eta.bibl.uszeged.hu/906/1/0061_apolastudomany_magyar.pdf

EXAMINATION ITEMS

- 1. Describe and demonstrate the process of hygienic hand disinfection.
- 2. Describe the daily routine of the ward, and the content of the nursing documentation.
- 3. After the patient left, tidy up the bed and its environment.
- 4. Describe possibilities of positioning patient in bed. Perform positioning taking patient's comfort and safety needs into consideration.
- 5. Prepare for and perform tidying up patient's bed, and bathe patient. Describe patient's hygiene, comfort and safety needs, and inform patient about the nursing procedure.
- 6. Prepare for a non-independent patient's need to defecate, and perform the necessary nursing procedure. Describe aspects of observation regarding the quality and quantity of the exudates.
- 7. Describe possible nutrition and fluid intake needs of the patient. Describe nursing tasks of enteral nutrition and sufficient hydration of the patient. Demonstrate leading a fluid chart.
- 8. Describe disinfection methods of the instruments and devices of the ward; explain asepsis and antisepsis.
- 9. A new patient is admitted to the ward. Assign patient to a hospital room, take nursing history, and fill out patient admission chart.
- 10. Measure weight, height, temperature, and respiratory rate of newly admitted patient, and indicate these values on patient's chart and nursing documentation.
- 11. Prepare for and perform blood pressure measurement. Take the pulse. Indicate these values on patient's chart and nursing documentation.
- 12. Describe nursing tasks for monitoring of bodily discharges. Indicate quality and quantity of discharges on patient's chart and nursing documentation.

- 13. Prepare subcutaneous injection for administration. Describe procedure and possible complications of administration. Perform administration under supervision of nurse, fill out necessary documentation.
- 14. Prepare intramuscular injection for administration. Describe procedure and possible complications of administration. Perform administration under supervision of nurse, fill out necessary documentation.
- 15. Prepare blood pressure measurement and perform procedure under supervision of nurse. Describe possible complications of taking blood pressure.
- 16. Prepare for placing permanent venous cannula. Describe means of fixing venous cannula, observation points, and possible complications. Perform placement of cannula under supervision of nurse, fill out necessary documentation.
- 17. Prepare for placing and intravenous drip administered for patient. Set up the infusion. Perform documentation regarding the infusion therapy.
- 18. Prepare for blood group determination and transfusion. Describe nursing tasks.
- 19. Prepare for and perform bedside blood glucose measurement. Explain what the device indicates in case of high or low blood glucose levels. Indicate these values on patient's chart and nursing documentation.
- 20. Prepare for placement of permanent catheter. Describe procedure and possible complications of placement. Document procedure.
- 21. Prepare 12 channel ECG with standard and chest leads for patient. Describe procedure of placement of ECG electrodes.
- 22. Describe options and methods of decubitus risk assessment. Perform and document decubitus risk assessment. Describe prevention methods.
- 23. Prepare for changing protective dressing and wound treatment. Describe procedure of changing dressing and wound treatment. Examine condition of the wound. Document procedure.
- 24. During medical rounds an elastic bandage was ordered for the patient's lower limb. Apply elastic bandage and document procedure.
- 25. Describe nursing tasks regarding medication (distributing and administering medication). Perform identification of patient, administration of medication, and necessary documentation.
- 26. Describe possibilities and procedures of special medication administration forms (drip, inhalant, rectal, vaginal).
- 27. Describe personal protective equipment used at ward, and their application. Possible methods for prevention of nosocomial infections.
- 28. Describe general and specialist diagnostic methods of the ward, and the preparations necessary for the examinations.
- 29. A patient in shock is admitted to the ward during night shift. Describe symptoms of circulatory and respiratory failure, and their recognition. Prepare for initiation of basic resuscitation, and describe procedure.

NOTE

BASIC MODULE



Faculty of Medicine 2nd year

STUDY PROGRAMME

Second year in the 2020/2021 academic year

3rd Semester

	hours				
course name	lecture (h/week)	pratice (h/week)	credit	prerequisite(s)	examination
Microscopic Anatomy and Embryology II.	2	2	4	Microscopic Anatomy and Embryology I., Medical Terminology	semi-final
Medical Physiology I.	5,5	5	10	Macroscopic Anatomy II. Medical Biophysics II., Medical Biochemistry I.	semi-final
Medical Biochemistry II.	3	2	5	Medical Biochemistry I.	final
Molecular Cell Biology I.	2	2	4	Cell Science	semi-final
Medical Psychology	1	2,5	4	Medical Sociology – Health Care, Medical Communication	semi-final
Hungarian Medical Terminology III.	0	4	2	Hungarian Medical Terminology II.	pract. mark
PE III.	0	1	0	PE II.	signature

4th Semester

	hours				
course name	lecture (h/week)	pratice (h/week)	credit	prerequisite(s)	examination
Medical Microbiology I.	2	2	4	Microscopic Anatomy and Embryology I. Medical Biochemistry I., Cell Science	semi-final
Medical Physiology II.	5,5	4,5	10	Medical Physiology I.	final
Molecular Cell Biology II.	3	2	5	Molecular Cell Biology I.	final
Immunology	2	1,5	3	Molecular Cell Biology I., Medical Biochemistry II.	semi-final
Genetics and Genomics	2	1,5	3	Molecular Cell Biology I., Medical Biochemistry II.	semi-final
Hungarian Medical Terminology IV.	0	4	2	Hungarian Medical Terminology III.	pract. mark
PE IV.	0	1	0	PE III.	signature

LIST OF TEXTBOOKS (The list may change!)

- 1 Harper's Illustrated Biochemistry, 30th edition, Lange, ISBN-10: 0071825347
- 2 Berne-Levy-Koeppen-Stanton: Physiology, 6th updated edition, Mosby. ISBN-10: 032307362X
- 3 Lodish: Molecular Cell Biology, 8th edition (2016); ISBN-13: 978-1-4641-8339-3
- 4 Cockerham, William C.: Medical Sociology. Prentice Hall, Upper Saddle River, 2006.
- 5 Marthy A. & Végh Á. Egészségére! Magyar orvosi szaknyelv. Semmelweis Egyetem Egészségtudományi Kar, 2010.
- 6 Immunology seminars (e-book): http://gsi.semmelweis.hu
- 7 Medical Genetics and Genomics (e-book)

Recommended textbooks:

- 1 Murray, Robert K-Granner, Daryl K-Mayes, Peter A-Rodwell, Victor W: Harper's Illustrated Biochemistry. 26th ed. McGraw-Hill. ISBN 0-07-138901-6 (online version: www.lib.sote.hu)
- 2 Biochemistry Laboratory Manual. Ed.Gy.Szabados. Bp. Semmelweis Univ.

MICROSCOPIC ANATOMY AND EMBRYOLOGY II.

Department of Anatomy, Histology & Embryology Course Director: Dr. Andrea D. Székely Dr. Sándor Katz

Credit value: 4 Number of lessons per week: 4 lectures: 2 practical course: 2 seminar: 0

Type of the course: compulsory course

Subject code²: AOKANT674_2A Name of the course leader: Dr. Szél Ágoston (full professor)

Objectives of the subject, its place in the medical curriculum:

Demonstration of the fine structure of cells and tissues composing the organs of the human body specifically to provide the future clinicians/ medical doctors with a valid body of information describing the microscopical elements of clinically significant morphological structures (including cell biology, general histology and the histology of organs).

General embryology demonstrates the steps of the formation of a new human being together with the stages of intrauterine development, including the clinically relevant aspects of the development of organ systems. Teaching is done in the form of lectures and histology laboratory classes

Place where the subject is taught (address of the auditorium, seminar room, etc.):

Semmelweis University, Department of Anatomy, Histology and Embryology Budapest 1094, Tűzoltó utca 58.

Successful completion of the subject results in the acquisition of the following competencies:

Understanding the microscopical composition of the human body together with the understanding of human development in order to draw parallels with macroscopical anatomy. Clear understanding of histological structure and function. Ability to identify basic structural elements within the tissue specimen. Identification of general directions/landmarks within digitized tissue slides.

Course prerequisites:

Cell sciences, cell biology Microscopic anatomy and embryology I

Number of students required for the course (minimum, maximum) and method of selecting students):

obligatory for all registered students, on the basis of registration via the NEPTUN system. How to apply for the course: Via the NEPTUN system.

Detailed curriculum:

List of lectures

1. week:	Cellular components of lymphatic tissue. Thymus, tonsils, MALT Structure and circulation of lymph nodes and spleen
2. week:	Microscopy of the CNS – fine structure of the spinal cord (spinal reflexes, receptros, effectors, monosynaptic/proprioceptive reflexes Microscopy of the CNS – Nociceptive (withdrawal) and autonomic reflex arcs
3. week:	Microscopy of the CNS – Nerve tissue. Fine structure of the cerebral cortex. Microscopy of the CNS – Diencephalon, thalamic nuclei
4. week:	Microscopy of the CNS – Sensory systems, epicritical and protopathic sensibility Microscopy of the CNS – Motor systems, pyramidal tract
5. week:	Microscopy of the CNS – Brainstem nuclei and pathways. Brainstem monoaminergic systems Microscopy of the CNS – Structure and connections of the basal ganglia.
6. week:	Microscopy of the CNS – Microscopy of the cerebellum, pathways. Microscopy of the CNS – Limbic system
7. week:	Microscopy of the CNS – Hypothalamus, the hypothalamo-hypophysial system Microscopy of the CNS – Endocrine organs (pineal, thyroid, parathyrois, adrenal glands)
8. week:	Development of the neural tube. Cranio-caudal and dorso-ventral differentiation. Differentiation of the brain vesicles
9. week:	Formation and derivatives of the neural crest and placode ectoderm Development of the skull
10. week:	Development of the vertebral column, limb development Skin and appendages. Mammary gland
11. week:	Fibrous and vascular coats of the eyeball. Lens, chambers of the eye, vitreous body, accommodation Inner coat of the eyeball, retina
12. week:	Optic nerve, visual pathway, visual reflexes. Development of the eye External ear, middle ear - tympanic cavity, tympanic membrane, auditory ossicles
13. week:	Bony and membranous labyrinth. Vestibular system Spiral organ of Corti. Auditory pathway. Development of the organ of hearing
14. week:	Microscopy of the CNS – Olfactory and gustatory systems Drugs of abuse, opiates and receptor mediated actions in the CNS

Histology laboratories

1. week:	Thymus, tonsils
2. week:	Lymph node, spleen
3. week:	Histology of the peripheral nervous system
4. week:	Histology of the central nervous system
5. week:	Midterm test 1(Histology slides of weeks 1-4) Microscopy of the CNS - consultation 1.
6. week:	Microscopy of the CNS – consultation 2.
7. week:	Microscopy of the CNS – consultation 3.
8. week:	Microscopy and development of the CNS - consultation 4.
9. week:	Midterm test 2 Microscopy of the CNS Development of the nervous system
	Endocrine system 1.
10. week:	Endocrine system 2.
	Histology of palm skin, scalp skin. Mammary gland
11. week:	Histology of the organ of vision
12. week:	Histology of the organ of hearing
13. week:	Revision 1.
14. week:	Revision 2.

Other subjects concerning the border issues of the given subject (both compulsory and optional courses). Possible overlaps of themes:

Macroscopic Anatomy I - II.

Cell sciences, cell biology

Certain chapters of Biochemistry. The endocrine and central nervous systems are also discussed in Physiology

Special study work required to successfully complete the course:

none

Requirements for participation in classes and the possibility to make up for absences:

Active participation in histology laboratory classes is obligatory for every student. Students should attend at least 75% of the scheduled hours to gain a signature proving the validity of the semester. Absences are therefore limited in **25%**. Attendance will be recorded in the histology laboratory classes

Methods to assess knowledge acquisition during term time:

The knowledge of students will be checked in midterm tests (held prospectively in weeks 5 and 9). written (electronic) test. Attendance is obligatory at the two midterm tests. Students absent from the tests should reattend at one of the offered retakes. Histology and Embryology midterms are written (Moodle) examinations organised as e-learning type examination where a valid SeKa account (including user name&-password) is required.

The time and topics of midterm tests will be announced in the departmental homepage at the beginning of the semester (http://semmelweis. hu/anatomia).

Requirements for signature:

Active participation in at least 75% of dissection room sessions, including the midterm tests (irrespective of the result) is obligatory for every student.

Type of examination:

Final (written and oral) examination, topics: subject matter of the semester (Microscopic Anatomy and Embryology I.). Final examinations consist of written theoretical and oral practical parts.

- 1. Written pretest (e-learning module)
- 2. Microscopic Anatomy identification of structures on digitized tissue slides including relevent theoretical questions from the subject matter of the semester

Requirements of the examination:

During the final examination the knowledge of students will be tested. Final examinations are composed of written (theoretical) and oral (practical) parts with the latter being conducted with the use of digitized histological tissue slides.

Topic list for the semifinal examination:

Microscopic Anatomy and Embryology I.

(see there)

Microscopic Anatomy and Embryology II.

Lymphatic organs

- Lymphatic tissues in general, cellular components
- Histological structure of lymph nodes
- Spleen (fine structure and circulation)
- Thymus
- Tonsils, MALT

Development of the nervous system and organs of special senses

- Development and primary differentiation of the neural tube
- Development of brain vesicles
- Development of the peripheral nervous system (neural crest, placodes)
- Development of the organ of vision
- Development of the organ of hearing&equilibrium

Development of the locomotor system

- Membranous and cartilaginous neurocranium and viscerocranium
- Development of the limbs and vertebral column
- Development of the muscular system

Neurohistology

- Histology of the neurons developing from the neural tube
- Glial cells
- Histology of the neurons and supporting cells developing from the neural crest
- Fine structure of peripheral nerves
- Receptors and effectors
- Interneuronal synapses

Microscopy of the central nervous system

- Fine structure (microscopy) of the spinal cord
- Proprioceptive reflexes
- Nociceptive reflexes

- Autonomic reflexes
- Fine structure of the medulla oblongata
- Fine structure of the pons
- Fine structure of the midbrain
- Classification of cranial nerve nuclei
- Tracts of the brain stem
- Reticular formation, monoaminergic systems
- Fine structure of the cerebellum
- Cerebellar afferents and efferents
- Fine structure of the thalamus
- Hypothalamo-hypophyseal system
- Fine structure of the basal ganglia
- Fine structure of the cerebral cortex, cortical fields
- Tracts of the protopathic sensibility (anterolateral system)
- Tracts of the epicritic sensibility (posterior funiculus/medial lemniscus)
- Corticospinal tract (pyramidal tract)
- Extrapyramidal system
- Limbic system (nuclei and tracts)
- Microscopy of the autonomic nervous system, tracts

Endocrine organs

- Microscopical anatomy and development of the pituitary gland. Portal circulation
- · Microscopical anatomy of the pineal gland
- · Microscopical anatomy and the development of the thyroid gland
- · Microscopical anatomy and the development of the parathyroid gland
- Microscopical anatomy and the development of the suprarenal gland
- Histology of the islands of Langerhans

Organs of special senses

- Microscopical structure of the skin (scalp and palm)
- Histology of the mammary gland (mamma lactans et non-lactans)
- Coats of the eyeball
- Chambers of the eye, vitreous body
- Lens, accomodation
- Visual pathway, visual reflexes
- External ear, tympanic membrane. Tympanic cavity, auditory tube, hearing ossicles.
- Organ of Corti. Auditory pathway
- Vestibular system
- Bony and membranous labyrinth
- Cochlea and cochlear duct
- Organs of olfaction and taste

Method and type of evaluation:

Final examinations are composed of written theoretical and oral practical parts. The written theoretical examination is done using an e-learning module while the practical examination is conducted with the help of digitized histological tissue slides.

Examiners are delegated by the Course Director with the consent of the Head of Department.

Students are given separate marks for each part of the examination. Unsuccessful partial examinations result in the failure of the semifinal examination. When failing at the practical part, the written test will not have to be repeated in case the result was a 4 or a 5 only. Upon the termination of the examination the Chairman of the Examination Committee composes the final mark from the partial marks earned in the written and practical parts.

How to register for the examination? Via the NEPTUN system

Possibilities for exam retake:

According the Study and Examination Policy

Printed, electronic and online notes, textbooks, guides and literature (URL address for online material) to aid the acquisition of the material:

List of textbooks

- 1. Langmann's Medical Embryology, 13th Edition by TW Sadler, Wolters Kluwer, ISBN 9781469897806, 2014
- 2. Histology: A Text and Atlas: With Correlated Cell and Molecular Biology; 7th Edition by MH Ross and W Pawlina; Wolters Kluwer 2015, ISBN 9781451187427
- Wheater's Functional Histology, A Text and Colour Atlas, 6th Edition by B Young, G O'Dowd and P Woodford Churchill Livingstone, Edinburgh, 2013, ISBN 9780702047473
- 4. Stevens & Lowe's Human Histology, Elsevier, 4th edISBN 978-0-723435020, 2015.
- Functional Anatomy, Histology and Embryology for medical and dental students by M. Réthelyi and J. Szentágothai, Medicina, 2018.
 6.
- 7. The Developing Human Clinically Oriented Embryology, 10th ed. by KL Moore, TVN Persaud and M Torchia, Saunders, 2015; ISBN 9780323313384
- 8. Histology Manual 1-3. by A. Nemeskéri and K. Kocsis: István Apáthy's Foundation, 2019.
- 9. A. L. Kierszenbaum Histology and Cell Biology: An Introduction to Pathology, 4th Edition, Paperback with STUDENT CONSULT Online Access and E-Book ISBN: 9780323085885:, 2015
- 10. Junqueira's Basic Histology: Text and Atlas; 13th Edition by Anthony Mescher, New York, McGraw-Hill Medical, 01/03/2013 ISBN13 978007178033

Further study aids:

To be downloaded from the homepage of the Department of Anatomy, Histology and Embryology (http://semmelweis.hu/anatomia) or from Knowledgebase on the Library homepage: (https://lib.semmelweis.hu/knowledge_base).

MEDICAL PHYSIOLOGY I.

Department of Physiology

Name of subject: Medical Physiology I.

Type of subject: Compulsory subject Subject code: AOKELT466_1A (subject to change by introducing the new curriculum) Credit Points: 10 Head of the Department: *Dr. László Hunyady, Full Professor* Course Director: *Dr. Péter Várnai, Full Professor* Tutor: *Dr. András Balla*

Aim of Medical Physiology course:

The goal of Medical Physiology course is to give the students the understanding of the concepts and principles of medical physiology. The lectures provide the information base while the seminars and practices provide the student with an opportunity to assimilate and integrate the material. Appropriate clinical perspectives are presented throughout the course.

Schedule of the subject:

- 1. Introduction, body fluids. Functions of cellular membranes, transport across membranes. Transepithelial transports.
- 2. Signal transduction: receptors, G proteins, second messengers. Cellular calcium metabolism, receptors of growth factors and cytokines. Membrane trafficking and vesicular transport.
- 3. Ion channels and resting membrane potential. Action potential. Physiology of nerve cells, synaptic transmission in the central nervous system.
- 4. Autonomic neurotransmitters and physiology of smooth muscle. Neuromuscular junction and physiology of skeletal muscle. Physiology of the heart I.: origin and spread of cardiac excitation.
- 5. Cardiac cycle. Regulation of cardiac output. Electrocardiography (ECG).
- 6. Physiology of blood circulation: introduction. Hemodynamics, systemic circulation. Microcirculation.
- 7. Venous circulation and lymph flow. Local control of circulation. Reflex control of circulation.
- 8. Circulation of blood in the brain and coronary circulation. Splanchnic circulation, circulation of skin and skeletal muscle.
- 9. Respiration: pulmonary ventilation. Gas exchange in the lungs. Pulmonary circulation, ventilation-perfusion relationship.
- 10. Gas transport, hypoxias. Regulation of respiration. Adaptation of cardiovascular and respiratory system.
- 11. Renal function: renal circulation, glomerular filtration. Tubular functions. Concentration, dilution.
- 12. Regulation of body fluids and osmotic concentration. Introduction to acid-base balance. Acid-base balance: role of lungs and kidneys.
- 13. General principles of regulation in the gastrointestinal tract. Motor functions of the gastrointestinal tract.
- 14. Secretory functions of the gastrointestinal tract. Digestion and absorption of food. Energy balance, quality and quantity requirement of food.

Practices:

- Blood cell counting, determination of hemoglobin concentration and hematocrit, measurement of erythrocyte sedimentation rate
- Leukocyte differential count on peripheral blood smear
- Typing of Blood Groups, Blood Coagulation Test
- Measurement of transport rate on red blood cells. Hemolysis
- Investigation of cardiac functions in situ
- Blood pressure measurement in humans
- Echocardiography
- Computer simulation: Neuromuscular junction
- Electromyography (EMG), nerve conduction velocity
- Recording and analyzing the human ECG
- Computer simulation: Skeletal and smooth muscle
- Effects of vagal nerve stimulation on cardiac functions
- Respiratory physiology calculations
- Evaluation of acid-base parameters with the Siggaard-Andersen nomogram

Attendance at classes: The lecture hours per week are 5; the practice hours per week are 5. The attendance of a minimum of 75% of practices (including seminars) is necessary for the end-term signature.

Absences:

No more than three absences from practices are allowed for any reason; otherwise the semester will not be credited. Missed sessions must be reported to the teacher the week after. There are no extra practices. Absence from the exam must be certified at the Head of the Department or Course Director within 3 working days.

Grading Performance in Seminars and Practices:

The knowledge of the students is tested in a written form on a weekly base. The written short tests cover the material of lectures of the previous week. The following rules will be enforced during the short tests: electronic devices must be kept in the baggage; any form of communication is disallowed; students not complying with these rules will be disqualified immediately. Evaluating the work of the student is based on his/her classroom tests and performance practice in the regular period of the semester. Missed tests cannot be repeated. The evaluation of the weekly written test will be expressed as a percentage. The average of the best written tests (the tests in the semester minus the three worsts) and the practical grade (also is expressed as a percentage) result a five-point scale:

This grade is taken into account in the exams.

Obtaining signatures:

The attendance of a minimum of 75% of practices (including seminars) is necessary for the end-term signature. Students must write a lab report for each practice using the Practical Book. The Practical Book should be signed by the teacher not later than one week after the practice. Participation in the practices is compulsory. No more than three absences from practices are allowed for any reason; otherwise the semester will not be credited.

Semi-final exam:

In the examination period the students have to give semi-final exam in the first semester.

Type and grading of exams:

The semi-final exam is oral exam. The oral exam consists of two theoretical questions (I-II). The overall result of the oral exam is based on the two theoretical grades and the lab work grade but a failed (1) theoretical question results in an overall failed (1) final exam.

Lists of the theoretical questions are listed in the webpage in the Department of Physiology. The following rules will be enforced during the exams: electronic devices must be kept in the baggage; baggage and overcoats should be placed next to the wall of the lecture halls; any form of communication is disallowed; students not complying with these rules will be disqualified immediately.

Requirements of the exams:

Semi-final exam: material of the Medical Physiology I.

Registration for the exam:

Registration for the exam must be recorded through the NEPTUN system. Modification of the registration for the exam: Modification in the registration must be recorded through the NEPTUN system not later than 48 hours before the start of the exam.

Absences from the exams:

Failing to certify absence or denying it cause registering "absence" = "nem jelent meg" in the lecture book and/or in the NEPTUN system.

List of textbooks:

Textbook: Koeppen-Bruce M- Stanton- Bruce A: Berne & Levy Physiology (7th edition). 2017. ISBN: 9780323393942 Practice book: Practices in Medical Physiology (Edited by: Péter Enyedi and Levente Kiss). 2017. ISBN: 9789633314159.

MEDICAL PHYSIOLOGY II.

Type of subject: Compulsory subject

Subject code: AOKELT466_2A (subject to change by introducing the new curriculum) Credit Points: 10

Head of the Department: *Dr. László Hunyady*, Full Professor Course Director: *Dr. Péter Várnai*, Full Professor Tutor: **Dr. András Balla**

Prerequisite: Medical Physiology I. (subject to change by introducing the new curriculum)

Aim of Medical Physiology course:

The goal of Medical Physiology course is to give the students the understanding of the concepts and principles of medical physiology. The lectures provide the information base while the seminars and practices provide the student with an opportunity to assimilate and integrate the material. Appropriate clinical perspectives are presented throughout the course.

Schedule of the subject:

- 1. Haematopoiesis. Haemostasis, overview of immune system. Principles of the innate immunity.
- 2. Humoral immunity. Cellular immunity. Regulation of immune response, blood groups
- 3. Endocrine regulations. The hypothalamo-adenohypophyseal system; growth hormone, somatomedins.
- 4. Function of the adrenal cortex. Function of the thyroid gland.
- 5. Hormonal regulation of intermedier metabolism.
- 6. Calcium metabolism, bone tissue, growth. Function of the reproductive system: endocrinology of the sexual differentiation and development.
- 7. Function of the reproductive system: male sexual function; female sexual function; endocrinology of pregnancy, parturition, and lactation.
- 8. Introduction to neurophysiology. Physiology of nerve & glia cells.
- 9. Sensory functions.
- 10. Physiology of hearing and equilibrium.
- 11. Physiology of vision.
- 12. Motor functions.
- 13. Integration of autonomic responses.
- 14. Electroencephalogram (EEG); sleep phenomena. Learning and memory. Regulation of behavioral mechanisms, motivation; emotion.

Practices:

- Studies on circulatory reactions of a virtual rat
- Circulatory and respiratory reflexes in rabbit (Demonstration, Practice)
- Smooth muscle of rabbit small intestine
- Human pulmonary function tests Spirometry
- Measurement of cardiac output in rat
- Pulse wave in human
- Oral glucose tolerance test (OGTT)
- Human pulmonary function tests Body plethysmography
- Electrooculography (EOG) and investigation of the vestibular system
- Spiroergometry
- Human visual physiology
- Investigation of reflexes
- Practice for lab exam. Lab exam

Attendance at classes: The lecture hours per week are 6; the practice hours per week are 4.5. The attendance of a minimum of 75% of practices (including seminars) is necessary for the end-term signature.

Absences:

No more than three absences from practices are allowed for any reason; otherwise the semester will not be credited. Missed sessions must be reported to the teacher the week after. There are no extra practices. Absence from the exam must be certified at the Head of the Department or Course Director within 3 working days.

Grading Performance in Seminars and Practices:

The knowledge of the students is tested in a written form on a weekly base. The written short tests cover the material of lectures of the previous week. The following rules will be enforced during the short tests: electronic devices must be kept in the baggage; any form of communication is disallowed; students not complying with these rules will be disqualified immediately. Evaluating the work of the student is based on his/her classroom tests and performance practice in the regular period of the semester. Missed tests cannot be repeated. The evaluation of the weekly written test will be expressed as a percentage. The average of the best written tests (the tests in the semester minus the three worsts) and the practical grade (also is expressed as a percentage) result a five-point scale:

This grade is taken into account in the exams.

Obtaining signatures:

The attendance of a minimum of 75% of practices (including seminars) is necessary for the end-term signature. Students must write a lab report for each practice using the Practical Book. The Practical Book should be signed by the teacher not later than one week after the practice. Participation in the practices is compulsory. No more than three absences from practices are allowed for any reason; otherwise the semester will not be credited.

Final exams

In the examination period the students have to give final exam in the second semester. Participation in the final exam requires the completed "Anatomy, Cell, Histology and Embryology III" course with a successful exam.

Type and grading of exams:

The final exam consists of practical, written and oral part. The practical part (lab exam) takes place in the last week of the second semester. Passing the lab exam is not a prerequisite to participate on the final exam, but failed lab exam is taken into account in grading the final exam as fail (1) partial grade. The written and oral part of the final exam is held on the same day. The oral part consists of two theoretical questions (I-II). Failed (1) theoretical question results in an overall failed (1) final exam. The mathematical average of four or five partial grades (lab grade, written exam grade, two oral exam grades, and lab exam grade) gives the grade of the final exam.

Lists of the theoretical questions are listed in the webpage in the Department of Physiology. The following rules will be enforced during the exams: electronic devices must be kept in the baggage; baggage and overcoats should be placed next to the wall of the lecture halls; any form of communication is disallowed; students not complying with these rules will be disqualified immediately.

Requirements of the exam:

Final exam: material of the Medical Physiology I. and Medical Physiology II. Participation in the final exam requires the completed "Anatomy, Cell, Histology and Embryology III" course with a successful exam.

Registration for the exam:

Registration for the exam must be recorded through the NEPTUN system. Modification of the registration for the exam: Modification in the registration must be recorded through the NEPTUN system not later than 48 hours before the start of the exam.

Absences from the exams:

Failing to certify absence or denying it cause registering "absence" = "nem jelent meg" in the lecture book and/or in the NEPTUN system.

List of textbooks:

Textbook: Koeppen-Bruce M- Stanton- Bruce A: Berne & Levy Physiology (7th edition). 2017. ISBN: 9780323393942 Practice book: Practices in Medical Physiology (Edited by: Péter Enyedi and Levente Kiss). 2017. ISBN: 9789633314159.

MEDICAL MICROBIOLOGY I.

Institute of Medical Microbiology

Program Director: **Prof. Dr. Dóra Szabó** Tutor: **Dr. Ágoston Ghidán**

Second Semester

Week	Lectures (2 hours per week)
1.	Introduction. General information about the tuition. The place of Medical Microbiology among natural sciences, its significance, sub-fields and short history. Fundamentals of the morphology, physiology and genetics of bacteria.
2.	Pathogenic nature and virulence of bacteria. Pathomechanism, molecular pathogenesis, virulence factors. Infection and disease.
3.	Defence mechanisms of the host against infections. Active and passive immunisation. Vaccines.
4.	Antibacterial drugs: Modes of action and interactions of antibacterial drugs. Principles and practice of the antibacterial chemotherapy. Origin, mechanisms, induction, transfer, spreading, elimination and control of resist- ance of bacteria against antibacterial drugs
5.	Introduction to the classification of medically important bacteria: fundamentals of taxonomic, epidemiolgical, nosological, as well as pathogenet- ical classification. Gram-positive non-spore forming rods: Corynebacterium, Listeria, Erysipelothrix, Lactobacillus Normal flora of the vagina.
6.	Gram-positive aerobic cocci: Streptococcus and Staphylococcus genus. Normal flora of the skin.
7.	Gram-negative aerobic and microaerophilic cocci and coccobacilli: Neisseriaceae, Pasteurellaceae, Haemophilus genus Normal flora of the upper respiratory tract.
8.	Gram-negative aerobic rods and coccobacilli: Pseudomonas, Legionella, Brucella, Bordetella, Francisella genus.
9.	Gram-negative facultative anaerobic rods Normal flora of the gastrointestinal tract. Extraintestinal diseases caused by Gram-negative enteral bacteria. Pathogens of the gastrointestinal tract I: Vibrio, pathogenic Escherichia coli, Campylobacter, Helicobacter.
10.	Pathogens of the gastrointestinal tract II: Yersinia (yersiniosis), Shigella (shigellosis), Salmonella (salmonellosis). The enteral fever (Salmonella typhi and parathyphi), as well as Yersinia pestis.
11.	Gram positive aerobic and anaerobic spore-forming bacteria: Bacillus and Clostridium genus Obligate anaerobic bacteria and associated infections: Gram-positive: Peptostreptococcus, Propionibacterium, Eubacterium, Bifidobacterium, Arachnia, Gram-negative: Veillonella. Bacteroides, Fusobacterium
12.	Acid-fast bacteria: Mycobacterium, Nocardia. Actinomyces
13.	Spirochaetales: Treponema, Borrelia. Leptospira.
14.	Rickettsiales, Chlamydiales, Mycoplasmatales

Second Semester

Week	Bacteriology Practicals (2 hours per week)
1.	Introduction. Rules and instrumentation of the safe handling of microbes. Safety in the laboratory. Basic microbiological methods I: Microscopic examinations.
2.	Basic microbiological methods II: Cultivation of bacteria and biochemical activity of bacteria
3.	Basic microbiological methods III: Sterilisation. Disinfection
4.	Basic microbiological methods IV: Susceptibility of bacteria to antimicrobial drugs
5.	Basic microbiological methods V: In vitro immunological reactions
6.	Midterm examination I. and Systematic bacteriology I: Identification of Gram-positive aerobic rods
7.	Systematic bacteriology II: Identification of Gram-positive cocci: Staphylococcus
8.	Systematic bacteriology III: Identification of Gram-positive cocci: Streptococcus
9.	Systematic bacteriology IV: Identification of Gram-negative cocci and coccobacilli, and Gram negative aerobic rods
10.	Systematic bacteriology V: Identification of Gram-negative facultative anaerobic rods
11.	Systematic bacteriology VI: Identification of the aerobic and anaerobic spore-forming bacteria, as well as the obligate anaerobic and microaero- philic bacteria
12.	Midterm examination II. and Systematic bacteriology VII: Identification of irregular Gram-positive rods
13.	Systematic bacteriology VIII: Spirochaetes
14.	Systematic bacteriology IX: Rickettsiae, Chlamydiales and Mycoplasmatales

MEDICAL BIOCHEMISTRY II.

Department of Medical Biochemistry

Credits: 5

Total number of hours: 70; lectures (hours): 42; practices (hours): 28 Type of the course: obligatory Academic year: 2019/2020 Code of the course Name of Head of the Department: Professor László Csanády M.D. Ph.D. D.Sc. Contact details: H-1094 Budapest, Tűzoltó u. 37-47. Phone: +36-1-459-1500#60010 e-mail: csanady.laszlo@med.semmelweis-univ.hu Position: Temporary Head of Department Date of Habilitation: 2013 Its number: 341

Aim of the course:

The aim of the course is to comprehensively describe metabolic processes in the human body, from a medical point of view. The main theme of the semester is to elaborate further on carbohydrate and lipid metabolism commenced in Medical Biochemistry I, elaborate on amino acid and nucleotide metabolism, examine more thoroughly intermediary metabolism including the integration of processes throughout the organs and the human body as a whole. Furthermore, this course aims to afford to medical students the skills of being able to interpret complex physiological processes in the human body at a molecular level. During practices they discuss rapidly developing, promising areas of medicine ("tomorrow's medicine"). The medical biochemical orientation of the course is based on the presentation of molecular bases of diseases that pose serious public health problems (cardiovascular, neurodegenerative, cancer states), with particular emphasis on discussing potential molecular targets of therapy.

Location of the course (lecture hall, practice room, etc.):

Premises located in the Basic Medical Sciences building (laboratory rooms located on the first floor and lecture halls located on the ground floor).

Upon the successful completion of the curriculum, the student should be able to:

Identify biochemical structures, know and understand the reactions in which medically important molecules participate; know and understand inter-organ biochemical processes; know and understand integrated metabolic functions of the human body. Overall, such knowledge is essential for understanding physiological and pathological processes and, consequently, for making sound medical decisions.

Prerequisite (s) for admission to the course: Medical Biohemistry I.

Terms and Conditions for Starting Student Course (Minimum, Maximum), Student Selection Method: Not applicable for compulsory subjects.

How to apply for the course: Application is through the Neptun online system.

The course in thematic details:

Lectures: weekly 2×70 min (3 hours)

Lecturers: Prof. Ádám Veronika (ÁV), Prof. Csanády László (CSL), Prof. Kolev Kraszimir (KK), Dr. Komorowicz Erzsébet (KE), Dr. Szöllősi András (SZA), Dr. Törőcsik Beáta (TB), Prof. Tretter László (TL)

Practices (P): 2 hours every week

Week	Lectures	Practices (P): 2 hours every week
1	Nitrogen balance. Digestion of proteins. Function of proteases, their regulation. Absorption of amino acids, amino acid transporters. Catabolism of amino acids. Elimination of ammonia, reactions and regulation of ornithine cycle. (KK,TL)	P: Carnitine deficiency
2	Degradation of amino acids: fate of their carbon skeleton. The role of vitamins in amino acid metabolism. Biosynthesis and degradation of heme. Iron homeostasis (KK, TL)	P: Hereditary hyperammonemias
3	Structure and function of nucleotides. The fate of nucleotides obtained through diet. Formation and elimination of uric acid; its metabolic role in humans. Molecular basis of gout. Synthesis and degradation of purine and pyrimidine nucleotides. Effects of cytostatic drugs on nucleotide metabolism. (KK)	P: Vitamin B12 deficiency and methylmalonic acidemias
4	Integration of metabolism. Metabolism of red blood cells. Red blood cell enzymopathies. Kidney metabolism, and dependence on fasting and acidosis. Metabolism of muscle and heart. Comparison of kidney and liver gluconeogenesis. Metabolic adaptation to physical effort. (TL, TB)	P: Metabolism of exercise; doping.
5	Metabolic characteristics of brain and adipose tissue. Metabolism of lymphocytes and intestinal epithel cells. The starvation-feeding cycle and its regulation. Regulation of hepatocyte metabolism in starvation. (TL, TB)	P: Acute and chronic liver disease
6	Molecular diversity of ion channels. Methods of ion channel examination. Molecular mechanism of gating and permeation. Voltage-gated K+ channels. ATP-sensitive K+ channels. Voltage-gated Cl- channels. The CFTR chloride channel. The nicotinic acetylcholine receptor. (CSL, SZA)	P: Tumor metabolism.
7	Membrane transporters. Na+/K+ ATPase isoforms. Chemical neurotransmission. Cholinergic neurotransmission. Biosynthesis of acetylcholine. receptors, acetylcholine esterase. Molecular mechanism of exocytosis. (AV, TB)	P: Tumor microenvironment, extracellular matrix
8	Noradrenergic neurotransmission. Synthesis and metabolism of norepinephrine. Synaptic uptake. Adrenergic receptors. Molecular mechanism of epinephrine and norepinephrine effects on various organs. (AV, TB)	P: The relationships of metabolism to the central nervous system.
9	Dopaminergic and serotoninergic neurotransmission. Synthesis, transporters, receptors. Biochemistry of Parkinson disease. Glutamatergic neurotransmission. NO: Regulatory role of NO. Nitric oxide synthase. Guanylate cyclase. Molecular effects of nitric oxide. (AV, TB)	P: Gut-brain interaction through metabolites of the intestinal flora
10	General overview of blood clot formation and elimination. Fibrinogen and fibrin. Prothrombin activation and regulation of thrombin activity. Triggers of blood clotting, amplification of the initiation. Inhibitors of blood coagulation and negative feedback mechanisms. (KK, KE)	P: Molecular background of congenital thrombophilias
11	Fibrinolysis. Activation of plasminogen. Inhibitors of plasmin. Cellular elements of the haemostatic system. Platelets and von Willebrand factor. (KK, KE)	P: Molecular background of acquired thrombophilias.

Week	Lectures	Practices (P): 2 hours every week
12	Neutrophils and endothelial cells in haemostasis. Hemodynamic and biochemical interactions in haemostasis. The role of endothelial dysfunction in atherosclerosis. LDL oxidation and pattern-recognition receptors (TLR, scavenger receptors). Cholesterol induced pyroptosis. (KK, KE)	P: Atherosclerosis
13	The role of food ingredients in regulating gene expression. (TL). Signal transduction of metabolic pathways. Biochemical effects of thyroid hormones and their role in regulating metabolism and thermogenesis. (TL)	P: Molecular basics of weight control in physiological and pathological conditions.
14	Molecular entities and drug targets for proliferation, differentiation, survival, angiogenesis, metastasis. (TL,TB).	P: Molecular basis of body's energy consumption; dysregulation in metabolic syndrome

Potential overlap(s) with other topics: none

Requirement for special study: not applicable

Policy regarding attending practices; policy regarding absences:

Practices are mandatory. It is not possible to make up for missed practices. In case of absences amounting to more than 3 practices, the semester is not acknowledged. Arriving to a practice with a delay of more than 10 minutes is considered an absence.

Means of assessing acquired knowledge during the semester:

not applicable

Requirement for acknowledging the semester, and for allowing the student to take the final exam: In case of absences amounting to more than 3 practices, the semester is not acknowledged.

Exam Type: Final. Form: written test exam, based on material of the official textbook, lectures and practices published at the department's website (http://semmelweis.hu/biokemia/en/).

Exam Requirements: The material for the written test exam is the material of the lectures and practices in the subject, with the corresponding textbook chapters.

Types and modes of grading:

The competition is held on week 13, and the structure of the competition is the same as that of the final.

The grade of the final exam is based on:

Written test:

This test consists of multiple choice questions (MCQs) from which max 65 points can be obtained.

Grade calculation of the semi-final exam: 60-65: grade 5 (excellent) 49-59: grade 4 (good) 41- 48: grade 3 (satisfactory) 33-40: grade 2 (pass) If 39 and below, then the grade of the semi-final exam is 'fail'.

How to apply for the exam: The exam dates are announced on the 12th week of the semester. We provide at least one exam date each week. Applications are made in the Neptun system in accordance with the University Study and Exam Rules.

Opportunities to repeat the exam: an exam can be re-taken only after two calendar days.

Printed, electronic and online notes, textbooks, tutorials, and literature for online learning (html for online material):

Harper's Biochemistry (30th edition, or latest)

Online material published in the department's website (http://semmelweis.hu/biokemia/en/)

MOLECULAR CELL BIOLOGY I

Department of Medical Chemistry, Molecular Biology and Pathobiochemistry

Mandatory course; Credit: 4

Description of the curriculum

The principal aim of the course is to provide an insight into the storage and expression of genetic information throughout replication, transcription and translation. Our current understanding of the multilevel regulation of gene expression will also be discussed, followed by an up-to-date summary of methods applied in molecular biotechnology.

Module I.

DNA, RNA and protein synthesis (storage and expression of genetic information)

Nucleic acids – structure and function. Bases, nucleosides, nucleotides, DNA structure, DNA denaturation, hybridization. DNA replication. Replication in prokaryotes, leading and lagging strand. Okazaki fragments. DNA-dependent DNA polymerases. DNA ligase. Telomerase. topoizomerases. Replication in eukaryotes. Structure of eukaryotic chromosomes. Mitochondrial DNA. Nucleosome structure. DNA repair. Types of DNA damage; mutations, frameshift, missense/nonsense/samesense mutations, mismatch repair. Coordination of repair and replication. Transcription in prokaryotes. Structure of RNA; t-RNA, r-RNA, m-RNA, differences between the prokaryotic and eukaryotic genomes. Transcription complexes, initiation, elongation, termination in prokaryotes. Transcription in eukaryotes, Processing of mRNA, mechanism of splicing. Alternative splicing, mRNA editing. The genetic code. Activation of tRNA. Mechanism of translation initiation, elongation, termination. Antibiotics. Posttranslational modification of proteins. Protein folding, sorting, quality control and transport into intracellular compartments. Ubiquitination and intracellular proteolysis. Epigenetic regulation of gene expression: DNA methylation, histone modifications, miRNA. Mobile genetic elements, genome evolution and the molecular biology of viruses.

Regulation of gene expression in prokaryotes. The operon model. Positive and negative regulation in the lac operon. Regulation of gene expression in eukaryotes at the transcriptional level. Role of chromatine structure; covalent and non-covalent chromatin modifying activities and DNA methylation (epigenetics). Post-transcriptional regulation in eukaryotes. Regulation of mRNA stability. Translational regulation.

Module II. Methods in molecular biology and gene technology

Principles of recombinant DNA technology: molecular cloning, restriction endonucleases. Genomic and cDNA libraries. Blotting techniques (Southern, Northern, Western) and their utilization. DNA microarrays. PCR, real-time PCR and its application in molecular biology. Recombinant vectors (reporter and expression vectors); synthesis of recombinant proteins. Transgenic, knock-out and knock-in animals in medical research. Human gene therapy (ex vivo vs in vivo; genome editing by the CRISPR/Cas9 technology). The Human Genome Project and its results: organization and polymorphic nature of the human genome; implications for human traits and diseases. Genotyping methods (PCR-RFLP, PCR-ASA, primer extension, (next generation) sequencing). Online databases.

Requirements for acknowledgement of the semester

- 1. Participation in the laboratory lessons is obligatory; students have to sign the attendance sheets at the end of each lesson. In case of more than three absences from the lab lessons (including the oral midterm in week 9 and the written test in week 14) for any reason, the semester will not be acknowledged and the student will be not allowed to sit for the semifinal exam. Missed practicals can be made up in the same week at another group; certificate from the host teacher should be presented by the student to his/her own teacher. The schedule of practical lessons can be downloaded from the official homepage of the Department.
- 2. The oral midterm examination (week 9) has to be passed before the commencement of the examination period. The material of the midterm examination corresponds to that of lectures of weeks 1-8 (see the Midterm 1 topic list on the website). Failed midterms can be retaken at most twice. Importantly, students cannot get a better mark than 2 on the retake (this rule does not pertain to students who missed the midterm due to an illness proven by a medical certificate). Dates of retakes will be disclosed in due course.

Lab test and exam bonus

A written test will be held in week 14 of the semester (see the schedule of labs for details). Students are supposed to answer a lab topic from the corresponding topic list ("Lab test"). Topics will be selected and marked by your own lab teacher. As it is not compulsory to pass the lab test, it cannot be taken again.

If the average of the marks obtained on the oral midterm and the written lab test is at least 4.0 or better, one will be exempted from answering lab topics (group IV) on the semifinal exam.

Semifinal exam

The course is finished with an oral exam. Students will be examined by a two-member examination committee. 4 topics taken from the topic list have to be answered.

Students are not allowed to leave the examination room between taking exam topics and getting their grades. Importantly, you fail the whole exam if you fail even on just one of your topics.

Recommended textbooks

- 1. Lodish: Molecular Cell Biology (8th edition)
- 2. Hrabák: Laboratory Manual Medical Chemistry and Biochemistry

MOLECULAR CELL BIOLOGY II.

Department of Medical Chemistry, Molecularbiology and Pathobiochemistry Mandatory course; credit: 5 Exam: final Detailed program to be given by the department – online!

IMMUNOLOGY

Deaprtment of Genetics, Cell- and Immunobiology Course Director: **Prof. Edit Buzás**

Credit: 3

Aim of the subject and its place in the curriculum:

A pre-clinical course for medical students that introduces the essentials of the immune system, natural and adaptive immune responses. It discusses the structure of the human immune system: organs, cellular and molecular components involved in the immune response; the development of genetic diversity of antigen receptors, and the role of diversity in an efficient immune response. It introduces to the students the processes of immunological regulation in healthy organism, including the immunology of pregnancy. It also discusses the course and alteration of immunological processes in certain pathological conditions, such as infections, tumors, hypersensitivity reactions, autoimmunity, immunodeficiency and transplantation, therefor provides a basis for other subjects. In related practices, students will be introduced to the basic methods required to test the functionality of the immune system, to the immunological assays and immunologically relevant procedures used in current diagnostics and therapy.

Competencies gained upon the successful completion of the subject: Understanding the relationships between immunological processes and the role of the immune system in the prevention, development and course of diseases. Theoretical knowledge of basic immunological diagnostic and therapeutic techniques.

Prerequisite(s) for admission to the subject:

Cell Science, Medical Biochemistry II.

Detailed thematic of the course:

	Lectures	Practices
1.	The role, processes, organs and cells of the immune system	Basic terms
2	Principles of natural immunity	The role of the immune system in the lab
3.	The complement system; inflammation and acute phase reaction	Methods based on antigen-antibody interactions I. Immunoserology
4.	Antigen, antigen presentation and MHCs	Methods based on antigen-antibody interactions II:immuno-assays
5.	Antigen receptors and their formation	Methods based on antigen-antibody interactions III Flow cytometry
6.	T lymphocytes and cell-mediated immune response	Complement assays
7.	B lymphocytes and humoral immune response	Biological therapies I
8.	Immune response in infections	Biological therapies II
9.	Immunodeficiences	Immunization and vaccination I
10.	Hypersensitivity reactions	Immunization and vaccination II
11.	Mucosal immunity	Hypersensitivity I.
12.	Immunological tolerance; natural and pathological autoimmunity	Hypersensitivity II-IV.
13.	Immunology of transplantation	Screening methods for autoantibodies
14.	Antitumor - and pregnancy immunity	HLA-typing
Policy regarding the attendance and making up absences:

Attendance of a minimum of 75% of the practices is necessary for the end-term signature. The presence at the seminars (practices) are registered weekly, more than three absences from the seminars invalidate the semester as well. The sessions can be attended in an appropriate mental and health condition.

Means of assessing the students' progress during the semester4: Discussing the topics of the lecture under the guidance of the practice teacher to establish diagnostic and therapeutic methods.

Requirement for acknowledging the semester (signature): Attendance of a minimum of 75% of the practices.

Type of the examination: written test

Exam requirements5:

The topics are based on the textbooks, the e-book, the lectures' and practices' presentations. At the exam, it is not sufficient to repeat memorized topics from the textbook and presentations, but you have to be able to synthesize and integrate your knowledge from different parts of the subject.

Topic list of lectures:

- 1. The concept of immunity, Principles of the immune response: antigen specificity, sensitivity, memory, clonal selection based operation.
- 2. Components (primary, secondary immune organs, cells, molecules) of the immune system.
- 3. Features of innate and adaptive, cell-mediated and humoral, primary and secondary response.
- 4. The immune homeostasis.
- 5. Migration of immune cells and adhesion molecules;
- 6. Cytokines and cytokine receptors.
- 7. Chemokines and chemokine receptors.
- 8. Fc-receptors; PAMP, DAMP, Pattern recognition receptors.
- 9. Phagocytes and phagocytosis.
- 10. Role of neutrophils, eosinophils and basophils/mast cells.
- 11. Types and role of dendritic cells.
- 12. Inflammasome/ inflammasomopathies.
- 13. Innate lymphoid cells.
- 14. The activation pathways and the regulation of the complement system;
- 15. Complement receptors;
- 16. Complement genetics;
- 17. The biological role of complement activation
- 18. The inflammation and the acute phase response, the provoking factors and mechanisms, periods;
- 19. The acute phase plasma proteins.
- 20. The major histocompatibility complex;
- 21. The ways of antigen processing and presentation.
- 22. Types and structures of antigen receptors;
- 23. The immunoglobulin and TCR genes, the sources of antigen receptor diversity;
- 24. Expression and production of antigen receptors.
- 25. Differentiation and activation of T cells
- 26. Types of the T cells
- 27. The cell mediated immunity.
- 28. The activation and differentiation of B cells
- 29. Types of the B-cells
- 30. The humoral immunity.
- 31. Antimicrobial immune response.
- 32. Mucosal Immunity

- 33. Hypersensitivity reactions: Type I-II-III-IV reactions
- 34. Immunological background of transplantation and GVH disease
- 35. The natural autoimmunity.
- 36. Idyiotype regulation and network.
- 37. Pathological autoimmunity.
- 38. Mechanisms of immune tolerance.
- 39. Primary and acquired immune deficiencies.
- 40. Tumor antigens.
- 41. Anti-tumor immunity.
- 42. Escape strategies of tumor cells.
- 43. Possibilities of anti-tumor immune-therapy.
- 44. The immunology of pregnancy

Topic list of practices:

- 1. The cells and organs of immune system.
- 2. Communication between the immune cells.
- 3. Antigen and hapten.
- 4. Features of diagnostic antibodies.
- 5. Immunserological techniques: Detection of antibodies in body fluids, or detection of antigens based on the antibody-antigen reaction.
- 6. Serum electrophoresis and densitograms,
- 7. Immune complex and immune precipitates.
- 8. Turbidymetry and nephelometry.
- 9. Methods based on immune precipitation: radial immunodiffusion, immunofixation.
- 10. Clinical application of immunoserology methods.
- 11. Direct, indirect and passive agglutination, methods based by agglutination, fields of use.
- 12. Features of diagnostic antibodies.
- 13. The labeling of diagnostic antibodies,
- 14. ELISA, Western blot. Immunocyto (histo)chemistry, fields of use.
- 15. Lateral flow test, fields of use.
- 16. Principles of flow cytometer and cytometry.
- 17. Identification of cell populations by size and granularity, scatter plot.
- 18. Immune phenotyping, histogram, dot plot.
- 19. Role of flow cytometry in clinical practice.
- 20. The ways of activation of complement system.
- 21. In vitro complement activation.
- 22. Measuring the complement activation (CH50).
- 23. Diseases of complement system. HAE disease.
- 24. HLA nomenclature.
- 25. HLA typing methods: Microcytotoxicity test and mixed lymphocyte culture test.
- 26. HLA associated diseases.
- 27. Definition of targeted molecular therapy and immune modulation.
- 28. Monoclonal antibodies in the therapy: Types of the monoclonal antibodies.
- 29. Monoclonal antibodies in the tumor therapy: checkpoint blockade, induction of ADCC, bispecific antibodies.
- 30. Antibody therapy in transplantation.
- 31. Antibody therapy in chronic inflammatory diseases.
- 32. TNF alpha, T- and B cells as therapeutic targets in RA.
- 33. IVIG
- 34. Cytokine therapy
- 35. Dendritic cell-therapy.
- 36. The aims and practical implementation of immunization.
- 37. Adjuvants.
- 38. Immunodominant epitope.
- 39. Oral tolerance.

- 40. The aim of immune stimulation, active immunization.
- 41. Passive immunization
- 42. The features of effective vaccines.
- 43. Types of vaccines, cell-based vaccination
- 44. Hypersensitivity reactions I.: Penetration of antigens, types of IgE mediated responses.
- 45. Release of histamine and its effects.
- 46. Allergy tests.
- 47. Anaphylaxis vs. anaphylactoid reaction; utricaria vs. angioedema.
- 48. Food intolerance vs. food allergy.
- 49. Basics of allergy pharmacotherapy; Desensitization and prevention.
- 50. Clinical examples for Hypersensitivity reactions II-III-IV.
- 51. Diagnostic tests used in Hypersensitivity reactions II-III-IV.
- 52. Types of systemic and organ specific autoantibodies
- 53. Screening methods of autoantibodies,
- 54. Detection of autoantibodies.

Literature, i.e. printed, electronic and online notes, textbooks, tutorials (URL for online material):

- 1. Abbas, Lichtmann, Pillai, Basic Immunology 5th Edition, Elsevier, 2015
- 2. Practice and lecture ppt-s): http://gsi.semmelweis.hu
- 3. Immunology seminars (e-book): http://gsi.semmelweis.hu

GENETICS AND GENOMICS

Department of Genetics, Cell- and Immunobiology

Course director: Prof. Dr. Edit Buzás

Course coordinator: Dr. F. Ágnes Semsei

Prerequisite subject: Medical Biochemistry II., Molecular Cell Biology I.

Credit:4

Lectures (2 hours per week):

- 1. Introduction to human genetics, the human genome
- 2. Monogenic inheritance (Autosomal inheritance)
- 3. Role of sex in inheritance
- 4. Chromosomal aberrations
- 5. Genetic variations
- 6. Epigenetics
- 7. Genetics of biological processes
- 8. Introduction to genomics. Methods in genomics
- 9. Genomic approach of complex inheritance
- 10. Midterm
- 11. Population genetics and genomics
- 12. Evolution genetics and genomics
- 13. Pharmaco- and nutrigenomics
- 14. Genome and environment

Practices (1,5 hours per week):

- 1. Cytogenetics I.
- 2. Cytogenetics II.
- 3. Molecular genetic methods and applications in human genetics I.
- 4. Molecular genetic methods and applications in human genetics II.
- 5. Pedigree analysis: autosomal inheritance I. (AD)
- 6. Autosomal inheritance II. (AR)
- 7. Sex-linked inheritance I. (XR)
- 8. Sex-linked inheritance II. (XD, mitochondrial)
- 9. Consultation
- 10. Complex inheritance
- 11. Gene therapy
- 12. Genetic aspects of cell cycle and cell division disorders
- 13. Meiosis, gametogenesis; pre-implantation genetic testing
- 14. From genes to bedside

Important notes:

Students must visit at least 75% of the lessons. More than three absences from the practice or more than three absences from the lecture invalidate the semester, no signature is given. There are no extra practices.

There is one midterm during the semester. Spare midterm is organized for those students, who miss the midterm because an acute illness, but they have to show up the medical record to the tutor in one week. There is no opportunity to improve the midterm scores.

After the course there is a written exam (single choice and essay questions, family tree, karyogram, evaluation of molecular genetic studies etc.). The exam grade is calculated from the sum of midterm scores (maximum 40) and exam scores (maximum 60). Students have to reach more than 50 % of both the exam scores and total scores to pass the exam. In the third exam midterm scores are not calculated.

Core text: Medical Genetics and genomics (e-book)

Lecture and practice presentations and additional texts are available on the homepage: http://gsi.semmelweis.hu (The user name and password is on course datasheet of the Neptun)

MEDICAL PSYCHOLOGY

Institute of Behavioral Sciences

Type of the course: compulsory credit: 4 credits Presenter of the course: Dr. János Kollár Course leader: Dr. József Kovács

Course objectives: The course is designed to give a broad overview of the field of medical psychology, including concepts, theory, and research.

Learning objectives:

- Develop an understanding of the complex interplay between one's physical well-being and a variety of biological, psychological, and social factors.
- Learn the nature of the stress response and its impact in the etiology and course of many health problems.
- Understand the approach of bio-psycho-social model and become familiar with some frequent psychosomatic diseases.
- Be able to identify various psychological disorders and key personality traits related to health / disease.

Course Syllabus:

Lectures:

Week 1.	Introduction to Human Behaviour
Week 2.	Major Schools of Psychology
Week 3.	Stress and illness; behavioral interventions
Week 4.	Conscious states, sleep, dreaming and general anesthesia
Week 5.	Stigmatization and people living with disabilities
Week 6.	Psychological correlates of cardiovascular disorders
Week 7.	Affects, Emotion and Motivation

Seminars:

Week 1.	Developmental psychology, attachment theories
Week 2.	Personality theories
Week 3.	Human sexuality and sexual disorders, psychology of reproduction, psychology of birth
Week 4.	Depression and mood disorders.
Week 5.	Anxiety and medical illnesses.
Week 6.	Eating disorders.
Week 7.	Psychosomatic disorders - case studies; somatization and dissociative disorders
Week 8.	Personality disorders.
Week 9.	Sleep disorders
Week 10.	Addiction, substance use
Week 11.	Suicide, cry for help, crisis intervention
Week 12.	Psychology of death, grief, and dying
Week 13.	Behaviour change and psychotherapy. Stress management in medical practice.
Week 14.	Mental health of medical doctors. Prevention and management of burn-out. Bálint-groups.

Participation and making up for absences: Students are expected to attend regularly the course and participation list will be recorded at the end of every lecture and every seminar. To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature needed to absolve the course. The maximum number of absences permitted: one absence from the lectures and three absences from the seminars. Content of the lectures may appear in the exams.

Justification of the absence in the lectures and examinations: Absence should be justified for the seminar leading teacher within three working days.

Checks during the semester (reports, written checks): Every student should prepare presentations on the topics designated by the seminar leader teacher. Active participation is expected.

Requirements for the signature at the end of the semester: Active participation on the practices. The teacher has the right for refusing to give signature to the students who didn't work on the desired level on the seminars.

Method of the calculation of marks: Grades will be based on student's performances at the final written exam.

Type of the exam: Written final examination taken in the examination period.

Requirements for the exam: The material of the lectures and seminars.

Application for the exam: Through the Neptun system.

Changing the application for the exam: Through the Neptun system.

Justification of the absence from the exam: Absence should be justified for the course leading teacher within three working days.

Course and recommended text books:

Required textbook:

1. Behavior & Medicine, 4th Edition, Danny Wedding, Hogrefe & Huber Publishers, Seattle, 2006.

Recommended text books:

- 1. Kopp M. Skrabski Á.: Behavioural Sciences Applied in a Changing Society, Corvina, 1996.
- 2. Fadem B: Behavioural Science., Lippincott Williams & Wilkins, 5th ed., 2008.
- 3. Sarafino E.P.: Health Psychology. Biopsychosocial interactions. 6th ed., New York, Wiley, 2008.

Additional readings:

The powerpoint slides and prezi presentations used for the lectures and seminars and also some related papers will be assigned for reading during the course, and they will be made available on the course website.

DEVELOPMENTAL BIOLOGY: from gene to newborn. I. -

"Our real teacher has been and still is the embryo, who is, incidentally, the only teacher who is always right."

Hamburger 1900-2001

Regulatory mechanisms and early development of embryology 2 hours/week, 2 credits Prof. Dr. Imre Oláh

Department of Human Morphology and Developmental Biology

Introduction to developmental biology

Comparative embryology, epigenesis and preformation, evolutionary embryology, medical implications Regulatory elements of the ontogenesis I. Hormones, growth factors, transcription factors, instructive and permissive interactions Regulatory elements of the ontogenesis II. DNA-methylation, X chromosome inactivation, genomic imprinting Cell-cell and cell-extracellular matrix interactions Adhesion molecules, integrins, cytoskeleton and cell movement, cell polarization Cell lineages Fate map, stem cells, peripheral blood fibrocytes, cell specification, polarity in biological system Neurogenesis Origin of neural cells, switch between neuronal and glial fates, axonal specificity, synaptic plasticity Neural crests and placods Origin of neural crest and placods, flexibility and heterogeneity of neural crest cells. Myogenesis Embryonic origin of skeletal, smooth and cardiac muscles. Induction of myogenesis, regulatory factors of myogenesis, regeneration of skeletal muscles Teratogenesis Morphogens, morphogenetic period, cancer as an altered development, stem cell therapy, teratogens. Primordial germ cells (PGC) Origins, migration, mitosis, differences between male and female PGC, maturations Fertilization Acrosome reaction, prevention of polyspermy, activation of egg metabolism **Embryonic induction** Spemann organization center, mosaic and regulative zygotes Early embryonic development Cleavage, neurulation, X-chromosome inactivation, parental imprinting Gastrulation Differentiation of mesoderm, primary tissue formation Axis formations in birdsand mammals

Symmetry breaking, left-right asymmetry formation.

ORGANOGENESIS

2 hours/week, 2 credits Prof. Dr. Imre Oláh

Department of Human Morphology and Developmental Biology

Axial and paraxial mesoderm Formation of axial skeleton, somitogenesis, clinical correlations
Segmentation and Homeobox genes Retinoic acid, gain of function, loss of function
Intermediate mesoderm I. Development of kidney, clinical correlations
Intermediate mesoderm II. Development of gonads, sex determination, clinical correlations
Lateral plate mesoderm, splanchnopleura I. Vasculogenesis, blood formation, hematopoietic stem cell.
Lateral plate mesoderm, splanchnopleura II. Early development of the heart. Cardiac anlage, cardiac jelly, cardiac skeleton, development of coronary vessels, contribution of neural crest cells, epicardial body, clinical correlations
Lateral plate mesoderm, somatopleura Development of the limb, evolutionary and ontogenetic aspects, clinical correlations
Branchiogenic arches and their derivatives Clinical correlations
Prechordal plate as head organizer, AVE-anterior ventral entoderm Cranial neural crest and head mesoderm, somatic and visceral head and neck, clinical correlations
Development of arteries Branchiogenic, parietal and visceral segmental arteries, clinical correlations
Epithelio-rnesenchymal interactions Ecto-entoderm <<-->> mesoderm, tooth and lung development, clinical correlations

Neurogenesis Antero-posterior, and craniosacral regionalization, axon guidance, growth, synapsis formation Development of eye Retina, lens

Entoderm formation Foregut and its derivatives (thymus, thyroid, parathyroid), development of pancreas **Environmental regulation of development** Developmental symbiosis, seasonality and sex, nutritional contribution

HUNGARIAN MEDICAL TERMINOLOGY III.

Responsible organisational unit:

Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:

Zöldi Kovács Katalin PhD, Head of the Division

4 lessons per week, 2 credits,

Assessment: midterm (written) and endterm (written and oral) tests

Role of subject in fulfilling the aim of training:

The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective communication in the language they use during their field practice both in their everyday life /'survival language'/ and in their academic studies. Raising students' awareness of cultural differences is one of our top priorities.

Brief description of subject:

The first three modules are dedicated to learning basic general vocabulary and grammar. In the third module students acquire basic structures and the vocabulary for everyday topics / e.g. travelling in a city, travelling abroad, arranging accommodation etc. /, language for "survival.". The course places special emphasis on phrases essential for everyday communications, e.g. past time activities, telephoning, buying/ordering tickets etc. Grammar is of less importance in this phase of language studies.

Course content of practical lessons:

Lesson 1-2:	What was your weekend like?
Lesson 3-4:	What did you yesterday?
Lesson 5-6:	Did you like the city?
Lesson 7-8:	Have you ever been to England?
Lesson 9-10:	What did you do on Monday?
Lesson 11-12:	Communication practice: What did you do?
Lesson 13-14:	What did your neighbour say?
Lesson 15-16:	Practising past tense
Lesson 17-18:	He didn't know that we were there. –Past tense
Lesson 19-20:	Communication practice- Practising past tense
Lesson 21-22:	Consolidation
Lesson 23-24:	Test 1 + situation
Lesson 25-26:	I'd like a ticket to London.
Lesson 27-28:	Travelling by train
Lesson 29-30:	Travelling abroad
Lesson 31-32:	Communication practice: travelling
Lesson 33-34:	Accommodation
Lesson 35-36:	Booking accommodation
Lesson 37-38:	Booking accommodation- conversations
Lesson 39-40:	At a hotel
Lesson 41-42:	Communication practise: travelling and booking accommodation
Lesson 43-46:	Customs and festivities – modal auxiliaries
Lesson 47-48:	At the dentist
Lesson 49-50:	Healthy lifestyle
Lesson 51-52:	Consolidation
Lesson 53-54:	Test – situation, communication practice
Lesson 55-56:	Assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)

Gyöngyösi Lívia - Hetesy Bálint. Hungarian language: Jó napot kívánok! Semmelweis Egyetem Egészségtudományi Kar, 2011.

HUNGARIAN MEDICAL TERMINOLOGY IV.

Responsible organisational unit:

Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:

Zöldi Kovács Katalin PhD, Head of the Division

4 lessons per week, 2 credits,

Assessment: midterm (written) and endterm (written and oral) tests

Role of subject in fulfilling the aim of training:

The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective professional communication in the language they use during their field practice. With the help of this course they become able to communicate with the patients in the Hungarian hospitals.

Brief description of subject:

The fourth module is dedicated to learning basic medical vocabulary. Students acquire the skills needed in taking family, social, and medical history in internal medicine. They also learn how to address the patient during an examination and give advice for the treatment.

Course content of practical lessons:

Lesson 1-4:	Revision
Lesson 5-6:	Family history - asking for family members, names
Lesson 7-8:	Family history – describing state
Lesson 9-10:	Family history – communication practice
Lesson 11-12:	Social history – habits
Lesson 13-16:	Social history – expressing frequency
Lesson 17-18:	Body parts, internal organs
Lesson 19-20:	Symptoms
Lesson 21-22:	Consolidation
Lesson 23-24:	Test 1 + situation
Lesson 25-28:	Asking the patient about the pain
Lesson 29-30:	Describing pain and symptoms
Lesson 31-32:	Names of diseases
Lesson 33-36:	Taking medical history
Lesson 37-40:	Medication
Lesson 41-48:	Giving advice, doctor's recommendations
Lesson 49-52:	Consolidation
Lesson 53-54:	Test – situation, communication practice
Lesson 55-56:	Assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)

Marthy Annamária – Végh Ágnes. Egészségére! - Magyar orvosi szaknyelv. Semmelweis Egyetem Egészségtudományi Kar, 2010.

PHYSICAL EDUCATION III.

Department of Physical Education

Subject: Physical Education III. Type of Subject: Compulsory Code of Subject: AOKTSI009_3A Credit: 0 Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:

One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):

Reduced to bi-weekly scheduled double-classes (90min.).

II. St. year I. semester:

1 – 2 weeks:	General information Accident, fire and environmental knowledge. Requirement for acceptance of the semester system, the structure of the classes and the presentation of the university recreational sports opportunities for extra -curricular activities. Theory and practical application of the warm-up as a sports injury risk significantly reducing factor. Common to the bench. Free exercises.
3 – 4 weeks:	Stamina Development Long-term (at least 45 – 60 minutes) running and skipping exercises.
5 – 6 weeks:	Balls skill development Practicing the fundamentals of volleyball (serves, over – and underhand touches, movements, etc.)
7 – 8 week:	Strength development Overall strength development using the circle-training method-setting up different stations working on different muscle groups.
9 – 10 weeks:	Coordination enhancing exercises Jumping rope exercises in place and in motion.
11 – 12 weeks:	Posture correction Stick exercises, in various position and motion.
13 – 14 weeks:	Stretching – relaxation exercises Stretching exercises using large medicine-balls in sitting, standing, kneeling and recumbent positions.

Requirements to participate in the sessions and the potential for absences:

Active participation in sport classes.

The method of proof for the workshops and the exam absence:

The absence can not be proved, should make up for the lost lessons.

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type): Active participation in six classes approved by the staff.

How to prove absence regarding the exam:

Absence must be retaken!

Additional Resources:

PHYSICAL EDUCATION IV.

Type of Subject: Compulsory Code of Subject: AOKTS1009_4A Credit: 0 Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:

One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):

Reduced to bi-weekly scheduled double-classes (90min.).

II. St. year II. semester:

1 – 2 weeks:	General information
	Accident, fire and environmental knowledge. Requirement for acceptance of the semester system, the structure of the classes and the presentation of the university recreational sports opportunities for extra -curricular activities. Theory and practical application of the warm-up as a sports injury risk significantly reducing factor. Common to the bench. Free exercises.
3 – 4 weeks:	Cardio – vascular system development The floorball: Using the basic elements of the game dribbling, passing, shooting, etc. Playing againts each other in the interval system on high intensity level.
5 – 6 weeks:	Posture corrective exercises
	Exercises on floor mats, focusing on the core muscles in various body-positions.
7 – 8 week:	Coordination enhancing exercises
	Special education and practice material for spatial vision, perception of body schema, right-left orientation, muscle devel- opment and perception of coordination at the technical skills of playing sports (tennis, badminton).
9 – 10 weeks:	Strengthening exercises
	Using manual and other exercises equipment (dumbbells, boxes, bench, wall bars, etc.)
11 – 12 weeks:	Balls skill development
	Exercise of basic technical elements of football. Learning and practicing tactical elements. During locomotion ball control exercises, skill development.
13 – 14 weeks:	Stretching – relaxation exercises
	Various stretching relaxing exercises after the meditative practices and knowledge (yoga, tai chi, etc.)

Requirements to participate in the sessions and the potential for absences:

Active participation in sport classes.

The method of proof for the workshops and the exam absence:

The absence can not be proved, should make up for the lost lessons.

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type): Active participation in six classes approved by the staff.

How to prove absence regarding the exam:

Absence must be retaken!

PRE-CLINICAL MODULE



Faculty of Medicine 3rd year

STUDY PROGRAMME

Third year in the 2020/2021 academic year

5th semester

	hours				
course name	lecture (h/week)	pratice (h/week)	credit	prerequisite(s)	examination
Pathophysiology I.	1,5	3	4	Anatomy, Histology, and Embryology IV., Medical Physiology II., Medical Biochemistry III.	semi-final
Medical Microbiology I.	1,5	2,5	4	Anatomy, Histology, and Embryology IV., Medical Physiology II., Medical Biochemistry III.	semi-final
Pathology I.	3	4	7	Anatomy, Histology, and Embryology IV., Medical Physiology II., Medical Biochemistry III.	semi-final
Immunology	2	1,5	3	Molecular and Cell Biology II.	semi-final
Internal Medicine - Propedeutics	2	5	7	Anatomy, Histology, and Embryology IV., Medical Physiology II., Medical Biochemistry, Molecular and Cell Biology III.	semi-final
Medical Aspects of Disaster Preparedness and Response I.	1x2/ semester	0	0	-	signature
Hungarian Medical Terminology V.	0	4	2	Hungarian Medical Terminology IV.	final
PE V.	0	1	0	PE IV.	signature

Third year

6th Semester

	hours					
course name	lecture (h/week)	pratice (h/week)	credit	prerequisite(s)	examination	
Pathophysiology II.	1,5	2,5	4	Pathophysiology I., Immunology	final	
Medical Microbiology II.	1,5	2	3	Medical Microbiology I., Immunology	final	
Pathology II.	3	4	7	Pathology I.	final	
Internal Medicine I.	1,5	3	4	Internal Medicine – Propedeutics, Pathophysiology II.*, Pathology II. *	semi-final	
Behavioral Sciences II. (Medical Psychology)	1	2,5	3	Behavioral Sciences I. (Medical Communication) Medical Sociology	final	
Medical Aspects of Disaster Preparedness and Response II.	1x2/ semester	0	0	-	signature	
Basic Surgical Techniques	0,5	1,5	2	Anatomy, Histology, and Embryology IV., Medical Physiology II.	semi-final	
Medical Imaging	12 hours/ semester	16 hours/ semester	2	Medical Biophysics, Anatomy, Histology, and Embryology IV.	semi-final	
Genetics and Genomics	2	2	4	Medical Biochemistry III., Molecular and Cell Biology II.	semi-final	
PE VI.	0	1	0	Testnevelés V.	signature	
Summer Practice – Internal Medicine	1 m	onth	-	-	signature	

(*The prerequisite is that registration has been done for the marked subject - corequisite - as well)

LIST OF TEXTBOOKS (The list may change!)

- 1 Cecil's Essentials of Medicine. Ed. Andreoli, Carpenter, etc. 5th ed. W.B. Saunders, 2001. ISBN 0-7216-8179-4
- 2 Bickley, L.S-Hoekelman R.A: Bates' Guide to Physical Examination and History Taking. 7th ed. J.B. Lippincott Williams & Wilkins, 1998. ISBN 0-7817-1655-1
- 3 Current Medical Diagnosis and Treatment. Tierney, McPhee, Papadakis, Appleton and Lange McGraw-Hill 2002. ISBN 0-07-136466-8
- 4 Murray, Rosenthal, Kobayashi, Pfaller: Medical Microbiology. 8th ed. Elsevier, 2016. ISBN 9780323299565
- 5 Robbins: Basic Pathology, 2008. V. Kumar, A. K. Abbas, N. Fausto, R. Mitchell Saunders; 8 edition
- 6 Szende B, Suba Zs.: Introduction to Histopathology. Bp. Medicina, 1999.
- 7 Katzung: Basic and Clinical Pharmacology. Lange 10th ed, 2007
- 8 Owen, Punt, Stranford, KUBY Immunology W. H. Freeman and Company New York 2013; International Edition ISBN-13: 978-14641-3784-6;ISBN-10: 1-4641-3784-6

Recommended textbooks:

- 1 Harrison's Principles of Internal Medicine. Companion Handbook. 12/1997 14th ed. 096009. Ed. by Anthony Fauci, E.Braunwald, K.J. Isselbacher et al. Paper Text ISBN 0-07-021530-8 LCCN:97-042634
- 2 Harrison's Principles of Internal Medicine. 15th ed. McGraw Hill Inc. 2001. ISBN 0-07007272-8 (Combo) 0-07-007273-6 (Vol.1.), 0-07-007274-4 (Vol.2.), 0-07913686-9 (Set)
- 3 Cecil Textbook of Medicine. Ed. Goldmann, L. Bennett, J.C. 21st ed. W.B.Saunders 2000. ISBN 0-7216-7995-1 Vol.1-2. ISBN 0-7216-7996-X (Single Vol.)
- 4 Concise Oxford Textbook of Medicine. Ed.Ledingham, Warrell. Oxford University Press, Oxford, 2000. ISBN 0192628704
- 5 The Merck Manual. 16th ed. Merck Research Laboratories, 1996.
- 6 William J. Marshall, Stephen K.Bangert: Clinical Chemistry. 5th ed. Elsevier Health Sciences 2004. ISBN: 0723433283.
- 7 H. Theml, H. Diem, T. Haferlach: Color Atlas of Hematology 2nd ed. Georg Thieme Verlag 2004. ISBN: 9783136731024
- 8 N. Goldschlager et al.: Principles of Clinical Electrocardiography. 3rd ed. 1989. Appleton and Lange ISBN: 0-8385-7951-5.
- 9 Mahta, Atul B. Hoffbrand, A. Victor: Haematology at a Glance 2nd ed. Blackwell Publishing 2005. ISBN: 1405126663
- 10 Carl A. Burtis: Tietz Textbook of Clinical Chemistry. W.B. Saunders 3rd 1999 ISBN 0721656102
- 11 Carl A. Burtis: Tietz Fundamentals of Clinical Chemistry. WB. Saunders 5th 2001 ISBN 0721686346
- 12 Davis et al.: Clinical Laboratory Science. (Strategies for Practice.) 1988. Lippincott-Raven Cldh Text. ISBN: 0-397-50860-3
- 13 E.Rubin-J.L. Farber: Pathology (J.B. Lippincott 1994). 3rd edition (1999)
- 14 Nemes Z.: Atlas of Histopathology (TEMPUS edition, Debrecen 1998)
- 15 CP.L. Wheater, H.G. Burkitt, Stevens J.S. Lowei: Basic Histopathology, a Colour Atlas and Text. (Churchill Livingstone; 4Rev Ed edition, 2002)
- 16 Zalatnai A.: 500 Practice Questions about Pathology (Semmelweis University of Medicine)
- 17 Illyés Gy.: Path Nebulo 2000. Version 1.0 (English-Hungarian)
- 18 Székely E.: Practice on Histopathology I-II. (Semmelweis University of Medicine) video

PHARMACOLOGY AND PHARMACOTHERAPY I – II.

Tutor: Dr. Pál Riba

First and Second Semester

Department of Pharmacology and Pharmacotherapy

Total credits: 10 Course Director: Dr. Ferdinandy Péter

Thematics:

Pharmacology and Pharmacotherapy (two semesters)

Topics of Pharmacology and Pharmacotherapy I (Year 3, first semester):

- 1. Introduction into the Pharmacology (history of pharmacology, pharmacogenomics, general principles of toxicology). General Principles of Pharmacodynamics (drug receptors, signaling mechanisms and drug action, pharmacodynamic principles, dose-response curves and quantal dose-effect curves, therapeutic index, tolerance).
- 2. Pharmacokinetics (drug absorption, distribution, elimination). Clinical pharmacokinetic principles Drug interactions
- 3. Development and Regulation of Drugs (clinical trials: phase I. II. III. IV.). Evidence Based Medicine (ethic disciplines, role of placebo in clinical trials). Pharmacovigilance (reports on adverse events and reactions). Registration of Drugs. ATC code. Biological Drugs. Orphan Drugs. Generic products, biosimilar products. Drug formulations. Prescription writing.
- 4. Introduction to the Neurotransmission (central and autonomic system). General Anesthetics
- 5. Pharmacology of Cholinergic Transmission. Skeletal Muscle Relaxants. Local Anesthetics.
- 6. Pharmacology of Adrenergic Transmission (sympathomimetic drugs). Pharmacotherapy of COPD. Drugs Used in Bronchial Asthma. Antitussive Drugs. Expectorants. Pharmacotherapy of Asthma.
- 7. Pharmacology of Adrenergic Transmission (sympatholytics drugs). Antipsychotics.
- 8. Sedative-hypnotic and Anxiolytic Drugs.
- 9. Antidepressants and Mood-stabilizing Agents. Antiseizure Drugs.
- 10. Treatment Strategy of Psychiatric/Neurological Disorders. Pharmacological Management of Neurodegenerative Disorders. Nootropic Drugs. Centrally Acting Skeletal Muscle Relaxants (spasmolytics).
- 11. Antiviral Agents. Pharmacotherapy of Viral Infection
- 12. Pharmacotherapy of Bacterial Infections. Cell Wall- and Membrane Active Antibiotics.
- 13. Pharmacotherapy of Bacterial Infections. Antibiotics Inhibiting the Protein- and Nucleic Acid Synthesis. Miscellaneous Other Antibiotics.
- 14. Antifungal and Antiprotozoal Agents. Drugs against pathogen insects. Disinfectants. Antiseptics.

Topic of Pharmacology and Pharmacotherapy II (Year 3, second semester):

- 1. Drugs Used in Coagulation Disorders. Agents Used in Cardiac Arrhythmias
- 2. Drugs Used in Angina Pectoris. Antihyperlipidemic Agents. Diuretics and antidiuretics.
- 3. Drugs Used in Heart Failure. Antihypertensive Agents.
- 4. Treatment Strategy of Cardiac Failure. Treatments Strategy of Ischemic Heart Disease. Drugs Used in Peripheral Vascular Diseases. Agents Used in Anemias.
- 5. Pancreatic Hormones and Antidiabetic Drugs. Hypothalamic and Pituitary Hormones. Adrenocorticosteroids and Adrenocortical Antagonists. Thyroid and Antithyroid Drugs. The Gonadal Hormones and Inhibitors. Hormonal contraception.
- 6. Treatment Strategy of Hypertension. Metabolic Syndrome. Treatment Strategy of DM Type II.
- 7. Basic Pharmacology of Inflammation and Fever. Non-opioid Analgesics. Non-steroid Anti-inflammatory Drugs. Drugs Used in Gout. Agents that Affect Bone Mineral Homeostasis. Treatment Strategy of Osteoporosis.
- 8. Basic Pharmacology of Opioid Analgesics. Drugs of Abuse. Drugs Acting on Smooth Muscles. Autacoids. Agents Affecting the Function of Uterus. Drugs Used for Treatment of Migraine and Cluster.
- 9. Treatment Strategy of Pain. Agents Acting via the Opioid Receptors. Adjuvant analgesics.
- 10. Immunopharmacology (immunosuppressive and immunomodulatory agents). Treatment Strategy of Rheumatoid Arthritis. Pharmacology of Nutrition (appetizers, agents improving digestion, prokinetic drugs). Laxatives and Antidiarrheal Drugs. Drugs Affecting the Liver and the Biliary Function. Vitamins, antioxidants, dietary supplements, traditional plant medicines.

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- 11. Pharmacology of the Gastrointestinal System (agents for treatment of peptic ulcer, gastroesophageal reflux disease (GERD), irritable bowel syndrome and inflammatory bowel diseases (IBD)). Emetics and Antiemetics. Treatment strategy of peptic ulcer, GERD and IBD.
- 12. Cytotxic and cytostatic anticancer drugs, other agents used within the frame of cancer chemotherapy. Treatment strategy of cancer. General and Detailed Toxicology.
- 13. Pharmacokinetic Differences and Variations in Drug Responsiveness according to Age or State of Health. Factors Affecting the Drugbody Interaction. Drug Treatment in Pregnancy.
- 14. Pharmacological Aspects of Emergency Medicine..

Maximum number of absences is 25 percent of the number of practices in the semester.

Certifying absence from the lesson:

Medical certificate is accepted

In each semester two written midterms are arranged (in both semesters on the 6^{th} and 10^{th} week). The results of the midterm exams influence the marks of the semifinal and final exam. The topics of the midterms are the material discussed from the beginning of the semester or after the previous midterm.

The number of absences must not be more than 25 percent of the number of practices in the semester.

Grading: Written test: according to the scores. The semi-final exam is oral. If the result of both midterms in the first semester reaches 80% the student will be offered a third, oral midterm. According to the student's knowledge in the 3rd midterm we can offer either 4 or 5 as the result of the semifinal exam in the last week of the first study period.

Final exam consists of three parts. The grade will be decided after the oral part of the exam (three questions), taken into consideration the results of the preceding two parts (see below).

Exam type:

1st semester. Semi-final, oral

2nd semester. Final exam has three parts. 1. Preceding exam from toxicology. 2. Written test from clinical pharmacology. 3. Oral exam.

Exam sign up:

Registration has to be done through the NEPTUN system for the days set by the department up to the limits.

Modifying:

Through the NEPTUN system, as it allows

Certifying absence from the exam:

Medical certificate is accepted.

Literature:

1 Basic and Clinical Pharmacology (Eds. B. G. Katzung, A. J. Trevor), 13th edition, McGraw-Hill Education, 2015. ISBN 978-1-25-925290

2 Materials discussed during lectures and seminars.

PATHOPHYSIOLOGY AND CLINICAL LABORATORY DIAGNOSTICS I-II.

5th semester

Week	Lectures (1.5 hours/week)	Practical seminars (3 hours/week)
1	Introduction. Pathophysiology of inflammation	Normal electrocardiogram
2	Pathophysiology of heart failure, cardiomyopathies	Arrhytmias I: disorders of impulse generation
3	Coronary heart disease. Cardiac arrhythmias	Arrhytmias II: disorders of impulse conduction
4	Peripheral circulatory failure. Pathophysiology of circulatory shock	Diagnosis of ischemic heart disease and myocardial infarction
5	Pathophysiology of Hypertension	ECG abnormalities of cardiac hypertrophy and electrolyte disorders
6	Alterations of energy balance: starvation, obesity, protein deficiencies	Multiple abnormalities of ECG, practice
7	Alterations of lipid metabolism, hyperlipoproteinemias	Midterm (ECG and lectures)
8	Atherosclerosis, metabolic X syndrome	Evaluation of alterations in carbohydrate metabolism
9	Pathophysiology of diabetes mellitus types I and II	Evaluation of alterations in hepatobiliary diseases
10	Liver diseases	Evaluation of alterations in lipid and purine metabolism
11	Diseases of the gastrointestinal system, malabsorptions, exocrine pancreas diseases	Diagnostic approaches to gastrointestinal diseases
12	Pathophysiology of pituitary and sexual function	Evaluation of hypothalamic-pituitary and gonad disorders
13	Pathophysiology of thyroid function	Evaluation of thyroid gland function
14	Diseases of the adrenal gland	Evaluation of adrenal gland function

6th semester

Week	Lectures (1.5 hours/week)	Practical seminars (2.5 hours/week)
1	Metabolism of calcium and phosphate, metabolic bone diseases	Evaluation of calcium and phosphate metabolism and metabolic bone disorders
2	Connective tissue disorders	Kidney diseases and their diagnostics
3	Pathophysiology of acute and chronic kidney failure	Differential diagnosis of fluid and electrolyte disorders
4	Disturbances in fluid, Na ⁺ and K ⁺ balance	Pathophysiology of acid-base disorders
5	Disorders of acid-base balance	Alterations of the respiratory system
6	Alterations of the respiratory system	Diagnostic importance of plasma proteins and tumor markers
7	Disorders of hemostasis	Diagnostic approaches to hemostatic disorders
8	Disorders of the immune system	Midterm (lab)
9	Pathophysiology of erythropoiesis	Evaluation of corpuscular elements of blood, morphology of red and white cell developmental forms
10	Malignant diseases of the bone marrow	Pathophysiology of erythropoiesis (anemia, polycythemia)
11	Pathophysiology of pain	Chronic leukemias (myeloid and lymphoid)
12	Disturbances in higher CNS function	Acute leukemias, infectious mononucleosis
13	Pathophysiology of aging	Midterm (hematology)
14	Trends in medical diagnosis and treatment	Monoclonal gammopathies, multiple myeloma, consultation

MEDICAL MICROBIOLOGY I.

Institute of Medical Microbiology

Program Director: **Prof. Dr. Dóra Szabó** Tutor: **Dr. Ágoston Ghidán**

First Semester

Week	Lectures (1,5 hours per week)
1.	Medical Mycology
2.	Medical Parasitology – 1
3.	Medical Parasitology – 2
4.	Medical Parasitology – 3
5.	General Virology
6.	• DNA viruses – 1
7.	• DNA viruses – 2
8.	• RNA viruses – 1
9.	• RNA viruses – 2
10.	• RNA viruses – 3
11.	Hepatitis viruses
12.	Retro viruses. AIDS. Viral oncogenesis
13.	Slow viruses and Prions. Control of viral diseases. Antiviral chemotherapy
14.	latrogenic and Nosokomial infections

Week

Practicals (2 hours per week)

1.	Medical Mycology
2.	Medical Parasitology – 1
3.	Medical Parasitology – 2
4.	Medical Parasitology – 3
5.	Midterm exam I. General Virology
6.	DNA viruses
7.	RNA viruses
8.	Midterm exam II.
9.	Clinical Bacteriological Diagnosis - 1: Skin, wound and eye infections
10.	Clinical Bacteriological Diagnosis – 2: Respiratory tract infections
11.	• Clinical Bacteriological Diagnosis – 3: Infections of the uro-genital tract. Abdominal and Enteral infections. Sexually transmitted diseases
12.	• Clinical Bacteriological Diagnosis - 4: Bacteriaemia, sepsis, endocarditis, meningitis
13.	Summary and review
14.	Practical exam

MEDICAL MICROBIOLOGY II.

Institute of Medical Microbiology

Program Director: **Prof. Dr. Dóra Szabó** Tutor: **Dr. Ágoston Ghidán**

Second Semester

Week	Lectures (1,5 hours per week)
1.	Medical Mycology
2.	Medical Parasitology – 1
3.	Medical Parasitology – 2
4.	Medical Parasitology – 3
5.	General Virology
6.	• DNA viruses – 1
7.	• DNA viruses – 2
8.	• RNA viruses – 1
9.	• RNA viruses – 2
10.	• RNA viruses – 3
11.	Hepatitis viruses
12.	Retro viruses. AIDS. Viral oncogenesis
13.	Slow viruses and Prions. Control of viral diseases. Antiviral chemotherapy
14.	latrogenic and Nosokomial infections
Week	Practicals (2 hours per week)
1.	Medical Mycology
2.	Medical Parasitology – 1
3.	Medical Parasitology – 2
4.	Medical Parasitology – 3
	Midterm even I

- 5. Midterm exam I. General Virology
- 6. DNA viruses
- 7. RNA viruses
- 8. Midterm exam II.
- 9. Clinical Bacteriological Diagnosis 1: Skin, wound and eye infections
- 10. Clinical Bacteriological Diagnosis 2: Respiratory tract infections
- 11. Clinical Bacteriological Diagnosis 3: Infections of the uro-genital tract. Abdominal and Enteral infections. Sexually transmitted diseases
- 12. Clinical Bacteriological Diagnosis 4: Bacteriaemia, sepsis, endocarditis, meningitis
- 13. Summary and review
- 14. Practical exam

PATHOLOGY AND HISTOPATHOLOGY I.

1st Dept. of Pathology and Experimental Cancer Research

Cancer Research Tutor: *Dr. Gergely Rácz*

First Semester

Lectures (14 weeks): (all lectures for the whole class are held at the 2nd Dept. of Pathology).

Autopsy and histology practice (14 weeks) absence: more than 3 absences invalidate semester. Missing any half (either histology or autopsy) of the practice is considered an absence.

Lectures (3 hours per week)	Histopathology practices
1. Introduction	Autopsy demonstration
	Nutmeg liver H&E (1)
	Cardiac fibrosis in liver H&E(7)
	Pulmonary edema H&E (2)
2. Cell injury	Haemosiderin in alveolar macrophages H&E (8)
3. Cell injury	Thromboembolism H&E (3)
, ,	Hemorrhagic infarction of the lung H&E (4)
	Anemic infarction of the kidney H&E(5)
	Emollition of the brain H&E (6)
	Fatty degeneration of the liver H&E (12)
4. Inflammation	Phlegmone H&E(13)
5. Inflammation	Cerebral abscess H&E(14)
	Fibrinous pericarditis H&E (15)
	Pseudomembranous colitis (16)
6. Wound healing, regeneration and fibrosis	Actinomycosis H&E (98)
7. Immunopathology	Candidiasis PAS (17)
	Aspergillosis (slide demonstration)
	Acute appendicitis H&E(66)
	Oxyuris in appendix H&E(67)
8. Neoplasia	Chronic polypous sinusitis H&E (18)
9. Neoplasia	Chronic abscess (9)
	Granulation tissue H8LE (19)
	Foreign-body granuloma H&E (20)
10. Neoplasia	Metaplasia (slide demonstration)
11. Genetic diseases	Dysplasia of the cervical epithelium (CIN) H&E(24)
	In-situ carcinoma of the cervix H&E (25)
	Invasive squamous cell carcinoma of the cervix H&E (26)
12. Haemodynamic disorders	Squamous cell papilloma H&E (23)
	Squamous cell carcinoma of the larynx H&E (10)
	Tubulovillous adenoma of the colon H&E (30)
	Adenocarcinoma of the colon H&E(31)
	Metastasis in lymph node H&E (36)
	Metastatic carcinoma in the lung (slide demonstration)
13. Haemodynamic disorders	Leiomyoma H&E (37)
	Leimyosarcoma (slide demonstration)
	Lipoma H&E (11)
	Liposarcoma (slide demonstration)
	Malignant fibrous histiocytoma H&E (38)
	Immunohistochemistry (slide demonstration)

<i>Lectures</i> (3 hours per week)	Histopathology practices
14. Environmental and nutritional pathology	Atherosclerosis of the aorta H&E (45)
1 07	Benign nephrosclerosis H&E(46)
	Coronary-sclerosis H&E(47)
	Polvarteriitis nodosa H&E (48)
	Giant cell arteriitis H&E (49)
	Cystic medianecrosis of the aorta H&E (86)
15. Blood vessels	Fatty infiltration of the myocardium H&E (41)
16. Blood vessels	Myocardial infarction, early H&E (42)
	Myocardial infarction, old H&E (43)
	Myocarditis H&E(44)
	Endocarditis H&E(96)
17. Heart	IRDS H&E (50)
18. Heart	Lobar pneumonia H&E(51)
	Bronchopneumonia H&E (52)
	Pneumoconiosis H&E (54)
	Pleurafibrosis H&E (97)
19. Respiratory system	Miliary tuberculosis in lung H&E (55)
20. Respiratory system	Tuberculotic lymphadenitis H&E (56)
	Sarcoidosis H&E (57)
	Oat cell carcinoma of the lung H&E (58)
	Mesothelioma H&E (59)
	Nasopharyngeal carcinoma (slide demonstration)
21. Respiratory system	Mixed tumor of the parotid gland H&E(32)
	Warthin-tumor (slide demonstration)
	Mucoepidermoid carcinoma (slide demonstration)
	Adenoid cystic carcinoma (slide demonstration)
	Chronic peptic ulcer H&E (60)
	Chronic gastritis H&E (61), Giemsa (62)
	Signet ring cell carcinoma of the stomach H&E(63), PAS (64)
	Ventricular-lymphoma (slide demonstration)
22. Infectious diseases	Villous atrophy in small intestine (65)
23. Infectious diseases	Ulcerative colitis H&E(68)
24. Infectious diseases	Crohn's disease H&E (69)
	Carcinoid H&E (53)
	Peritoneal carcinosis H&E (99)
25. Gastrointestinal tract	Organ demonstration
26. Gastrointestinal tract	

27. Gastrointestinal tract

28. Pancreas

PATHOLOGY AND HISTOPATHOLOGY II.

Second Semester

Lectures (3 hours per week)	Histopathology practices
29. Liver and biliary system	Alcoholic hepatitis H&E(70)
30. Liver and biliary system	Chronic hepatitis H&E (71)
31. Liver and biliary system	Liver cirrhosis H&E(72)
, ,	Hepatocellular carcinoma H&E (73)
	Cavenous haemangioma of liver H&E (35)
32. Kidney	Chronic cholecystitis H&E(74)
33. Kidney	Chronic pancreatitis H&E(75)
	Acute hemorrhagic necrotising pancreatitis H&E(76)
	Pancreatic pseudocyst (slide demonstration)
	Adenocarcinoma of pancreas H&E (77)
	Islet cell tumor of pancreas (slide demonstration)
34. Urinary tract	Diabetic nodular glomerulosclerosis
	(Kimmelstiel-Wilson) H&E (78)
35. Male genital syste	Glomerulonephritis H&E (79)
	End stage kidney H&E (80)
	Acute rejection in transplanted kidney H&E (22)
36. Gynecologic pathology	Acute pyelonephritis H&E (81)
37. Gynecologic pathology	Chronic pyelonephritis H&E (82)
	Renal cell carcinoma H&E (83)
	Normal adrenal cortex (slide demonstration)
	Wilm's tumor H&E(84)
	Transitional cell carcinoma H&E (28)
38. Neonatology	Nodular hyperplasia of the prostate H&E(85)
39. Breast	Adenocarcinoma of prostate H&E(87)
	Seminoma H&E (88)
	Embryonal carcinoma (slide demonstration)
40. Discale and human side areas	leratoma H&E(89)
40. Blood and lympoid organs	Placenta retention H&E (90)
41. Blood and lympoid organs	Extrauterine gravially H&E (91)
	Anas-stella phenomenon (side demonstration)
	Chariogarcinoma H § E (92)
	Endomotrial hyperplacia H&E (94)
	Endometricsis (slide demonstration)
	Endometrium carcinoma H&E (95)
42 Blood and lympoid organs	Chronic cervicitis H&E (123)
43. Blood and lympoid organs	HPV infection in cervix H&E (124)
45. Blood and lympold organs	In situ hybridisation (slide demonstration)
	Condyloma acuminatum (slide demonstration)
	Follicular cyst of the ovary H&E (125)
	Mucinous cystadenoma of the ovary H&E(29)
	Mucinous cystadenocarcinoma (slide demonstration)
	Borderline serous papillary cystadenoma of the ovary H&E (126)
	Serous papillary cystadenocarcinoma of the ovary (slide demo)
	Granulosa cell tumor (slide demonstration)
44. Endocrinology	Fibrocystic disease of the breast H&E(101)
07	

Lectures (3 hours per week)	Histopathology practices
45. Endocrinology	Peri- and intracanalicular fibroadenoma of the breast H&E (33)
0,	Phylloid tumor (slide demonstration)
	Intraductal carcinoma H&E (102)
	Invasive ductal carcinoma H&E(103)
	Invasive lobular carcinoma H&E (104)
	ENAB of the breast (cytol, smear demonstration)
46 Skin	Normal bone marrow H&E (127)
47. Skin	Leukemic bone marrow H&E(128)
	Leukemic infiltration of parenchymal organs
	(slide demonstration)
	Multiple myeloma H&F (106)
	Amyloidosis Congo (21)
48 Head and neck	Non Hodgkin lymphoma (low grade) H&E (107)
40. Head and heek	Non Hodgkin lymphoma (high grade) H&E (108)
	Follicular lymphoma (slide demonstration)
	Tonsillar lymphoma (slide demonstration)
	MAALT lymphoma (slide demonstration)
	MALT lymphoma (side demonstration)
	Hodgkin lymphoma histologic types (slide demonstration)
40. Romas and isints	Colloid goiter LLS (110)
49. Bones and joints	Conoid goiler Hac(110)
50. Bones and joints	Graves disease $\Box \propto c$ (111) Falliandar and a second of the theorem in along $d \downarrow 10$ $F(112)$
	Follicular adenoma of the thyroid gland H&E(112)
	Follicular carcinoma (slide demonstration) Denillementaria energia f the theorem of the f (112)
	Papiliary carcinoma of the thyroid gland H&E (113)
	Medullary carcinoma (slide demonstration)
	Adrenal cortical adenoma H&E(105)
54 D 1111	Parathyroid adenoma (slide demonstration)
51. Bones and joints	Osteosarcoma H&E (114)
	Rhabdomyosarcoma H&E (115)
	Rheumatoid arthritis H&E (116)
	Autoimmun diseases (slide demonstration)
52. Eye	Basocellular carcinoma H&E (27)
	Verruca vulgaris H&E (100)
	Naevus pigmentosus H&E (39)
	Malignant melanoma H&E (40)
	Metastatic melanoma (slide demonstration)
	Bowen's disease (slide demonstration)
	Capillary haemangioma of the skin H&E (34)
53. Skeletal muscle	Purulent meningitis H&E(117)
54. Nervous system	Encephalitis H&E (118)
55. Nervous system	Meningeoma H&E (119)
	Glioblastoma multiforme H&E(120)
	Schwannoma H&E (121)
	Neuroblastoma H&E (122)
	Ganglioneuroblastoma (slide demonstration)
	Paraganglioma (slide demonstration)
56. Nervous system	Review
57. Clinicopathologic conference	

Semifinal Exam: Autopsy demonstration on the last autopsy practice will be graded 1 to 5. This grade, if not 1, will be added to the scores of written test. Written test is composed of 100 Qs (true-false, simple choice, problem solving, combination, multiple choice, relations, medical term, assay, scores are 0-65:1; 66-73:2; 74-83:3; 84-89:4; 90-105:5). Further details available in the semifinal exam protocol provided one month before examination period.

PATHOLOGY AND HISTOPATHOLOGY I - II.

2nd Department of Pathology

Head of Department: Prof. Dr. András Kiss

Index

Lectures List of textbooks Histopathology practices - slides for the histopathology exam and slide demonstrations General information - Lectures, practices, competition Examinations: Semifinal Examinations - Final Schedule Schedule for the academic year

1st SEMESTER

	LECTURES	HISTOPATHOLOGY
Week 1	Introduction (Kiss) Cell injury (Kiss) Reversible cell injury (hydropic swelling, atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia, intracellular storage). Irreversible cell injury (necrosis, apoptosis, ischemic cell injury, external damaging agents, calcification, hyaline, aging).	Practice 1- Introduction Digital teaching system Feleconsultation E-school Safety rules Cell injury, adaptation, storage disorders Necrosis, coagulative Necrosis, liquefactive Apoptosis Hypertrophy Hypertrophy Hyperplasia Fatty degeneration Amyloidosis
Week 2	 Hemodynamic disorders I. (Madaras) Basic notions in hemodinamics. Hemorrhage, active and passive hyperemia. Disorders of water and electrolytes. Edema. Hemodynamic disorders II. (Madaras) Thrombosis, embolism. Infarction. Shock. 	Practice 2-Hemodynamic disorders I. Acute congestion – Pulmonary edema Chronic congestion in lung Haemosiderin in alveolar macrophages ("heart failure cells") Chronic congestion in liver ("Nutmeg liver") Nutmeg liver with fibrosis Centrilobular necrosis

	LECTURES	HISTOPATHOLOGY
Week 3	 Inflammation I. (Tímár) Definition. Symptoms. Vascular permeability. Inflammatory mediators and their origin. Cellular recruitment. Acute inflammation. Systemic manifestations of inflammation. Inflammation of avascular tissues. Wound healing, regeneration and repair. Classification of cells and tissues according to their regenerative capability. Extracellular matrix. Inflammation II. (Lotz) Chronic inflammation. Fibrosis, scar formation. Granulomatous inflammation: (tuberculosis, syphilis. etc.) 	 Practice 3- Hemodynamic disorders II. Thrombus Fat embolism Anemic infarction-kidney Hemorrhagic infarction-lung
Week 4	 Neoplasia I. (Schaff) Neoplasia-definition. Characteristics of benign and malignant tumours. Histological classification of tumours Grading. Neoplasia II. (Schaff) Causes of neoplasia. Epidemiology. Chemical, physical and biological carcinogenesis. Prevention. Screening. 	 Practice 4 –Inflammation, repair Acute appendicitis Fibrinous pericarditis Granulation tissue Foreign body granuloma
Week 5	 Neoplasia III. (Tímár) Molecular mechanisms of tumour development: protooncogenes, oncogenes, tumor suppressor genes, growth factors. Neoplasia IV. (Tímár) Tumor growth, tumor progression, metastasis. Familiar cancer Neoplasia V. (Kulka) (Saturday) Prognostic factors in tumour pathology. Staging and grading of tumours. TNM. Handling of surgical biopsy material. 	 Practice 5- Neoplasia I Squamous metaplasia Condyloma (LSIL) CIN 3 (HSIL) Invasive carcinoma
Week 6	Childhood tumours (Halász) Genetic and developmental disorders. Gene pathology I. (Kiss) Single-gene abnormalities. Autosomal dominant and recessive inheritance, sex- linked disorders. Lysosomal storage disease.	Practice 6-Midterm I (cell injury, hemodynamics, inflammation) Neoplasia II. (Benign and malignant tumours) • Squamous papilloma • Squamous cell carcinoma • Adenoma • Adenocarcinoma • Lymph node metastasis • Liver metastasis
Week 7	Genetic and developmental disorders. Gene pathology II. (Kiss) Chromosomal abnormalities. Morphogenic disorders, malformations, multifactorial inheritance. Prenatal diagnosis. Familiar diseases and symptoms.	Practice 7-Neoplasia III. (Soft tissue and childhood tumours) • Leiomyosarcoma • Osteosarcoma • Wilms tumour • Neuroblastoma • Teratoma maturum
Week 8	Cardiovascular pathology I. (Glasz) Structure of vessels. Atherosclerosis. Aneurysms. Hypertensive vascular disease. Inflammatory disorders of blood vessels. Microvascular disease. Diseases of veins and lymphatic vessels. Vascular tumours. Cardiovascular pathology II. (Glasz) Endocarditis, myocarditis, pericarditis. Rheumatic heart disease. Ischemic heart disease.	Practice 8- Biopsy techniques, protein- and DNA-based diagnostics • Cytology smear • Core needle biopsy • Biopsy by endoscopy • Frozen section • Special stains • Immunohistochemistry • FISH

	LECTURES	HISTOPATHOLOGY
Week 9	Cardiovascular pathology III. (Glasz) Congenital heart diseases. Cardiomyopathies. Heart failure. Systemic diseases involving the heart. Cardiac tumors. Head and neck (Székely E) Neoplastic and non-neoplastic lesions of lips, oral cavity, tongue, teeth, salivary	 Practice 9- Cardiovascular diseases Arteriosclerosis Actut myocardial infarction Myocardial infarction-healing Endocarditis
	glands, sinuses, pharynx, larynx, ear.	
Week 10	Respiratory system I. (Székely E) Diseases of conducting airways and lung parenchyma. Diffuse alveolar damage. Chronic obstructive pulmonary diseases. Restirctive lung diseases.	Practice 10- Midterm II. (Neoplasia, Cardiovascular system, Head and neck) Pulmonary pathology I non-neoplastic • IRDS
	Respiratory system II. (Tímár) Development of lung cancer. Neoplasia (primary cancer of the lung, metastasis, benign tumors). Etiology, genetic abnormalities. Diseases of the pleura.	BronchopneumoniaTuberculosisBoeck sarcoidosis
Week 11	 Immunpathology (Kiss) Constituents of the immune systeHypersensitive reactions. Allergy. Transplantation. Immunodeficiency. AIDS. Autoimmune diseases (Glasz) Etiology. Monosystemic diseases (e.g. chr. Athrophic gastritis, myasthenia gravism Basedow dis., Hashimoto thyreoiditis, Addison dis., Insulin dependent diabetes mellitus, Sclerosis multiplex) and Oligo- polysystemic diseases (e.g. SLE, Sjögren sy, RA. scleroderma. dermatomyositis) 	 Practice 11- Pulmonary pathology II- neoplastic Small cell carcinoma Squamous cell carcinoma Adenocarcinoma Mesothelioma Pulomonary metastasis
Week 12	 Infectious diseases (Lotz) Diseases caused by viruses (tick-borne viruses, polio, variola, herpes, CMV, EBV, rubella, varicella, mumps, influenza), Rickettsiae, Spirochetes. Bacteria (tularaemia, pertussis, legionella, brucellosis, listeriosis, clostridial infections (tetanus, botulism), Streptococci) Actinomycosis. Mycobacteria (tbc, leprosy). Protozoa (malaria, toxoplasmosis, amebiasis) Skin pathology (Székely T./Kovács A.) Basic notions in skin pathology. Primary lesions. Dermatitides. Infectious conditions of the skin.Manifestations of systemic diseases. Tumors of the surface epithelium and skin appendages.Pigmented nevi and malignant melanoma. 	 Practice 12- Skin Seborrheic keratosis Basal cell carcinoma Melanocytic nevus Malignant melanoma
Week 13	Environmental and nutritional pathology (Kerényi) Smoking, alcoholism, drugs. latrogenic injuries. Environmental chemical and physical factors. Obesity, protein malnutrition, vitamins. Bones and joints (Arató) The structure of the bone and cartilage. Osteogenesis. Growth and maturation disorders of the skeleton. Aseptic bone necrosis. Reactive osteogenesis. Osteomyelitis and specific inflammations. Metabolic disorders. Tumors and tumor-like lesions of the bones. Joints	
Week 14	Clinical pathology I. (Székely E) Tumor Screening, Cytodiagostics. Basic cytopathological morphology of benign and malignant lesions. Case presentations. Clinical pathology II. (Kiss)	Practical exam
	Diagnostic parameters, requirements, which guide the clinical protocols. Molecular diagnostics of tumors. Targeted therapy	

Faculty of Medicine

2nd Semester

Week 1	Gastrointestinal tract I. (Kiss) Esophagus (anatomy and developmental disorders, inflammation, trauma, tumors). Stomach- part I.	Practice 1- The pathology report
Week 2	Gastrointestinal tract II. (Madaras) Pathology of the stomach(-part 2) and small bowel. Appendix. Gastrointestinal tract III. (Madaras) Colon (congenital disorders, infections, diverticular disease, inflammation, Crohn- disease, ulcerative colitis, vascular diseases, neoplasms, other disorders). Peritoneum.	 Practice 2- Gastrointestinal pathology I. Pleomorphic adenoma- parotis Peptic ulcer-stomach Gastritis chronica (H. pylori) Carcinoma sigillocellulare GIST
Week 3	 Pathology of the liver I. (Schaff) Anatomy of the liver, function. Bilirubin-metabolism and jaundice. Hepatic failure. Hepatorenal syndrome. Viral hepatitis. Chronic hepatitis. Cirrhosis. Portal hypertension. Non-viral hepatitis. Pathology of the liver II. (Schaff) Alcoholic liver disease, toxic liver injury. Hemochromatosis. Vascular disorders. 	 Practice 3-Gastrointestinal pathology II. Celiac disease Pseudomembranous colitis Ulcerative colitis Crohn disease
Week 4	 Pathology of the liver III. (Kiss) Neoplasms. Gallbladder and bile ducts (congenital anomalies, cholecystitis, cholelithiasis, cholangitis, neoplasms). Pathology of the exocrine pancreas (Székely E) Developmental abnormalities, inflammations, tumors of the exocrine pancreas. 	 Practice 4- Liver pathology Alcoholic hepatitis Viral hepatitis Cirrhosis Hepatocellular carcinoma Cavernous hemangioma Liver metastasis
Week 5	 Endocrinology I. (Székely E) Pathology of the endocrine pancreas: Diabetes mellitus. The hypothalamus- hypophysis system. Pathology of the pituitary gland. The thyroid gland: hypo- and hyperfunction, inflammations, tumors. Endocrinology II. (Kovács A) Pathology of the parathyroid gland. Hypo- and hyperfunction and other diseases of the adrenal cortex. Tumors of the adrenal gland. Pineal gland. Ectopic hormone production. 	 Practice 5- Pathology of the pancreas Acute pancreatitis Chronic pancreatitis Adenocarcinoma of the pancreas Neuroendocrine tumour
Week 6	Renal pathology I. (Kardos) Anatomy. Clinical syndromes. Glomerular diseases. Tubulointerstitial diseases. Renal disease and systemic disorders. Kidney transplantation. Renal pathology II. (Somorácz) Hydronephrosis. Lithiasis. Pyelonephritis. Congenital abnormalities. Tumors of the kidney.	 Practice 6- Endocrine pathology Adrenal cortical adenoma Goiter Autoimmune thyreoiditis (Hashimoto) Thyroid gland-follicular adenoma Thyroid gland-papillary carcinoma
Week 7	Uropathology I. (Székely E) Congenital abnormalities of the urinary tract. Inflammations. Urinary bladder (malformations, inflammations, tumors). Urethra. Uropathology II. (Székely E) Diseases of the epididymis, testis, prostate, penis and scrotum.	 Practice 7- Midterm III (GI, liver, pancreas, endocrine) Renal- and uropathology Acute pyelonephritis End stage kidney Renal cell carcinoma Transitional cell carcinoma
Week 8	Gynecologic pathology I. (Schaff) Pathology of the vulva and vagina Non-neoplastic diseases of the cervix. Precancerous lesions of the cervix. HPV. Cervix-screening. Conisation. Cervic carcinoma. Bethesda system. Gynecologic pathology II. (Madaras) Pathology of the uterus. Uterine bleeding disorders. Endometrial hyperplasia, endometricois. Tumours of the endometrium myometrium and serosa	 Practice 8- Uropathology- prostate, testis Prostatic hyperplasia Prostatic adenocarcinoma Testis- seminoma Testis- embryonal carcinoma

Week 9	Gynecologic pathology III. (Kulka) Pathology of the fallopian tube and ovarium.Pregnancy related pathology of the uterus. Neonatology (Kiss) Premature birth and its complications. Intrauterine infections and their consequences. Twin pregnancy. Diseases of the perinatal period. Sudden infant death.	 Practice 9- Gynecologic pathology I. Ectopic pregnancy Endometriosis Endometrial hyperplasia (simple) Endometrial carcinoma
Week 10	 Breast pathology I. (Kulka) Symptoms and diagnosis of breast diseases. Malformations. Benign symptomatic lesions (inflammations, fibrocystic disease, epithelial dysplasia and its significance, benign tumours) Breast pathology II. (Kulka) Malignant tumours - epidemiology, risk factors. Histologic types of breast carcinoma. Prognostic factors in breast cancer. Non-epithelial breast malignancies.Screening: non-palpable breast lesions. The male breast. 	 Practice 10- Gynecologic pathology II. Follicular cyst- ovary Mucinous cystadenoma-ovary Serous cystadenoma-ovary Serous papillary (cystadeno-)carcinoma-ovary
Week 11	Spring break	
Week 12	Easter-Public Holiday Hematopathology I. (Székely E) Hemopoetic system. Normal function (bone marrow, lymph nodes, spleen). Morphology and immunologic evaluation. Disorders of platelets and coagulation. Anemias, polycytemia. Neutrophilia. Proliferative disorders of mast cells. Monocytosis. Sinus histiocytosis. Benign disorders of lymphoid cells	 Practice 11- Breast pathology Fibrocystic disease Fibroepithelial tumours Ductal carcinoma in situ (DCIS) Invasive carcinoma (NOS, lobular)
		COMPETITION- 1 st round
Week 13	Hematopathology II- (Székely E) Acute myeloproliferative syndromes (acute leukaemias). Chronic myeloproliferative syndromes (CML, myelofibrosis, thrombocytemia). Acute and chronic lymphocytic leukaemias. Disorders of the spleen	Practice 12-Hematopathology • Reactive lymphadenopathy • Hodgkin lymphoma • Nodal non-Hodgkin lymphoma • Extranodal non-Hodgkin lymphoma
Week 14	 Hematopathology III. (Székely E) Lymphomas (Hodgkin, non-Hodgkin). Metastatic tumors in bone marrow and lymph nodes. Clinicopathological case demonstrations Central nervous system I. (Schaff) Trauma, vascular and circulatory disorders. CSF dynamics. Enchepahlomyelitis, meningitis. Congenital malformations. Metabolic storage Demyelinating diseases. Neurodegenerative diseases. Pathology of the eye and ear. Metabolic diseases 	Practice 13-Midterm IV (renal and uropathology, gynecologic pathology) CNS histopathology: • Purulent meningitis • Meningeoma • Glioma • Brain metastasis COMPETITION- 2 nd round
Week 15	Central nervous system II. (Reiniger) Neoplasms (neuroectodermal, embryonic, ectopic tissue, metastasis). Peripheral nervous system (neuropathies, inflammations, trauma, tumors).	Consultation

List of textbooks

1 Kumar, Abbas, Aster, Malone Robbins and Cotran: Pathologic Basis of Disease (Elsevier Saunders, Ninth Edition, 2015), ISBN-13: 978-1455726134

2 Szende B., Suba Zs Introduction to Histopathology (Medicina, 1999)

Webpage www.path2.sote.hu
General Informations: www.path2.sote.hu
General information, downloads: www.semmelweis.hu/patologia2
Online available case center (digital slides): http://casecenter-korb2.sote.hu/casecenter/
User name and password for Java based version: student_jav
User name and password for Panoramic Viewer based uasege: student_pv
The visit of the internet based Case Center and Practice Test on tuition and exam dates is allowed after 4 p.m. only!
Mr. Rúben Kis and Mr. Endre Kontsek shall be approached with technical problems regarding server availability:
e-mail: for Mr. Rúben Kis: kis.ruben@semmelweis-univ.hu
for Mr. Endre Kontsek: kontsek.endre@med.semmelweis-univ.hu
Panoramic Viewer free dowlnload at : http://www.3dhistech.com/
4D pathology and auxilliary materials at: www.4dpathology.hu

Panoramic Viewer free download: http://www.3dhistech.com/ Practice test: http://casecenter-korb2.sote.hu/espractice/

General information

Lectures

The topic of the lectures include both general and systemic pathology. Each lecture lasts 1hour 10 minutes and is illustrated with macroscopic and microscopic photographs, radiologic images, illustrating the presented material. Occasionally interesting autopsy cases will be demonstrated during the lectures.

Attending the lectures is compulsory, since the semifinal and final exams are partly based on them. The 2nd Department of Pathology may record the absences and those students who skip more then 15 % of the lectures may not be registered for examination.

Practices

There are 14 two + two hours practices in both semesters, which are divided into autopsy and histopathology. Not more than 2 autopsy practices and not more than 2 histopathology practices can be missed in each semester. Catch up is possible only for autopsy hall practices, students can join other groups and their presence should be registered and signed by the tutor of the autopsy hall practice attended. In case the abscences exceed the allowed limit the student will not be accepted for examination.

The histopathology practices provide basic histopathology skills. The topic of the histopathology practices matches that of the lectures. Brief theoretical background for the presented slides will be discussed in the frame of the practice. The pathological lesions will be presented in form of digital slides and will be demonstrated by the tutor with the help of a computerized multidiscussion/teleconsultation system. The digitalized slides will be individually studied and analyzed by the students as well. The digital slides are also available for the students through the internet every day from 4 p.m. till 8 a.m. the next day.

During autopsy practices the students will learn the basic skills of autopsy and how to recognize what's pathological and will gain skills to demonstrate and describe these lesions. The emphasis is on the clinicopathologic aspects of the discussed cases. If there is no autopsy available, organ demonstration will take place on plastinated organs. Alternatively, visit of the laboratories (Laboratory of Histopathology, Laboratory of Immunhistochemsitry and Laboratory of Molecular Pathology) of the Department will be on the program.

The medical and patient information provided during autopsies, lectures and demonstrations is confidential. The requirement to maintain professional secrecy and preserve confidentiality also applies for medical students.

It is strictly forbidden to make any kind of record (photography, video, sound-record) of the material provided during the tuition and demonstrations in the facilities and building of the Department, especially during lectures and practices (including autopsy and histology practices). The material presented during the tuition is the intellectual property of the Department and their presentation is directly controlled by the Department. Therefore, it is not intended for the public and must not be published or arbitrarily recorded, alternatively taken away without the permission of the Department. Violation of the rules mentioned above implies disciplinary action. Exception can be made only based on the previous and written permission provided by the Head of the Department. The Department reserves the rights to completely control the communication of the information about the Department.

Midterm exams: There are two midterm exams in each semester. The participation and successful absolvation (average result exceeding 60%) of the midterm exam is compulsory. If a student can not attend one of the midterms or the average 60% is not achieved, the tutor should assess the basic knowledge of the student (see list of definitions on our webpage).

Pathology competition

Pathology competition has two rounds: the first, during the 12th and the second, during the 14th week of the 2nd semester. Macroscopic photographs will be projected in the first round and diagnoses should be given. The students with the best results (up to 8-10 people, depending on the number of participants) will enter the second round. The 2nd round has two parts: theoretical and histopathology parts. In the former, participants should recognize and describe autopsy macrophotos (virtual autopsy). During the histopathology part, participants should recognize and describe a non-neoplastic slide.

Students use pseudonyms in both rounds. Those students who enter the second round are exempt from test writing, those who recognize both of the histopathology slides in the second round are exempt from histopathology in the final exam. The first three ranked students will get only 2 theoretical questions in the final examination.

Consultation

Upon request there is a possibility for a consultation with the tutor. The students are welcome to autopsy practices of other groups for retake or extra occasion as long as it does not disturb the ongoing practice. **There is no consultation during the exam period.**

Examinations

SEMIFINAL:

1. Prerequisites:

Absences: not more than 2 autopsy practices and not more than 2 histology practices (histology practice and autopsy hall practice counts separately) can be missed in each semester. Attending the lectures is compulsory. If one does not fullfill the above mentioned prerequisites the 2nd Department of Pathology has the right for not acknowledging the semester.

Midterm exams: Completion of the 2 midterm exams during each semester is compulsory.

2. Autopsy demonstration will be held during the last autopsy hall practice. One should be able to recognize the organ (complex), orientate it properly, precisely describe the pathological lesions and establish a macroscopical diagnosis. The performance is graded on a scale from 1 to 5. In case the mark of autopsy demonstration would be 1 (failure) it should be retaken otherwise the student will not be examined at the semifinal. The score (1-5) of the autopsy demonstration will be added to the written exam's result if the latter is over the passing limit.

3. The semifinal exam is a written test!!

The material for the examinations is based on the book, the lectures and practices as well. The questions are prepared based on the official pathological textbook, but the factual data of the lectures are also constituents of the written test.

The test consists of 80 questions. The students have 80 minutes for writing the test. The test is given in one session, there will be no break during the examination. Your sitting order is determined by the actual supervisor. The written test will be held in the Histopathology practice room using the teleconsultation computerized system. Every student to be examined on a certain exam day will receive the same set of questions, however, in different order within one question and regarding the numbering of the questions as well. The actual set of questions will be randomly selected from a pool by the computer. Upon submission of the test for evaluation, the computer will evaluate it. The result is immediately available and will be recorded. Since there is no possibility of human error in the correction the result of the written test is not subject of personal consultation.

The test questions include simple choice (one correct answer out of 5), multiple choice (2 answers are correct), "true-false" analysis and definitions sholuld be given. Every correct answer of a multiple choice question will be awarded with one point, false statements of the multiple choice questions will result in one point deduction in order to avoid randomly crossing every possible answer of the multiple choice questions. Altogether, the deductions can not conclude a negative score, the worst score for one question is 0. Before submitting the test for evaluation the answers might be changed. Copying the questions are not permitted. The results are posted at the same day, generally early afternoon.

Evaluation: The passing level is 60 %. Each correct answer is worth of 1 point.

0-59,99%: = 1 60-69,99%: = 2 70-79,99%: = 3 80-89,99%: = 4 90-100%: = 5

Suspension: If you have any problem during the test, ask the supervisor. In case of communicating, unacceptable behaviour, cheating (usage of mobile phone, books, notes, etc.,) your exam is <u>immediately</u> suspended and the exam will not be evaluated and counts as a failed exam. Written report of the incident will be prepared and signed by the teachers.

- 4. The exam for EM begins at 8.30 a.m. sharp at the 2nd Department of Pathology, meeting at the Histology practice room. The grade books are collected by the supervisor before starting the exam. Students without a grade book should provide a photo ID, otherwise they are not allowed to take the examination.
- 5. Exam dates: You will be notified about the dates offered by the Department before the exam period and they will be finalized at the Staff/ Student meeting. Then these fixed days will figure in NEPTUN.

Important! Taking examinations before the exam period is not permitted! (University Policy). In exceptional cases (such as near-delivery, etc.), you must have a written permission from the Dean's Office.

- **6. Registration** The internet based sign up system (NEPTUN) regarding pathology has been established for 3rd year students as well. The sign up procedure is controlled and regulated by the software and the institute can not interfere with the system. The officially signed up students will be scheduled for examination.
- 7. Rescheduling the exam date: The list of examinees is completed 2 days before the examination date (deadline: 9.00. a.m.), the NEPTUN system automatically closes the sign up list by expiration of the deadline. Example: if the exam is on Thursday the data sheet for Thursday will be taken in and finalized on Tuesday at 9 a.m..You may remove your name prior to this period. After that changes are not permitted. If you do not show up on the given exam date, you should justify it within 3 days at the head of the Institute or at the tutor responsible for the English program. Otherwise, "not appeared" note is written in your index, and the exam is not allowed without having a retake ticket! The skipped exam is deducted from the number of possible retake exams.
- **8. Retake exam:** In case of failure or for those who are unsatisfied with the result of the first exam a retake exam should be taken to improve the mark. For that a retake ticket is required from the secretariate. If one retakes an exam to improve the previous mark it is not granted that mark of the retake exam can not be the same or worst than the previous mark.

The retake exam - the first retake exam as well - may be oral by request !!

At least 4 days should be passed between the day of the failed exam and the day of the retake exam (the days of the examinations are **not included**). One must also register on the NEPTUN system and indicate that this is the first, second, etc. retake exam. Without retake ticket and NEPTUN registration one is not allowed to take an examination.

Any further details regarding the exam and exam dates will be discussed on a STUDENT / STAFF meeting held in the last week of November. The date of the meeting is to be announced on the lecture.

FINAL EXAM

Form of the **FINAL** examination

The final exam consists of two practical and two theoretical parts. The practical parts are **histopathology** in the histology practice room and **organ demonstration** in the autopsy hall. The theoretical parts are: **written test** (**60 questions – 60 minutes**) and **oral exam about theoretical topics** – concerning not only the organ or organ complex to be demonstrated, but the complete material discussed in the official pathology books as well as the material presented in the lectures. **The written test is compulsory part of the exam! The passing limit is 60 %.** The test is given in one session, there will be no break during the examination. Your sitting order is determined by the actual supervisor.

Written test: The test questions include simple choice (one right answer out of 5), and multiple choice (2 correct answers are correct), "truefalse" analysis. Every correct answers of multiple choice questions will be awarded with one point, false statements of the multiple choice questions will result in one point deduction on order to avoid randomly crossing every possible answers of the multiple choice questions. Every answer should be marked in the computer. Before submitting answers for evaluation the answers might be changed.

Oral exam: the 2 theoretical questions of the oral examination are from a list of theoretical questions. The list of these theoretical questions is on the website of the department.

The material for the examinations is based on the book, the lectures and practices as well !!

The examination will take place at the 2nd Department of Pathology starting with the written test in the Histology Practice Room. The final exam starts at 8.30 a.m. sharp!!!

MEETING POINT: In the Histology Practice Room at the 2nd Dept. of Pathology!!!

The students to be examined will be identified by picture ID cards by the supervisor before starting the exam. Tehrefore, students should present a picture ID, otherwise they are not allowed to take examination !

Evaluation: The passing level is 60 %. Each correct answer is worth of 1 point.

After test writing, examinees are required to take the **histology** part of the final. Two slides from the pool are given to the student and the examinee should describe the organ (if there is one present on the side) and the histological findings. Finally, a correct diagnosis should be given. The Histology part can not be examined by the tutor of the student.

After the test and histology, **organ demonstration** follows. During this part of the exam dissected organs or organ complexes are to be described. The student should be able to orientate the organ (or organ complex) properly, to describe it fully and evaluate the pathological alterations and establish diagnoses.

Finally, the 2 theoretical questions are to be discussed.

The final mark will be decided by the exam board of the institute based on the marks received on the practical and theoretical parts of the final exam.

It sould be kept in mind that the final mark is <u>not merely</u> the matemathical average of the given grades of different parts of the exam! Additional factors, for example your midterm results, your general performance during the academic year (evaluated by your tutor), the competition results, etc. are also taken into consideration. Serious mistakes or "clear spots" in your knowledge may significantly affect the final mark or even result in a failed exam.

Retake exam: In case of failure or for those who are unsatisfied with the result of the first exam a retake exam should be taken to improve the mark. If the student retakes the exam to improve the previous mark, the mark of the retake exam may be the same or worst than the previous mark.

At least 4 days should be passed between the day of the failed exam and the day of the retake exam (the days of the examinations are not included). The student must also register on the NEPTUN system and indicate that this is the first, second, etc. retake exam. Without retake ticket and NEPTUN registration the student is not allowed to take an examination.

By retake examination in case of <u>failure</u> the written test or/and the histology exam should not be repeated in case it has reached at least grade 3 by the previous examination.

In case of a retake exam that serves as improving the grade, the complete examination should be repeated, except if the written test/ histology part was grade 5.

Failure on any part of the exam excludes a result of 5!

Announcement of the results is at the same day. Signed grade books can be obtained in the office of the Head of Department.

Suspension: If you have any problem during the test, ask the supervisor. In case of communicating, unacceptable behaviour, cheating (usage of mobile phone, books, notes, etc.,) your exam is <u>immediately</u> suspended and the exam will not be evaluated and counts as failed exam. Written report of the incident will be prepared and signed by the teachers.

Schedule

Lectures		1 st semester	2 nd semester
Monday		11:50 – 13:00	10:50 - 12:00*
Wednesday		8:00 - 9.10	8:00 - 9.10*
Practices		1 st semester	2 nd semester
Group 1-6	Wednesday	9:30 - 12:50	9:30 - 12:50
Group 7-8	Monday Thursday	15:20 - 16:50 11:10 - 12:40	15:00 - 16:30 11:10 - 12:40

* preliminary data

Tutors Dr. Benedek GYÖNGYÖSI

Dr. Judit HALÁSZ Dr. Dóra HARGITAI Dr. Ildikó ILLYÉS Dr. István KENESSEY Dr. Magdolna KARDOS Dr. András KISS Dr. Zsófia KRAMER Dr. Gábor LOTZ / Dr. Lilla MADARAS Dr Tekla KOVÁCS Dr. Márton SÁGHI Dr. Eszter SZÉKÁCS Dr. Ildikó SZIRTES

IMMUNOLOGY

Deaprtment of Genetics, Cell- and Immunobiology

Course Director: Prof. Edit Buzás

Credits: 3

Total number of hours: 49 lectures: 28 practices: 21

Aim of the subject and its place in the curriculum:

A pre-clinical course for medical students that introduces the essentials of the immune system, natural and adaptive immune responses. It discusses the structure of the human immune system: organs, cellular and molecular components involved in the immune response; the development of genetic diversity of antigen receptors, and the role of diversity in an efficient immune response. It introduces to the students the processes of immunological regulation in healthy organism, including the immunology of pregnancy. It also discusses the course and alteration of immunological processes in certain pathological conditions, such as infections, tumors, hypersensitivity reactions, autoimmunity, immunodeficiency and transplantation, therefor provides a basis for other subjects. In related practices, students will be introduced to the basic methods required to test the functionality of the immune system, to the immunological assays and immunologically relevant procedures used in current diagnostics and therapy.

Competencies gained upon the successful completion of the subject: Understanding the relationships between immunological processes and the role of the immune system in the prevention, development and course of diseases. Theoretical knowledge of basic immunological diagnostic and therapeutic techniques.

Prerequisite(s):

Cell Science, Medical Biochemistry II

Detailed thematic of the course:

Lectures

- 1. The role, processes, organs and cells of the immune system
- 2. Principles of natural immunity
- 3. The complement system; inflammation and acute phase reaction
- 4. Antigen, antigen presentation and MHCs
- 5. Antigen receptors and their formation
- 6. T lymphocytes and cell-mediated immune response
- 7. B lymphocytes and humoral immune response
- 8. Immune response in infections;
- 9. Immunodeficiences
- 10. Hypersensitivity reactions
- 11. Mucosal immunity
- 12. Immunological tolerance; natural and pathological autoimmunity
- 13. Immunology of transplantation
- 14. Antitumor and pregnancy immunity
Practices

- 1. Basic terms
- 2. The role of the immune system in the lab
- 3. Methods based on antigen-antibody interactions I. Immunoserology
- 4. Methods based on antigen-antibody interactions II:immuno-assays
- 5. Methods based on antigen-antibody interactions III Flow cytometry
- 6. Complement assays,
- 7. Biological therapies I
- 8. Biological therapies II
- 9. Immunization and vaccination I
- 10. Immunization and vaccination II
- 11. Hypersensitivity I.
- 12. Hypersensitivity II-IV.
- 13. Screening methods for autoantibodies
- 14. HLA-typing

The Immunology subject provides theoretical backgrounds for the Microbiology, Immunopathology lectures of Pathology and the Rheumatology lectures of Internal Medicine II and all other clinical subjects.

INTERNAL MEDICINE - PROPEDEUTICS

First Semester

Course: Internal Medicine Type: compulsory Form of tuition: lecture, bedside practice Mode of assessment: practical course grade (semi-final)

Aim: The teaching offers the essential information required in performing the most comprehensive and diagnostic type of patient history and physical examination (an introduction to internal medicine).

The syllabus: The course is concerned with the clinical approach to evaluation of the patient including history taking and bedside physical examination (inspection, palpation, percussion, auscultation, taking vital signs). General symptoms and signs of the respiratory and cardiovascular diseases, the most common abdominal syndromes.

INTERNAL MEDICINE I.

Course Directors:

Prof. István Takács Prof. Péter Igaz

Credit: 4

Contact hours: lecture: 1,5 hours/lectures practice: 3 hours/practices

Type: obligatory

Lectures delivered during the semester to all students, practices according to group assignment in the second semester with exams at the corresponding examination periods

Objective of the course and how it fits in the educational curriculum:

Primary objective of the course is to introduce the student to acquire the basic skills of examination, diagnosis, treatment of a patient with endocrine, metabolic disease and toxicological problems.

Number of students (minimum, maximum) required to initiate the course

One third of the students registered at the Neptun system for the third year

Registration to the course:

Through the Neptun system

Detailed syllabus:

Lectures will be delivered during the semester to all students. Practices will be held for students during the semester, evenly distributed between the Medical Departments. Students will have their exams are in the corresponding examination periods

Lectures:

duration: 1 contact hour = 1x70 minutes

- Introduction to endocrinology. Disorders of the pituitary gland. 1.
- 2. Disorders of the thyroid gland: hypothyroidism, hyperthyroidism
- 3. Disorders of the thyroid gland: thyroiditis, thyroid cancer. Evaluation of a patient with goiter.
- Disorders of the adrenal cortex: Addison's disease, congenital adrenal hyperplasia. 4.
- 5. Disorders of the adrenal cortex: Conn syndrome, Cushing syndrome and phaeochromocytoma
- 6. Approach to a patient with hypo- or hypercalcemia.
- 7. Osteoporosis.

- 8. Approach to a patient with hypogonadism.
- 9. Classification, epidemiology and diagnostic criteria of diabetes mellitus.
- 10. Treatment of diabetes mellitus.
- 11. Short- and long-term complications of diabetes mellitus. Emergency in diabetology.
- 12. Approach to an intoxicated patient. Most common poisonings.
- 13. Disorders of lipoprotein metabolism. Gout. Porphyrias.

Practices:

Duration: 3 contact hours = 3x45 minutes

- 1. Clinical management of patients with disorders of the pituitary gland.
- 2. Clinical signs, symptoms of hypothyroidism, hyperthyroidism. Management of patients with thyroid dysfunction.
- 3. Evaluation of a patient with goiter.
- 4. Diagnosis, treatment strategy and long-term follow up of patients with adrenal insufficiency.
- 5. Differential diagnosis of endocrine hypertension.
- 6. Approach to a patient with hypo- or hypercalcemia.
- 7. Osteoporosis: diagnosis, treatment options
- 8. Hypogonadism: physical findings, diagnosis, treatment. Polycystic ovary syndrome.
- 9. Diagnosis of diabetes mellitus.
- 10. Treatment of diabetes mellitus.
- 11. Screening methods of short- and long-term complications of diabetes mellitus. Treatment of critical states of diabetes mellitus.
- 12. Neuroendocrine tumors and paraneoplastic endocrine syndromes.
- 13. Disorders of lipoprotein metabolism.

Additional assignments to be completed for the course:

None

Required attendance:

According to the rules of the University, students are required to participate on at least 75% of all practices. This is evaluated through attendance sheets signed by the tutor. The participation on the lectures are highly recommended.

Midterm evaluation:

There is no formal midterm evaluation. Students are individually followed for their progress by the tutor of the group during the patient oriented practices. The objective is to allow the teacher and students develop a personal relationship with regular feed backs on their advances and areas that need further improvement.

Requirements for obtaining the signature for the course:

Participate on at least 75% of all practices. At the end of the semester, once the tutor certified that the student met this requirement be evaluating the attendance sheets, the course director grants credits to students in the Neptun system.

Exam type:

semi-final, oral and patient examination

Method of the exam:

Required lexical knowledge comprise of the textbook and lecture material.

The exam has two parts: bedside patient examination followed by answering two questions from the topic list.

- 1. During bedside patient examination the student is required to demonstrate the acquired skills in taking medical history and physical examination
- 2. The oral question part allows the student to demonstrate lexical knowledge.

Topic list for the oral questions

- 1. Hypopituitarism.
- 2. Clinically nonfunctioning pituitary tumours.
- 3. Prolactinomas and hyperprolactinaemia.
- 4. ACTH-dependent hypercortisolism: Cushing's disease. Ectopic Cushing's syndrome,
- 5. Acromegaly.
- 6. Diabetes insipidus.
- 7. Managements of thyroid nodules.
- 8. Thyroid cancer: classification, diagnosis, management.
- 9. Hyperthyroidism: causes and management.
- 10. Hypothyroidism: causes and management.
- 11. Primary hyperparathyroidism,
- 12. Hypoparathyreodism.
- 13. Osteoporosis.
- 14. Cushing's syndrome.
- 15. Primary aldosteronism.
- 16. Adrenal insufficiency.
- 17. Adrenal incidentalomas.
- 18. Adrenocortical cancer.
- 19. Phaeochromocytomas. Paragangliomas.
- 20. Male hypogonadism.
- 21. Polycystic ovary syndrome.
- 22. Turner-syndrome.
- 23. Diabetes mellitus: epidemiology, classification, diagnosis.
- 24. Diabetes mellitus, type 1. LADA.
- 25. Diabetes mellitus, typer 2. MODY.
- 26. Diabetes mellitus: management lifestyle management, oral antidiabetic therapy.
- 27. Diabetes mellitus: management insulin therapy.
- 28. Diabetes mellitus: acute complications.
- 29. Diabetes mellitus: micro-, and macrovascular complications.
- 30. Hypoglycaemia.
- 31. Hyperlipidaemia.
- 32. Neuroendocrine tumours: diagnosis. Pancreatic neuroendocrine tumours.
- 33. Carcinoid syndrome.
- 34. Paraneoplastic endocrine syndromes: hyponatraemia (SIADH), hypercalcaemia.
- 35. Basics of toxicological diagnosis and treatment

Scoring the exam results:

A score from 1 (fail) to 5 (excellent) is given, that is the mean of the scores obtained for the oral and bedside patient examination

Registration to the exam:

Through the Neptun system

Repeat exams, failed exams:

According to the general rules of the University

Suggested print, electronic, online material

Lecture slides provided online after registration (bel1.semmelweis.hu/)

Jameson – Fauci – Kasper – Hauser – Longo – Loscalzo: Harrison's Principles of Internal Medicine. (McGraw-Hill Education, 20th Ed., 2018)

SURGICAL RESEARCH AND TECHNIQUES

Department of Surgical Research and Techniques

Theoretical Block at Nagyvárad Square, Operating training center, 1089 Budapest, Nagyvárad sqr 4. Lecturer: **Professor Dr. György Wéber**

Tutor: Dr. Györgyi Szabó

Credit: 2

Second Semester

Prerequisites: Pathology and Histopathology II., Surgery I.

The aim of the subject is to practice the basic surgical techniques, to present hygienic approach, which attainments are indispensable for clinical doctors working in manual field of medicine. This subject provide basics about special behavior in the operating theatre, preparation of the patent and surgical team before operation, surgical tools and instruments, wound management, laparoscopic instruments and techniques. Recommended for students interesting in manual fields of medicine.

Practices are held on every second week (7x135 minutes).

- 1. The operating room.
- 2. Knoting and suturing on in vitro models.
- 3. Knoting and suturing on in vivo models.
- 4. Operations on small animals I.
- 5. Operations on small animals II.
- 6. Basics of the video-endoscopic techniques.
- 7. Practices on pelvitrainers.

Attendance is obligatory on every practice. Because of limited capacity of operating theatre, absence cannot be repeated by joining another group. One missed practice can be repeated on 14th week of the semester.

Absence should be certified with medical or other official certificate. Absence from practices is not to exceed 25%.

Requirement: Practical exam (5 degree evaluation).

Textbook: Basic surgical techniques (textbook and video)

PROBLEM BASED MEDICAL PHYSIOLOGY

Course Director: Prof. Dr. László Hunyady M.D., Ph.D., D.Sc., Head of the Department of Physiology

Lecturers: **Professor László Hunyady** M.D., Ph.D., D.Sc. **Professor Péter Enyedi** M.D., Ph.D., D.Sc. **Péter Várnai** M.D., Ph.D., associate professor **Miklós Geiszt** M.D., Ph.D., associate professor **Gábor Czirják** M.D., Ph.D., assistant professor

Credits: 4

Programme:

The primary purpose of this course is the synthesis of the theoretical and practical knowledge of the students. The thematic of the course includes various clinical and non-clinical practical problems (e.g. acclimatisation). The students will receive questions related to a specific problem and they have usually one week to find the proper answer in available electronic and printed information sources. Problem solving is based on the discussion of the students with directions from the instructors. This course requires the active participation of the students. The role of the instructor is to determine the thematics of the course and to provide guidance to the discussions.

Thematics:

- 1. Physiologic principles of circulatory problems I.
- 2. Physiologic principles of circulatory problems II.
- 3. Physiologic principles of circulatory problems III.
- 4. Physiologic principles of respiratory problems I.
- 5. Physiologic principles of respiratory problems II.
- 6. Physiology of acclimatisation.
- 7. Dysfunctions of kidneys I.
- 8. Dysfunctions of kidneys II.
- 9. Immune cells and blood coagulation.
- 10. Physiologic principles of the regulation of food intake.
- 11. Dysfunctions of neuroendocrine system I.
- 12. Dysfunctions of neuroendocrine system II.
- 13. Dysfunctions of central nervous system I.
- 14. Dysfunctions of central nervous system II.

Requirement and attendance

Requirement: Medical Physiology (AOKIKELT2A)

In case of an over-application selection will be made on the base of the exam achievement.

Condition of the sign: participation at min. 75% of the lessons. Replacement of an absence is not possible.

Absence: Certification of the absence from the lessons is not required. Absence from the exam should be certificated in three weekdays (medical certificate).

Semester requirement: Recitation: every week, oral or written. Details will be given on the first lesson.

End-semester evaluation: Condition of the sign: participation at min. 75% of the lessons. A practical mark will be given.

Mark: Weekly results plus the oral exam grade.

Exam sign up: On the last week, personal.

Written subject-matter of instruction: the discussable themes were selected by the lecturers of the Department of Physiology, and are given to the students every week. The necessary subject-matter of instruction will be published on the home page of the Department of Physiology. Use of data bases in the Central Library of the University (e.g. PubMed) is required.

GENETICS AND GENOMICS

Department of Genetics, Cell- and Immunobiology Course leader: *Prof. Edit Buzás*

Subject type: compulsory course

Objectives of the subject, its place in the medical curriculum:

Introductory course in classical and molecular genetics and functional genomics, as well as basic course for the clinical module. It addresses the types, general laws of human inheritance, characteristics, organization and structure of the human genome, and the most important methods and / or their application in theoretical and clinical medicine, according to the needs of medical students, and evaluates the results (in practice). It presents the forms of genetic and epigenetic variability, their mechanisms and their consequences for human health. Through selected examples, the pathway from gene to disease is analyzed using a systems biology approach.

Place where the subject is taught (address of the auditorium, seminar room, etc.):

Semmelweis University, Department of Genetics, Cell- and Immunobiology, H-1089 Budapest, Nagyvárad tér 4. Hungary

Successful completion of the subject results in the acquisition of the following competencies:

Basics of cytogenetics. Setting up and interpreting pedigrees. Basic knowledge of human genetics and human genomics. Background of monogenic and multifactorial diseases. Basics of prenatal diagnosis, detection of monogenic diseases by molecular genetic methods. Basic knowledge of oncogenetics, epigenetics, population genetics, nutrigenetics, evolutionary genetics, pharmacogenetics with biomedical approach. Role of gene-gene and gene-environment interactions in various diseases. Basic knowledge of bioinformatics and systems biology related to medical genetics and genomics. Basics of gene therapy.

Course prerequisites:

Cell Science, Medical Biochemistry II.

Detailed curriculum:

Lectures (2 hours per week)*:

- 1. Introduction to human genetics, genetic variations (Cs. Szalai)
- 2. Chromosomal aberrations (S. Toth)
- 3. Autosomal inheritance I. (S. Toth)
- 4. Autosomal inheritance II. (S. Toth)
- 5. Role of sex in inheritance (Cs. Szalai)
- 6. Epigenetics (Cs. Szalai)
- 7. Introduction to genomics (Cs. Szalai)
- 8. Methods in genomics, systems biology (Cs. Szalai)
- 9. Genetics of biological processes, oncogenetics (H. Hegyesi)
- 10. Genomic approach of complex inheritance (H. Hegyesi)
- 11. Genome and environment, Populationgenetics (H. Hegyesi)
- 12. Pharmaco- and nutrigenomics (Á. F. Semsei)
- 13. Evolutiongenetics (Á. F. Semsei)
- 14. Genetherapy (E. Lajkó)

* The order of the lectures may vary (depending on holidays and workday transfers). Colleagues with senior teaching status may also act as lecturers, if the lecturer on schedule is prevented.

Practices (1.5 hours per week)*:

- 1. Genetic aspects of cell cycle and cell division disruptions (Atypical mitosis)
- 2. Atypical meiosis and genetic variance
- 3. Cytogenetics I.
- 4. Cytogenetics II.
- 5. Introduction to pedigree analysis
- 6. Pedigree analysis: Autosomal dominant inheritance
- 7. Pedigree analysis: Autosomal recessive inheritance
- 8. Pedigree analysis: Sex-linked inheritance
- 9. Molecular genetic methods and applications in human genetics I.
- 10. Molecular genetic methods and applications in human genetics II.
- 11. Midterm
- 12. Complex inheritance I.
- 13. Gametogenesis, prenatal genetic testing
- 14. From genes to bedside

* The order of the practises and the date of the midterm may vary (depending on holidays and workday transfers). Practice instructors: Colleagues with teaching status at the Institute of Genetics, Cell and Immunobiology

Other subjects concerning the border issues of the given subject (both compulsory and optional courses!).

Possible overlaps of themes:

Understanding of Genetics and Genomics is based on the knowledge of molecular biology and molecular genetic techniques studied at Medical Biochemistry I-II. Elective subjects taught by our institute (Sex Genetics, Epigenetics, Genomics) elaborate on some of the subchapters of "Genetics and Genomics", with overlaps needed for understanding, focusing on topics not covered in the main subject. Understanding the subject of Clinical Genetics is based on the knowledge of Genetics and Genomics.

Special study work required to successfully complete the course: -

Requirements for participation in classes and the possibility to make up for absences:

Completion of prerequisite subject.

Practices can only be attended to in an appropriate mental and health condition. Practical absence can be remedied during the current training week, in parallel courses, after prior consultation with the practice instructors.

Methods to assess knowledge acquisition during term time:

Written homework from the topics of taught lectures and practices after prior consultation with the practice instructors. Bonus lecture scores can be collected at lectures. Written midterm from the topics of taught lectures and practices. We provide an opportunity to retake the midterm, only for students who have proven absence.

Requirements for signature:

According to the Study and Exam Policy the students must visit at least 75% of the lectures and practices.

Type of examination: written (lectures and practices)

Requirements of the examination:

Exam topics:

1.) Introduction to human genetics and genomics. Basic genetic terms, e.g.: genome, genetics, genomics, homologous chromosomes, gene, locus, allele, wild type allele, genotype, phenotype, homozygote, heterozygote, hemizygote, dominant, recessive, cytogenetics; Mendel's laws, Model organisms in genetics; DNA: structure, function, amount, organization (chromatin, chromosome). Replication, transcription, mRNA maturation (splicing, alternative splicing), types of RNA-s, features of genetic code. Translation and posttranslational modifications. Human genome: nuclear and mitochondrial. Structure of eukaryotic gene. Intergenic DNA; Specific sequences of nuclear genome. Repetitive sequences. Human Genome Project, ENCODE Project

- 2.) Transmission of genetic information from cell to cell in an organism. Main features and concept of multicellular cell cycle (phases, checkpoints). M-phase: activation and activity of MPF. Features of mitotic phases. Functional parts of chromosomes (telomere, centromere, kinetochore, sister chromatids, additional protein complex: cohesin and condensin and their role). Structure and role of centrosome, the centrosome cycle. Structure of mitotic spindle. Activity of APC. Cytokinesis. Changes of DNA amount and chromosome number during cell cycle. Types, causes and consequences of atypical mitosis. Light microscopic slide: 52
- 3.) Transmission of genetic information from generation to generation. Significance and source of genetic variability. Significance of meiosis. Stages of meiosis: meiosis I. and II. Features of phases of first prophase (leptotene, zygotene, pachytene, diplotene, diakinesis; synapsis, crossing over, chiazma). Random alignment and assortment of homologous chromosomes in meiosis I anaphase. Atypical meiotic process: non-disjunction. Change of DNA amount and chromosome number during meiotic process.
- 4.) Pedigree analysis Mendelian or monogenic inheritance, Construction of pedigree: main symbols that are used in pedigrees. Pedigree analysis (characteristics pedigree patterns of monogenic inheritances: AD, AR, XD, XR, Y-linked, mitochondrial). Disease examples for monogenic inheritances (AD, AR, XD, XR, mitochondrial); *Important terms*: gene, genome, locus, allele, multiple allelism, wild type (normal) allele, genotype: homozygote, heterozygote, complex heterozygote, hemizygote, phenotype: dominant, codominant, recessive.
- 5.) Cytogenetics Structure and types of eukaryotic chromosome. Karyotyping (chromosome preparation, principle, significance and types of banding techniques, principle and significance of multicolor-FISH, and M-banding); kariogram, idiogam; X inactivation. Study of sex chromosomes in interphase. Characteristics of human karyotype. Mutagenicity tests: micronucleus and sister chromatid exchange. Chromosome territories. Light microscopic slides: 54, 60, 64
- 6.) Structural chromosome mutations Structural chromosome aberrations. Types of structural aberrations: deletion (terminal, interstitial), duplication, translocation (reciprocal, Robertsonian), inversion (paracentric, pericentric), ring chromosome, isochromosome. Balanced and unbalanced mutations. Chromosomal translocations in leukemia. Consequence of structural aberrations.
- 7.) Numerical chromosome mutations Numerical chromosome aberrations: euploidy, polyploidy, aneuploidy, mixoploidy (mosaicism, chimerism). Possible cause of aneuploidy (non-disjunction in meiosis and II). Autosomal (Patau, Edwards and Down syndromes) trisomies. Numerical aberrations of sex chromosomes (Klinefelter, XYY, triplo X, Turner syndromes). Uniparental disomy (UDP). Cause and consequence of of polyploidy and mixoploidy (mosaicism and chimerism).
- 8.) Mutations and polymorphisms Different meanings of mutation and polymorphism. Significance of mutation. Classification of mutations: by cause (spontaneous, induced, different DNA repair mechanisms, consequence of their failure), by site (in the organism: somatic, germline, in the gene), by function (loss-of-function, gain-of-function, dominant negative, lethal, back), by fitness (neutral, beneficial, harmful), by size (genome, chromosome, gene: insertions, deletions, substitutions). Repetitive insertions, triplet repeat: poly-glutamine and polyalanine disorders. inDel mutations: frame shift and in frame mutations. Nucleotide substitutions: transition, transversion, sense (synonymous) missense and nonsense (non-synonymous) mutations. Types, size and significance of genetic polymorphism.
- 9.) Epigenetics Meaning of epigenetics. Relationship of genome, epigenome and phenotype. Epigenetic mechanisms: transcriptional (DNA methylation, histone modifications), posttranscriptional (RNAi, miR). X chromosome inactivation, role of XIST. Autoimmunity and X inactivation. Genomic imprinting, evidences of nonequivalence of parental genome. Mechanism of genomic imprinting. Causes of Prader Willi and Angelman syndromes. Possible role of genomic imprinting. Relationship between genomic imprinting and cancer. Position effect. Epigenetic changes caused by aging and by in vitro fertilization. Transgenerational effects.
- **10.)** Introduction to genomics. Methods in genomics Genomics, Human Genome, DNA sequencing. Participants in the Human Genome Project. Some results of the HGP, Variations in the human genome. Some novel data about gene expression and genetic variability. Junk DNA in the human genome, Comparative genomics, ENCODE project, Genetic markers, GWAS. Principle of molecular genetic methods: hybridization, restriction enzymes, DNA isolation. Visualization of genomial DNA, Southern blot: separation of DNA fragments by gelelectrophoresis, capillary gelelectrophoresis, non-specific staining of DNA (EtBr), Allele-Specific Oligonucleotide (ASO) test, RFLP, microarray, PCR, PCR-RFLP. Multiplex PCR, MLPA. Significance of real time-PCR. Significance and detection of VNTR. VNTR and trinucleotid diseases. Significance of polymorphism detection in forensic medicine. DNA fingerprint. Foreign DNA (bacterial, viral) detection. Sequencing in genotyping. NGS. Study of gene expression: Northern blot, RT (reverse transcriptase)-PCR.
- 11.) Complex inheritance. Features of complex inheritance. Environmental factors. Heritability of the complex diseases. Disease examples
- **12.) Pharmacogenomics** Pharmacogenetics and pharmacogenomics. Pharmacokinetics, -dimamics, Drug development Adverse drug response, Genomic background of adverse effects, CYP (cytochrom P-450) gene family, Warfarin, Mercaptopurine, Genes influencing pharmacodynamics, Examples of pharmacogenetic studies, Pharmacogenetics of statins, Clopidogrel, Pharmacotherapy of asthma, MODY, Succinylcholine sensitivity, Thiopurin methyltransferase variations, Role of membrane receptors in drug effects.

- 13.) Nutrigenomics Genetic variations and food, food and gene expression.
- **14.)** Gene therapy Gene therapy types (real, gene expression modification) and forms (in vivo, ex vivo). Nucleic acids applied in gene therapy: DNA, RNA. Forms of introduction of nucleic acids into target cells. Vectors applied in gene therapy: adenovirus, adeno associated virus, retrovirus, lentivirus, nonviral integrating vectors. Comparison of viral vectors. Examples of succesful gene therapy trial.
- **15.) Population genetics** Types of sample collection, prospective and retrospective studies. Selection of populations for genetic studies. Hardy Weinberg equilibrium. Linkage, haplotype, linkage disequilibrium. Founder populations. Association studies, population stratification, population admixture. Risk calculation, odds ratio and relative risk, p-value.
- **16.)** Evolution genetics: Gene environmental interactions and the human genome. Natural selection. Role of infections in formation of the genome. Genetic drift, bottleneck effect. Why are some lethal mutations frequent? Examples for effects forming the genome.
- 17.) Genome and environment: Penetrance of the genetic variants; Interactions between highly and low penetrant variations and the environment; smoking-genome interaction, gene-environmental interactions;
- **18.)** Gametogenesis, prenatal genetic testing: Comparison of spermatogenesis and oogenesis; Genetic aspects of infertility; Genetic aspects of assisted reproduction techniques; CGH; aCGH prenatal genetic testing; Non-invasive prenatal testing
- **19.) Genetics of biological processes, oncogenetics:** Genetics of development: development potentials (totipotent, pluripotent, multipotent, unipotent), cell differentiation, significance of stem cells. Role of morphogens and their concentration gradient (Sonic hedgehog), homeotic genes. Genetics of sex: sex determination, male sex determination. Causes of maldevelopment. Oncogenetics: oncogenes and tumor suppressor and mutator genes. Activation mechanisms of oncogenes. Tumor suppressor genes, LOH. Immunogenetics: somatic gene rearrangement, role of epigenetics, genetic background of antibody diversity.

Method and type of evaluation:

Final grade will be calculated from the result of the exam scores and bonus scores. Bonus scores are the grade calculated from the scores collected at the midterm, homeworks and lectures.

How to register for the examination?:

In the Neptun system, according to current university and faculty settings.

Possibilities for exam retake: According to the Study and Exam Policy

Printed, electronic and online notes, textbooks, guides and literature (URL address for online material) to aid the acquisition of the material:

Cs. Szalai (Editor): Medical Genetics and Genomics e-book, 2018

Power Point presentations of the lectures and practices; The e-book and presentations available at the homepage: http://gsi.semmelweis.hu/ index.php/en/education/

BEHAVIORAL SCIENCES II.

(Medical Psychology)

Institute of Behavioral Sciences

Type of the course: compulsory

credit: 2 credits

Presenter of the course: Dr. János Kollár

Course leader: Dr. József Kovács

Semester: 2nd semester

Course objectives: The course is designed to give a broad overview of the field of medical psychology, including concepts, theory, and research.

Learning objectives:

- Develop an understanding of the complex interplay between one's physical well-being and a variety of biological, psychological, and social factors.
- Learn the nature of the stress response and its impact in the etiology and course of many health problems.
- Understand the approach of bio-psycho-social model and become familiar with some frequent psychosomatic diseases.
- Be able to identify various psychological disorders and key personality traits related to health / disease.

Course Syllabus:

Lectures:

Week 1.Introduction to Human BehaviourWeek 2.Major Schools of PsychologyWeek 3.Stress and illness; behavioral interventionsWeek 4.Conscious states, sleep, dreaming and general anesthesiaWeek 5.Stigmatization and people living with disabilitiesWeek 6.Psychological correlates of cardiovascular disorders		
Week 2.Major Schools of PsychologyWeek 3.Stress and illness; behavioral interventionsWeek 4.Conscious states, sleep, dreaming and general anesthesiaWeek 5.Stigmatization and people living with disabilitiesWeek 6.Psychological correlates of cardiovascular disorders	Week 1.	Introduction to Human Behaviour
Week 3.Stress and illness; behavioral interventionsWeek 4.Conscious states, sleep, dreaming and general anesthesiaWeek 5.Stigmatization and people living with disabilitiesWeek 6.Psychological correlates of cardiovascular disorders	Week 2.	Major Schools of Psychology
Week 4. Conscious states, sleep, dreaming and general anesthesia Week 5. Stigmatization and people living with disabilities Week 6. Psychological correlates of cardiovascular disorders	Week 3.	Stress and illness; behavioral interventions
Week 5.Stigmatization and people living with disabilitiesWeek 6.Psychological correlates of cardiovascular disorders	Week 4.	Conscious states, sleep, dreaming and general anesthesia
Week 6. Psychological correlates of cardiovascular disorders	Week 5.	Stigmatization and people living with disabilities
	Week 6.	Psychological correlates of cardiovascular disorders
Week 7. Affects, Emotion and Motivation	Week 7.	Affects, Emotion and Motivation
Seminars:	Seminars:	
Week 1. Developmental psychology, attachment theories	Week 1.	Developmental psychology, attachment theories
Week 2. Personality theories	Week 2.	Personality theories
Week 3. Human sexuality and sexual disorders, psychology of reproduction, psychology of birth	Week 3.	Human sexuality and sexual disorders, psychology of reproduction, psychology of birth
Week 4. Depression and mood disorders.	Week 4.	Depression and mood disorders.
Week 5. Anxiety and medical illnesses.	Week 5.	Anxiety and medical illnesses.
Week 6. Eating disorders.	Week 6.	Eating disorders.
Week 7. Psychosomatic disorders – case studies; somatization and dissociative disorders	Week 7.	Psychosomatic disorders – case studies; somatization and dissociative disorders
Week 8. Personality disorders.	Week 8.	Personality disorders.
Week 9. Sleep disorders	Week 9.	Sleep disorders
Week 10. Addiction, substance use	Week 10.	Addiction, substance use
Week 11. Suicide, cry for help, crisis intervention	Week 11.	Suicide, cry for help, crisis intervention
Week 12. Psychology of death, grief, and dying	Week 12.	Psychology of death, grief, and dying
Week 13. Behaviour change and psychotherapy. Stress management in medical practice.	Week 13.	Behaviour change and psychotherapy. Stress management in medical practice.
Week 14. Mental health of medical doctors. Prevention and management of burn-out. Bálint-group	Week 14.	Mental health of medical doctors. Prevention and management of burn-out. Bálint-groups

Participation and making up for absences: Students are expected to attend regularly the course and participation list will be recorded at the end of every lecture and every seminar. To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature needed to absolve the course. The maximum number of absences permitted: one absence from the lectures and three absences from the seminars. Content of the lectures may appear in the exams.

Justification of the absence in the lectures and examinations: Absence should be justified for the seminar leading teacher within three working days.

Checks during the semester (reports, written checks): Every student should prepare presentations on the topics designated by the seminar leader teacher. Active participation is expected.

Requirements for the signature at the end of the semester: Active participation on the practices. The teacher has the right for refusing to give signature to the students who didn't work on the desired level on the seminars.

Method of the calculation of marks: Grades will be based on student's performances at the final written exam.

Type of the exam: Written final examination taken in the examination period.

Requirements for the exam: The material of the lectures and seminars.

Application for the exam: Through the Neptun system.

Changing the application for the exam: Through the Neptun system.

Justification of the absence from the exam: Absence should be justified for the course leading teacher within three working days.

Course and recommended text books:

Required textbook: Behavior & Medicine, 4th Edition, Danny Wedding, Hogrefe & Huber Publishers, Seattle, 2006.

Recommended text books: Kopp M. – Skrabski Á.: Behavioural Sciences Applied in a Changing Society, Corvina, 1996. Fadem B: Behavioural Science., Lippincott Williams & Wilkins, 5th ed., 2008. Sarafino E.P.: Health Psychology. Biopsychosocial interactions. 6th ed., New York, Wiley, 2008.

Additional readings:

The powerpoint slides and prezi presentations used for the lectures and seminars and also some related papers will be assigned for reading during the course, and they will be made available on the course website.

MEDICAL ASPECTS OF DISASTER PREPAREDNESS AND RESPONSE

Directorate for Safety Technology Department for Disaster Management and Education

Supervisor: *Pál Kocsik* Lecturer: *Csaba Csendes*

Type of Course: indispensable

Credit value: 1

Second Semester

Purpose of the lecture:

The goal of the subject is to provide basic knowledge of the definition, mission, reasons and circumstances of establishment of civil protection/disaster management, on its place and role in the country's defense/protection system; to provide information on the types of disasters and their features. Based on experience gained in real incidents, to provide information on the peculiarities of disaster management and the tasks of medical authorities in this context.

The syllabus:

(M1) Concept, mission, tasks and establishment of civil protection and disaster management in Hungary. Types and features of disasters, the disaster vulnerability of Hungary, the organizational system of the protection against disasters, command and control of protection, the role of medical authorities.

(M2) The early warning system and signals of disaster management. The elimination of the consequences of disasters, the staff work applied during protection. Features and activities of Hungarian disaster management organizations and authorities, international possibilities of disaster management and the lessons learnt, demonstrated by examples.

Requirements and the potential for absences to participate in the sessions:

The subject consists of 4 modules. Module 1 does not have any prerequisites; module 2 anticipates the fulfillment of module 1. Students must register to attend the course announced as required. Those who are unable to fulfill module 1 or 2 (do not attend), may participate in a supplementary lesson in the 1st semester of the following year.

The method of certificate for the workshops and the exam absences:

Certificate of absence: medical, official - court of justice, local government, Students' Union, etc.

The mid-term controls' (reports, midterm) number, topic and date, replacements and repairs:

Method of making up for the absence justified by certificate: participation in a supplementary lesson.

Requirements for the signature:

Students must participate in the lesson announced to acquire signature, or in case of absence justified by certificate, in a supplementary lesson. Only registered students may participate in a supplementary lesson announced.

The method of grading: signature

Type of examination: none

Requirements: none, students must fulfill the obligation to attend the lessons.

Application for exam: none

Changing procedure for exam application: none

Absence from the examination: none

Notes, textbooks, study aids and literature list: László Major PhD – Ronald Barham PhD – Dr. György Orgován PhD: Medical Aspects of Disaster Preparedness & Response – Semmelweis Kiadó 2017. ISBN 978-963-331-420-3

BASIC CELL BIOLOGY – Department of Genetics, Cell- and Immunobiology

OBLIGATORY ELECTIVE COURSE FOR MEDICINE I. II. III. YEARS

Course Director: *Dr. Valéria László Ph.D.* **Prerequisite subject:** Anatomy, Cell, Histology and Embryology I. **Credit:** 3 **Lectures** (2 hours per week)

First semester

- 1. Intracellular transport mechanisms
- 2. Endoplasmic reticulum. Vesicular transport
- 3. Secretion and Golgi
- 4. Endocytosis. Endosomal lysosomal system
- 5. Nuclear envelope and nuclear lamina. Nuclear pores and gated transport
- 6. Functions and malfunctions of some nuclear components
- 7. rRNA synthesis. Telomerase
- 8. Endosymbiotic cell organelles. Mitochondrion
- 9. Peroxisome
- 10. Cytoskeleton. Microtubules
- 11. Microfilaments and intermediate filaments
- 12. Cell cell and cell ECM adhesion and junction
- 13. Regulation of cell cycle I
- 14. Cell aging and death

Important notes: No possibility to make up of absences.

There are no mid-term exams.

Attendance of 75% of lectures is neccessary for the end-term signature.

Requirement: practice grade based on the result of the written or oral exam. (depending on the number of students).

Core text:

Alberts et al. Essential Cell Biology (4th edition) Garland Science, ISBN-13: 978-0815344544; ISBN-10: 0815344546 Lecture presentations are available on the homepage: http://gsi.semmelweis.hu (The user name and password is on course datasheet of the Neptun)

CLINICAL CARDIOVASCULAR PHYSIOLOGY

AOVKIK102_1A

Elective course for medical students in the 3rd, 4th and 5th years.

The purposes of the course:

To refresh and extend – in selected topics – the basic knowledge related to normal and pathological functions of the human circulatory system To integrate the latest scientific results related to different organization levels – from molecular mechanisms to system physiology – of the cardiovascular system.

To discuss and demonstrate measurement principles and techniques, as well as physiological and pathophysiological mechanisms related to the application of modern non-invasive cardiovascular diagnostic procedures in the clinical practice.

Program:

- 1. Investigation of blood pressure regulation by use of transgenic technologies
- 2. Cardiovascular effects of hypersensitivity reactions (CARPA). Modern methods for measuring and monitoring arterial blood pressure
- 3. Hemodynamic background of normal and pathological cardiovascular functions; "hemodynamic exercise" and prevention of diseases
- 4. Pathophysiology of chronic venous insufficiency
- 5. Physiological mechanisms supporting venous return of blood; orthostatic tolerance
- 6. Cardiovascular implications of the healthy and the diseased kidney
- 7. Coronary circulation. Physiological background of the treatment of myocardial ischemia
- 8. Interventional radiological procedures on arteries and veins
- 9. Age related changes in the vascular system, role of sexual hormones
- 10. Role of endothelial mechanisms in clinical symptoms
- 11. The cardiovascular risk and the protection of menopausal women. Alterations of the cardiovascular system in pregnancy and polycystic ovary syndrome
- 12. Biomechanical properties of cerebral aneurisms, their computer modeling
- 13. Visit to the MRI Cardiovascular Diagnostic Unit of the Semmelweis University Heart Center
- 14. Ultrasonic investigation of the human heart: theoretical background; 2D-, M-, Doppler-mode, color Doppler imaging, echocardiography; diagnostics of valve insufficiency and coronary diseases. Duplex ultrasonic investigation of large vessel function: measurement of vessel wall elasticity, Doppler-indexes

Students who meet the following criteria will receive 2 credit points: regular attendance of classes and successful written exam. Material for the exam includes lecture topics and textbooks suggested by the lecturers.

CLINICAL PHYSIOLOGY OF RESPIRATION AND RESPIRATORY DISEASES

AOVKIK099_1A

Elective course for medical students in the 3rd, 4th and 5th years.

The aims of the course are to strengthen knowledge on basic physiological principles related to respiration, summarize the most important aspects of cardiorespiratory adaptation in sport activities and also its changes in respiratory diseases and to provide integrated information about the physiological and pathophysiological background of the most important respiratory disorders in light of results from cutting edge research.

Program:

- 1. Physiological function of the respiratory system
- 2. Smoking, e-cigs, supporting cessation
- 3. Lung development
- 4. Inhalation therapy
- 5. Sleep related respiratory disorders.
- 6. COPD and COPD exacerbation
- 7. The lung in systemic diseases
- 8. Cystic fibrosis
- 9. Pulmonary circulation
- 10. Bronchoscop
- 11. Cardiovascular exercise testing, COPD
- 12. Asthma bronchiale
- 13. Non-invasive ventilation
- 14. Chest imaging

Acknowledgement of the course: regular attendance (maximum 3 absences) is required; signature in the Neptun, and 2 credit points will be provided after a successful written exam.

CARDIORESPIRATORIC AND NEUROPHYSIOLOGICAL MEASURING METHODS

Department of Clinical Experimental Research

Type of course: Elective course **Course code:** AOSKIK151_1A (credit value: 2)

Course Tutors: Dr. Zoltán Benyó, Full professor (Head of Dept.), Dr. Habil. László Dézsi, Adjunct professor (Course Director), SU. (Invited Tutors: Dr. Iván Füzes, Master tutor, SU; Dr. Ákos Jobbágy, Full professor, BTU; Dr. György Nádasy, Senior associate professor, SU) **Academic year:** 2019/2020 1st Semester

The purpose of the course:

To review the theory and practice of modern measuring methods in experimental and clinical medicine, and providing practical knowledge to medical students on cardiorespiratoric and neurophysiological measurements. The course is based on, but further extends the material delivered during the course of Medical physiology. Throughout the lectures we put an emphasis on potential methodological errors of measurements and examinations, as well as how to avoid them.

Detailed Program:

- 1. Introduction. Biomedical Engineering. Design of biomedical equipments.
- 2. General metrology. Basics of measurement and control theory.
- 3. Sampling of continuous signals. Digitizing analogue signals.
- 4. Computerized data acquisition and analysis. Telemetric measuring systems.
- 5. Clinical and laboratory blood pressure monitoring (invasive and noninvasive methods).
- 6. Investigation of electrical activity of the heart. Design of ECG amplifiers.
- 7. Home monitoring of cardiovascular health. Determination of glucose concentration.
- 8. Investigative methods of cardiovascular adaptation and experimental angiology.
- 9. Determination of cardiac output and peripheral blood flow (direct and indirect methods).
- 10. Experimental study of pulmonary function. Measuring blood gases and acid-base balance.
- 11. Investigative methods in neurophysiology and audiology (action potentials, evoked potentials).
- 12. Complement-related immunological and cardiopulmonary responses (CARPA).
- 13. Studying brain function using functional imaging systems.
- 14. Experimental methods to study nociceptive function.

Acknowledgement of the course: Prerequisite of the course is the completion of the first 2 years (Theoretical module). Regular attendance (maximum 3 absences) is required. Students exceeding this allowance cannot take the exam and no credit points will be awarded. Presence of lectures will be recorded weekly. Signature in the Neptun and 2 credit points will be awarded after successful exam. Source: material of the lectures, supplementary literature if provided by the lecturers. Lecture slides will be uploaded onto the Dept. web-site.

Order of the exam: The exam will be held at last week of the semester. Eligible students are allowed to come, no application needed. The exam is based on minor essay type questions. All lectures are the subject of questions. Minimum level of success is 51% of total points. The 5-level grading system will be applied. Retake of absence (doctor's note required) is allowed once in the exam period.

List of textbooks and notes for preparation to the exam:

- 14. Fonyó Attila: Az Orvosi élettan tankönyve 7. kiadás, Medicina Kiadó, Budapest, 2014
- 15. Guyton & Hall: Textbook of Medical Physiology 12th edition, W.B. Saunders Company, 2011
- 16. Medical Devices and Systems, The Biomedical Engineering Handbook, 3rd ed., Edited by Joseph D. Bronzino, Taylor and Francis Group, Boca Raton-London-New York, 2006
- 17. Medical Instrumentation. Application and Design, 3rd ed., Ed. John G. Webster, John Wiley & SonsNew York-Toronto, 1998
- 18. Általános Metrológia Egyetemi jegyzet, BME
- 19. Magnetic Resonance in Medicine. The Basic Textbook of the Europen Magnetic Resonance Forum Edited by Peter A. Rinck Blackwell Scientific Publications, 1993
- 20. Jobbágy Á, Csordás P, Mersich A, Lupkovics G, Sztaniszláv Á: Vérnyomás otthoni monitorozása Informatika és Menedzsment az Egészségügyben 2008. VII:(10) pp. 36-40.
- 21. Monos Emil: Hemodinamika: A vérkeringés biomechanikája, 4. átdolgozott kiadás, Semmelweis Kiadó, 2018.
- 22. Lecture notes and other materials provided by the Tutors.

INTRODUCTION TO THE METHODOLOGY OF CLINICAL RESEARCH I. – Observational studies

Obligatory elective course for medical students

Nowadays most physicians will inevitably get in contact with clinical studies either as active researchers or practitioners who utilize the products of clinical research via studying the literature or by interpreting new clinical guidelines. Therefore, at the time of graduation the physicians of the 21st century must possess skills which enable them to join research programs and critically interpret scientific evidence. The ultimate goal of the course is to prepare future doctors for these challenges by offering a curriculum which helps to acquire these skills prior to graduation. The course aims to give a comprehensive insight into the methodology of clinical research. The broad spectrum of methodological approaches will be presented in 2 separate courses built on each other. The course **"Introduction to the Methodology of Clinical Research I."** will focus on observational studies. Accordingly, the course will describe the types of observational studies, the pros and conduct of these studies. Beyond these, the course will introduce the students (without showing mathematical formulae) the statistical approaches which are closely related to the analyses of observational studies, and the practicums of the course will provide opportunity to apply the knowledge acquired on lectures to real-life situations.

Program:

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1 st week:	Types of observational studies
2 nd week:	Introduction to biostatistics I.
3 rd week:	Introduction to biostatistics II.
4 th week:	Workshop lecture to introduce the biostatistical analysis software package (STATA)
5 th week:	Introduction to epidemiology
6 th week:	PRACTICUM I. Clinical epidemiology. Finding an epidemiology related research question based on a simulated patient dataset and answering the question by performing statistical analysis using STATA statistical software package.
7 th week:	Ethical and legal issues of observational studies.
8 th week:	Applied regression I.
9 th week:	Applied regression II.
10 th week:	Applied regression III.
11 th week:	PRACTICUM II. Steps of multivariate regression model building. The students will build regression models on a simulated patient dataset using STATA statistical analysis software package. They experience how the inclusion of different variables/ confounders can affect results and data interpretation.
12 th week:	PRACTICUM III. Critical interpretation and discussion of a prereleased publication (original article)
13 th week:	Biomarker research, genomics. Screening tests.
14 th week:	Test exam.

Acknowledgement of the course: Attendance of at least 70% of lectures and all lab practices. Written test exam at the end of the semester. Two (2) credit points will be provided after a successful completion of the course.

CLIMATE CHANGE AND HEALTH IN SOCIOLOGICAL PERSPECTIVES

Institute of Behavioral Sciences

Lecturer: László Antal Z. Credit: 2 Code: AOSMAG372_1A

Thematics:

- 1. week: The history of climate change science 2. week: Climate change and society, sociological perspectives Animal and plant health impacts of climate change 3. week: 4. week: Human health impacts of climate change 5. week: Consumer society and environmental boundaries 6. week: Demographic processes and environmental boundaries 7. week: Climate change and health care 8. week: Adaptation to climate change 9. week: Adaptation to heat waves and to UV radiation 10. week: Adaptation to climate change at local level 11. week: Civil society, social movement and climate change 12. week: Climate communication
- 13. week: Climate change and the social values

ULTRASONOGRAPHY IN OBSTETRICS AND GYNECOLOGY

(obligatory elective course - 6th semester)

AOVNO1554_1A Course director: **Prof. Dr. János Rigó** Lecturer: **Dr. Gábor Szabó PhD** Department: First Department of Obstetrics and Gynecology Study time: In every second week 2×45 minutes. Advised Semester: between 6. und 12. Semester Exam: Written test and practical note Credit: 1 Minimal/maximal participants: (1/5 person) Application deadline: 1. December Prerequisite: Completion of second year

The knowledge gained in theoretical basic subjects (anatomy, physiology) can be used by medical students as practical knowledge in the clinic. As a result of more than four decades of experience, ultrasound examination has a fundamental role in modern obstetrical and gynecologycal diagnostic. The course helps you to acquire skill in this field. Performing obstetrical-gynecological ultrasound tests and assessment of findings can only be learned through appropriate training. This non-invasive procedure is also safe for patients. The modern ultrasound equipment of the Department and the wide range of patients and diseases provide the opportunity for learning. Not only obstetricians and gynecologists, but also other associate colleagues such as clinical genetics, radiologists, gynecological cancer surgeons, anesthetists, and intensive therapists can utilize the knowledge provided by the subject.

Themes:

Physical basics of ultrasound examination. Parts of the ultrasound device. Application modes (amplitude, motion, brightness, Doppler). Gynecological ultrasound examination. Early pregnancy tests. Ectopic pregnancy. Standard planes of the first ultrasound screening during the 11-13th week of pregnancy. Neurosonography and fetal echocardiography. Standard planes of the second ultrasound screening during the 18-22th week of pregnancy. Ultrasound examinations in the third trimester. Amniotic fluid index and fetal Doppler examinations. 3-4-dimensional ultrasound examinations and their practical application.

The Scalpel and the Paragraph: Special Issues of Medical Practice in Light of the Law - :

elective subject

Lecturer: Prof. Dr. József Kovács Department of Behavioural Sciences

1st semester

2 hours / week

Within the framework of the course the participants, who have an affinity for Bioethics and Law, will gain insight into the special characteristics of the legal domain and certain fundamental legal concepts and methods that are relevant for a practicing physician, but cannot be sufficiently investigated into within the framework of other compulsory courses. The course considers the general part of medical law governing the legal relationship between medical practitioners and their patients, first by distinguishing between civil law and criminal law and explaining their respective characteristics. The legal position, the customary rights and obligations of physicians and patients are examined, together with the issues of informed consent. Topics will also include the civil and criminal liability of physicians and the issue of malpractice. Selected medico-legal issues over human life are also examined; these will include foetal rights, modern reproductive technologies, various aspects of human genetic research, and certain end-of-life issues such as advance directives and euthanasia. The foregoing topics will be discussed from the perspective of comparative law, by presenting various court cases from the countries of the European Union and the United States of America as well. Attending students will gain the ability to recognise and analyse legal health care issues by engaging in interactive discussions and informative research.

Attending students will gain insight into the special characteristics of the legal way of thinking, the basic concepts of civil and criminal law, and also the approach to the most controversial medico-legal issues in the European Union and the United States.

Students intending to practice in any field of medicine may find the course profitable.

Minimum number of participants: 10

Maximum number of participants: 20; applications are accepted through the "Neptun" system.

Students are to register through the "Neptun" system. No special achievement/prior completion of other course(s) is required.

Thematics:

- 1. Introduction: Aims and objectives of the course; presentation of the interdisciplinary method (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
- 2. The concept of "law"; the branches of law particularly relevant for medical practice (civil/private law; criminal law) (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
- 3. The human being and the law. Legal personhood and capacity to act. Man as a subject to fundamental human rights. (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
- 4. The parties to a medical legal relationship: doctor and patient. The legal position of the physician and the patient; their principal rights and obligations in the various legal systems (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
- 5. Creating a doctor-patient relationship: informed consent in the member countries of the European Union and in the USA (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
- 6. Various legal models of the doctor-patient relationship (mandate agreement, service agreement, treatment agreement etc.) (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
- 7. The physician and civil liability: malpractice/liability for damages in the member countries of the European Union and in the USA (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
- 8. The physician and criminal liability: specific criminal offences that can be committed by a physician/health care specialist (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer)
- 9. The beginnings of human life and the law: legal position of the human foetus in the various legal systems (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
- 10. The beginnings of human life and the law: surrogacy and the legal issues generated by the recent developments in assisted human reproduction in Europe and in the world (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).

250 SEMMELWEIS UNIVERSITY / FACULTY OF MEDICINE

- 11. The issues of medical research on humans: the framework set up by law (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
- 12. End-of-life decisions and the law: the "living will" and other forms of advance directives in the various legal systems; the refusal of lifesaving treatments (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
- 13. End-of-life decisions and the law: euthanasia in the member countries of the European Union and in the USA (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
- 14. Review of the semester; suggestions, observations and proposals (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).

Participants will meet weekly (2 hours/week) as a discussion/seminary group.

Participating students are required to prepare and hold an oral presentation (15-20 mins) about a preferred medical legal issue, to be previously approved by the instructor. A suitable schedule for such presentations will be worked out together with the students.

Students are required to attend at least 75% of the meetings; a maximum of 4 (four) absences is acceptable. Attendance will be verified at the beginning of each meeting. In the event of more than 4 (four) absences an additional oral presentation or an essay will be required, provided such excessive absence is unjustified.

No medical certificate/other proof is required up to the maximum number (4) of excused absences. In the event of more than 4 (four) absences an authentic proof of justifiable absence is accepted.

"Aláírás" (the instructor's "signature" indicating the fulfilment of the term requirements) will be granted as follows:

- 1. Preparation and actual holding of an oral presentation.
- 2. Proper attendance (max. 4 absences; proper justification or additional work in the event of more than 4 absences)

The performance of participating students will be graded as follows:

- 1. Excellent (5): less than four absences; active and constructive participation in group discussions; an oral presentation of outstanding quality.
- 2. Satisfactory (3): regular attendance; an oral presentation of good quality.
- 3. Insufficient (1): more than four absences without proper justification; no presentation or presentation of an inferior quality.

Participants will be given a "gyakorlati jegy" (term mark) at the end of the semester; no further examination is required.

Recommended reading materials:

Kuhse - Singer: A Companion to Bioethics, 2nd Edition (Wiley-Blackwell)

Kuhse - Singer: Bioethics. An Anthology, 2nd Edition (Blackwell)

See also the extensive bibliography in Kuhse-Singer

HUNGARIAN MEDICAL TERMINOLOGY V.

Responsible organisational unit:

Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:

Zöldi Kovács Katalin PhD, Head of the Division

4 lessons per week, 2 credits

Assessment: midterm (written) and endterm (written and oral) tests and a final examination

Role of subject in fulfilling the aim of training:

The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective professional communication in the language they use during their field practice. With the help of this course they become able to communicate with the patients in the Hungarian hospitals.

Brief description of subject:

The last module covers the terminology of the main body systems and provides further training in taking history. The symptoms, diseases and common treatments of the diverse body systems (respiratory, cardiovascular, urinary, digestive and endocrine) are discussed during the semester.

Course content of practical lessons:

- Lesson 1-4: Communication practice (family and social history)
- Lesson 5-6: Communication practice (internal medicine medical history)
- Lesson 7-8: Communication practice (treatments, medication)
- Lesson 9-10: Common illnesses symptoms
- Lesson 11-16: The respiratory system
- Lesson 17-22: The cardiovascular system
- Lesson 23-24: Consolidation
- Lesson 25-26: Test 1 + situation
- Lesson 27-32: The urinary system
- Lesson 33-38: The digestive system
- Lesson 39-44: The Endocrine system
- Lesson 45-50: Consolidation
- Lesson 51-52: Test situation, communication practice
- Lesson 53-56: Mock final exam (oral part), assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)

Marthy Annamária – Végh Ágnes. Egészségére! – Magyar orvosi szaknyelv. Semmelweis Egyetem Egészségtudományi Kar, 2010.

PHYSICAL EDUCATION V-VI.

Practice: 1 hour per week

SUMMER (INTERNAL MEDICINE) PRACTICE

Managing (and contributing) institutes: Hajnal Imre Internal Medical Clinic

In English: Internal medicine summer practical

Total hours: practice: 6 hours daily for 1 month Type of course: compulsory Course code: AOKNSG600

Responsible for course: Prof. Dr. Tamás Masszi

Aim of the course, its position in the medical curriculum:

The main aim of the internal medicine summer practical following the 6th semester is, apart from practicing taking medical history and performing physical examination, detailed introduction to and participation in practical clinical work, as well as utilisation of obtained preclinical knowledge. Acquiring the basics of the integrative approach of internal medicine, practicing differential diagnostics.

Location of course (address of lecture-hall, seminar room, etc.):

SE Hajnal Imre Internal Medical Clinic, H-1085 Budapest, Üllői út 26. External training sites (see list of accepted practical locations)

Acquired competences after successfully completing the course:

Practical and internal medical utilisation of knowledge obtained during theoretical courses and propaedeutics within the internal medicine famulus practical. The goal is that the student is able to receive the patient, start examination, set up diagnostic and, as far as possible, treatment plan, as well as to perform routine treatment, under supervision. Furthermore, the aim is to acquire professional and human communication skills with medical staff, patients and their relatives.

Prerequisite(s) for admission to the course:

Attendance requirements of propaedeutics and signature in propaedeutics. Successful exam in propaedeutics is not a criteria for attending summer practical.

Student enrolment requirements (minimum, maximum), method of student selection:

Based on registration in the Neptun system maximum 25 students per shift per clinic.

How to apply for course:

In Neptun system

Detailed syllabus:

Students participate in practice 6 hours daily, 5 days a week for 1 month. Students take part once for an evening or weekend shift on call for 6+ hours.

General syllabus:

Introduction to the internal medical ward and the hospital.

Examination of patient, treatment of assigned patients at an assistant physician level under supervision, according to only partial pharmacological knowledge.

Medical history:

- taking medical history of patient, documenting the organised collected information with medical terms.
- interpretation of medical history in patient's documentation (abbreviations, recognition of connection of events)
- considering an expected home treatment based on medical history

Medication

- connecting the name of the patient's medications with the active ingredients
- identifying indication of drugs (in medical history)
- setting up a medical treatment plan for the condition indicated upon admission

Physical examination

- practicing head-to-toe examination and its professional description
- practicing targeted examination (e.g. patient with dyspnoea, anaemia, hepatic cirrhosis)
- recognising connection between acquired results of physical examination and medical history

Practicing the most important medical interventions

- Measuring pulse, blood pressure, temperature, weight, blood glucose
- Administration methods of medication
- Blood sample collection, injection administration, insulin administration, utilisation of pen (perhaps insulin pump)
- Prepare and administer infusions with supervision, introduction to transfusion
- Utilisation of diagnostic devices (ECG, Doppler, ultrasound, monitor, blood gas)

Introduction to patient's documentation (patient's chart, medical record, glucose chart, fluid chart, critical patient sheet), individual documentation. Professional demonstration of patient case known and followed by student on clinical rounds.

Acquiring skills of communication with patient and relatives, especially of informing patient and confidentiality. Become familiar with informed consents required for interventions, their introduction to patient, obtaining consent.

As far as possible, participation in consultations, in imaging diagnostics, in examination with devices, in clinical pathological consultations, especially in case of patient's known by student.

Participation in professional consultations of the institute.

Schedule

8:00-8:15	AM short meeting about events of night shift, daily tasks
8:15-9:30	AM medical rounds at ward - making rounds in the ward with the ward physician
9:30-10:00	AM clinical case consultation
10:00-10:20	AM coffee break
10:20-11:00	AM participation in ward tasks, participation in scheduled examinations, admission of new patients
11:00 AM-12:00	PM medical rounds with senior physician of ward
12:00-12:30	PM midday medical consultation
12:30-01:00	PM lunch break
01:00-01:30	PM assessment of and consultation on laboratory findings
01:30-02:00	PM consultation on daily tasks, reviewing and correction of documentation, reviewing activities log book, discussion
	of home study

Cross-border issues of the given course related to other courses (compulsory and elective). Possible overlaps in curriculum: general hospital bedside practice, practical basics of clinical courses

Special study work required to complete the course:

Activities

The student prepares an activity log book during the practical. Each student follows the patient turnover of a hospital bed. Student prepares medical record for the patient assigned to the bed and documents daily events. Student may analyse and explain patient's medication, details of therapy (e.g. choice of antibiotics, adjusting medication of cardiac insufficiency, etc.). Student may document main points of examinations, interventions, consultations they participated in during the day. The log book may be electronic or hand-written.

Requirements for participation in classes and opportunities to make up for absences:

According to the Studies and Exams Code, the criteria for obtaining signature is at least 75% participation in the practical.

Examination of acquired knowledge during term:

cannot be interpreted

Type of exam: report

Exam requirements:

Presentation of activity log book, exam on the subjects listed in the general syllabus within the context of a bedside consultation.

Method and type of class marks:

The completion of the practical is confirmed by a signature. Confirmation is given based on the activity shown during the practical and the complex patient examination at the end of the practice.

How to apply for the exam:

Application happens automatically when applying for the practical.

Opportunity to repeat the exam:

you will not receive a failing mark for this exam, no repetition is required

The list of printed, electronic and online notes, textbooks, study aids and literature to be used for to learn the curriculum (in case of online sources, html address):

A belgyógyászat alapjai (Tulassay, Zs. ed., 2016) A belgyógyászat alapjai (Tulassay, Zs. ed., 2017) Belgyógyászati diagnosztika (Petrányi, Gy., 2009) Belgyógyászati fizikális diagnosztika (Szarvas, F.-Csanády, M., 2005) Oxford Textbook of Medicine (Weatherall, Ledingham, Warrel, 10th ed. 2017). Harrison's Principles of Internal Medicine 18th ed. (McGraw-Hill, 2017). Herold Internal Medicine, B+V (medical and technical) Lap- és Könyvkiadó Kít., 2009)

Practical examination

- 1. taking medical history of a given patient, documenting the organised collected information with medical terms, complete physical examination of patient and its professional presentation (may be performed previously during the days before the exam, student is expected to present the documentation in the test)
- 2. theoretical and practical consultation on one item of the exam items.

Exam items

- 1. targeted examination of patient with dyspnoea
- 2. targeted examination of patient with anaemia
- 3. targeted examination of patient with renal insufficiency
- 4. targeted examination of patient arriving with chest pain
- 5. targeted examination of patient with fever
- 6. measurement of pulse, bedside diagnostics of vascular stenosis
- 7. blood pressure measurement technique, ABPM, assessing values of blood pressure measured at home
- 8. describing transfusion process (indication, choosing blood supply, bedside tasks)
- 9. blood glucose measurement (technique), assessing glucose chart, therapy recommendations
- 10. practical instructions on insulin treatment, describing utilisation of pen
- 11. primary/hospital treatment of hypoglycaemic patient
- 12. primary treatment of patient with ketoacidosis
- 13. diagnosis and treatment of pleural effusion
- 14. diagnosis and treatment of ascites
- 15. arterial blood gas analysis (technique, assessment)
- 16. recognising septic patient/patient in critical condition (ABCDE), report on condition (SBAR)
- 17. examination procedure of patient with icterus
- 18. utilisation of bedside ultrasound device
- 19. administration methods of medication, preparation of infusion
- 20. placement technique of urinary catheter

OBLIGATORY ELECTIVE AND ELECTIVE SUBJECTS – SCHEDULE OF THE BASIC AND PRE-CLINICAL MODULES (1st, 2nd & 3rd year) – Find detailed curricula after the 5th year

OBLIGATORY ELECTIVE SUBJECTS

1st semester							
Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite		
History of Medicine	2	-	2	pract. mark	-		
Developmental Biology I.	2	-	3	pract. mark	Anatomy, Cell, Histology and Embryology II.		
Library Informatics	2	-	3	pract. mark	-		
Clinical Physiology of Respiration and Respiratory Diseases	2	-	2	pract. mark	Medical Physiology II.		
Basic Cell Biology	2	-	3	pract. mark	Anatomy, Cell, Histology and Embryology I.		
Teaching assistance (Demonstrator)	1	-	1	pract. mark	Only 2 nd year students and up with an average of 3,51 from the previous school year and having achieved a final grade of "good" (4) or better in the course related to the teaching assistant work		
Teaching assistance II. (Demonstrator)*	1	-	1	pract. mark	-		
Work within the union of research students (TDK munka)	1	-	1	pract. mark	-		
Introduction to Clinical Medicine	2	-	2	pract. mark	Medical Profession		
Medical Profession	0,67	1,33	2	pract. mark	-		
Mathematical and Physical Basis of Medical Biophysics	1	-	1	pract. mark	-		
			2nd seme	ester			
History of Medicine	2	-	2	pract. mark	-		
Clinical anatomy – propedeutics	2	-	2	pract. mark	Anatomy, Cell, Histology and Embryology III.		
Developmental Biology II.	2	-	3	pract. mark	Developmental Biology I.		
Clinical cardiovascular physiology	2	-	2	pract. mark	Medical Physiology II.		
Introduction to Medical Informatics	-	1	1	pract. mark	Medical Profession		
Library Informatics	2	-	3	pract. mark	Med. Fac.: Medical Physiology II. Dent. Fac.: Medical and Dental Physiology I.		
Teaching assistance (Demonstrator)	1	-	1	pract. mark	Only 2 nd year students and up with an average of 3,51 from the previous school year and having achieved a final grade of "good" (4) or better in the course related to the teaching assistant work		
Teaching assistance II. (Demonstrator)*	1	-	1	pract. mark	-		
Work within the union of research students (TDK munka)	1	-	1	pract. mark	-		
Preclinical and clinical neuropsychopharma- cology and psychopharmacogenetics	1	-	1	pract. mark	Previous attendance of courses in Biology, Physiology and Biochemistry		
The Scalpel and the Paragraph: Special Issues of Medical Practice in Light of the Law	2	-	2	pract. mark	-		
Ultrasonography in obstetrics and gynecology	1	-	1	pract. mark	completion of second year		

ELECTIVE SUBJECTS

1st semester							
Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite		
Art of Learning	2	-	2	pract. mark	-		
Social media in medicine	2	-	2	pract. mark	-		
The theory and the practice of Mindfulness Based Stress Reduction	2	-	2	pract. mark	-		
Introduction to Epigenetics	2	-	2	pract. mark	Immunology		
Lessons in Digital Health	2	-	2	pract. mark	-		
Traditional Chinese Medicine	2	-	2	pract. mark	basic module		
Highlights on Mental Health and Mental Treatment (Culture in Medicine II.)	2	-	2	pract. mark	-		
Culture in Medicine, Culture of Medicine	2	-	2	pract. mark	-		
Basic Cell Biology	2	-	3	pract. mark	Anatomy, Cell, Histology and Embryology I.		
Cardiorespiratorical and neurophysical measuring techniques	2	-	2	pract. mark	Medical Physiology II.		
Jewish Medical Ethics I.	2	-	2	pract. mark	-		
History of Medical Professionalism	2,5	-	2	pract. mark	-		
Introduction to Pharmacological Research	2	-	2	pract. mark	Medical Biochemistry, Molecular and Cell Biology I.		
Basics of Medical Chemistry	2	-	3	pract. mark	-		
Medical Genomics	2	-	2	pract. mark	Medical Biochem., Molecular and Cell Biology I, II, III		
			2nd semest	er			
Subject	Lectures	Practicals	Credit Points	Examination Prerequisite			
Art of Learning	2	-	2	pract. mark	-		
Clinical Hungarian	-	4	2	pract. mark	Hungarian Medical Terminology V.		
Medical Terminology II.	-	2	2	pract. mark	-		
Disruptive Technologies in Medicine	2	-	1	pract. mark	-		
Pathobiochemistry	2	-	2	pract. mark	Medical Biochemistry II.		
Social media in medicine	2	-	2	pract. mark	-		
Traditional Chinese Medicine	2	-	2	pract. mark	basic module		
Culture in Medicine, Culture of Medicine	2	-	2	pract. mark	-		
Problem based medical physiology	2,5	-	4	pract. mark	Medical Physiology II.		
Clinical cardiovascular physiology	2	-	2	pract. mark	Medical Physiology II.		
History of Medical Professionalism	2,5	-	2	pract. mark	-		
Sexual genetics	2	-	2	pract. mark	Anatomy, Cell, Histology and Embryology II. Biochemistry, Molecular and Cell Biology I.		

Jewish Medical Ethics II.	2	-	2	pract. mark	-
Chemotaxis – Its significance in biology and clinical sciences	2	-	2	pract. mark	Medical Chemistry
Introduction to Pharmacological Research	2	-	2	pract. mark	Medical Biochemistry, Molecular and Cell Biology I. or Medical Biochemistry I.
Systems Neuroscience	-	2	2	pract. mark	-
Clinical Gastroenterology	2	-	3	pract. mark	Internal Medicine – Propedeutics
Climate Change and Health in Sociological Perspectives	2	-	2	pract. mark	Medical Sociology
Pathobiochemistry	2	-	2	pract. mark	Medical Biochemistry, Molecular and Cell Biology II.
Hate Crimes	2 hours	14 hours	1	oral semifinal	Medical Sociology, Medical Physiology II.
Introduction to Principles of Students' Scientific Research	2	-	1	pract. mark	completion of the 1 st and 2 nd semester
Biomedical Innovation for the 21st century	2	-	2	pract.mark	recommended from 2 nd year

NOTE

CLINICAL MODULE



Faculty of Medicine 4th year

STUDY PROGRAMME

Fourth Year in the 2020/2021 academic year

4th and 5th Years (7th-10th semesters)

Teaching is done in "clean" blocks: Theory + Practice + Exam. (Practices are taught by "shadowing") The time span of each block depends on the credit value of the subjects: 1 to 5 weeks

For example: based on a subject of 2 credits:

- 2 credits × 14 lessons = 28 lessons (1 semester consists of 14 weeks. The number of credits are equal with the lessons in a week)
- Education is provided as 8 lessons in a day: 4 days x 8 lessons = 32 lessons
- the training and the exam must be completed in 2 weeks
- approx. 40 students will be trained by providing 4 days of training and 2 days of exams within 10 working days.

7th and 8th semester

	ho	urs			examination
course name	lecture (h/week)	pratice (h/week)	credit	prerequisite(s)	
Internal Medicine (Metabolism, Endocrinology, Gastroenterology, Nephrology)	1	2	4	Internal Medicine - Propedeutics Pathophysiology II., Pathology II.	semi-final
Cardiology, Cardiac Surgery, Angiology, Vascular Surgery	2	4,5	6	Medical Microbiology II, Pathology II., Internal Medicine - Propedeutics	semi-final
Surgery	3	3	6	Anatomy, Histology, and Embryology IV., Basic Surgical Techniques, Pathology II.	semi-final
Traumatology	1	2	3	Anatomy, Histology, and Embryology IV., Medical Imaging*, Surgery I-II.* (*The prerequisite is that registration has been done for the marked subject – corequisite - as well)	semi-final
Orthopedics	1,5	2	3	Anatomy, Histology, and Embryology IV., Pathology II., Surgery I-II.*	semi-final
Medical Imaging	1	2	3	Anatomy, Histology, and Embryology IV., Pathology II.	semi-final
Otorhinolaryngology	1	2	3	Anatomy, Histology, and Embryology IV., Surgical Research and Techniques, Surgery I-II.*	semi-final
Dermatology	1,5	2,5	4	Pathophysiology II., Internal Medicine I.*, Pharmacology II.	semi-final
Oral Surgery and Dentistry	-	2	2	Anatomy, Histology, and Embryology IV., Basic Surgical Techniques	semi-final

	ho	urs			examination
course name	lecture (h/week)	pratice (h/week)	credit	prerequisite(s)	
Laboratory Medicine	1,5	1	3	Internal Medicine – Propedeutics, Pathology II., Surgical Research and Techniques	semi-final
Pulmonology – Thoracic Surgery	1	2	3	Pathology II., Microbiology II., Internal Medicine - Propedeutis	semi-final
Oncology and Reconstructive Oncoplastic Surgery	1	2	3	Anatomy, Physiology, Pathology, Microbiology, Clinical Pharmacology, Translational Medicine, Laboratory Medicine, Surgery I-II, Oral Surgery, Otolaryngology, Internal Medicine I.	semi-final
Emergency Medicine and Oxyology	1	0	2	Internal Medicine I.*, Cardiology, Cardiac Surgery, Angiology, Vascular Surgery*	semi-final
Pharmacology	5	5	10	Medical Microbiology II., Pathophysiology II.	final
Family Medicine	1	1	2	Internal Medicine - Propedeutics	semi-final
Medical Ethics	2	0	2	Medical Psychology	semi-final
PE VII.	0	1	0	PE VI.	signature
PE VIII.	0	1	0	PE VII.	aláírás
Summer Practice - Surgery	1 m	onth	1	Surgery	pract. mark

*The prerequisite is that registration has been done for the marked subject - corequisite - as well

LIST OF TEXTBOOKS (The list may change!)

- 1 Cecil's Essentials of Medicine. Ed. Andreoli, Carpenter, Griggs. Loscalzo.W.B. Saunders. 5th ed. 2001. ISBN 0-7216-8179-4
- 2 Adler: ABC of AIDS. 1993. 3rd ed. ISBN 727907611. BMJ
- 3 Adler: ABC of Sexually Transmitted Diseases. 3rd ed. 1995. ISBN 72790261X. BMJ
- 4 Becker,W.- Naumann,H.- Pfaltz R.: Ear, Nose and Throat Diseases. Thieme. Stuttgart, New-York, 1994. ISBN 0-86577-536-2 or 3-13-671202-3
- 5 Répássy, G.: Otolaryngology. Eger, Radó Ny. 2000.
- 6 Churchill's pocketbook of cardiology. Grubb, NR-Newby, D.E. Edinburgh 2006.
- 7 Adams, J.C.-Hamblen, D.L.: Outline of Orthopaedics. 12th ed. Churchill Livingstone, Edinburgh, 1995. ISBN 0443 05149 6
- 8 Horst Cotta: Orthopaedics. Georg Thieme Verl. New York, 1980. ISBN 3-13590001-0
- 9 Szendrői Miklós (szerk.): Orthopaedics. Semmelweis Kiadó, 2008. ISBN 978 963 9656 93 2
- 10 Bourne, Brewis: Lecture Notes on Respiratory Disease. Blackwell. 5th ed. 1998. ISBN 0-632-04968-5
- 11 Sabiston Essentials of Surgery. Saunders. 1994. ISBN 0-7216-3492-3.
- 12 Szabó Gy.ed: Oral and Maxillofacial Surgery. Semmelweis Kiadó, Budapest, 2001.
- 13 Szende B.-Suba Zs.: Introduction to Histopathology. Medicina, Budapest, 1999.
- 14 Koerner KR: Manual of Minor Oral Surgery for the General Dentist, Blackwell Munksgaard, 2008
- 15 Peitzman B.A, Rhodes M, Schwab C.W, Yealy M.Y, Fabian C.T: The Trauma Manual: Trauma and Acute Care Surgery, Third edition, Publisher: Wolters Kluwer / Lippincott Williams & Wilkins

Recommended textbooks:

- 1 Cecil Textbook of Medicine. 21th ed. W.B. Saunders, 2000. Vol.1-2.
- 2 Lynn S. Bickley: Bates' Guide to Physical examination and history taking
- 3 Tulassay Z. (Ed): A belgyógyászat alapjai (I.-II.)
- 4 Internet links for Internal Medicine
- 5 Current Medical Diagnosis and Treatment. (Ed.)Tierney, McPhee, Papadakis. Appleton & Lange, McGraw-Hill 2002. ISBN 0-07-136466-8
- 6 Harrison's Principles of Internal Medicine. 15th ed. McGraw-Hill Inc. 2001.
- 7 Concise Oxford Textbook of Medicine. Ed. Ledingham, Warrell. Oxford University Press, Oxford, 2000.
- 8 Davis-Christopher: Textbook of Surgery / Synopsys for students (Sabiston)
- 9 Clive R. G. Quick, Joanna B. Reed et all.: Essential SURGERY(5th Edit.) Churchill Livingston
- 10 Duckworth, T.: Orthopaedics and Fractures. 3rd ed. Blackwell Science, 1995.
- 11 Semmelweis Egyetem e-learning rendszere Ortopédia fejezet Semmelweis University e-learning system: Orthopaedics
- 12 Szécsény-Berentey: Sebészet. Bp. Medicina.
- 13 Gaál: Sebészet. Bp. Medicina.
- 14 Littmann: Sebészeti mütéttan. Bp. Medicina.
- 15 Fitzpatrick's Dermatology in General Medicine Editor: Freedberg, Irwin M.; Eisen, Arthur Z.; Wolff, Klaus; Austen, K. Frank; Goldsmith, Lowell A.; Katz, Stephen I. Publisher: McGraw-Hill Edition: 6th Edition ISBN: 0-07-138076-0, 0-07-138066-3, 0-07-138067-1
- 16 full-text online access: http://gateway.ut.ovid.com/gw1/ovidweb.cgi?New+Database=SingleI0&S=IDNJHKIDNGILPL00
- 17 Shimizu's Textbook of Dermatology accessable online also
- 18 Clinical Dermatology Editor: Rona M.MacKie 5th Edition Oxford Core Texts, 2003 ISBN13: 9780198525806ISBN10: 019852580X Paperback or the latest edition
- 19 Dermatology Editor: Otto Braun-Falco, Gerd Plewig, Helmut H. Wolff, Walter Burgdorf Publisher: Springer Verlag; 3 edition (November 2009)
- 20 Peterson: Principles of Oral and Maxillofacial Surgery. Decker, 2004.
- 21 Robinson PD: Tooth Extraction. A Practical Guide, Oxford, Boston, 2000
- 22 Ward Booth P, Eppley B, Schmelzeisen R: Maxillofacial Trauma and Esthetic Facial Reconstruction, 2nd Edition, Elsevier, 2011
- 23 Forrai J.-Ballér P.: Chrestomathy on the History of Medicine. SOTE, Bp. 1992.
- 24 W. Becker, H.H. Naumann, C.R. Pfaltz: Ear, Nose and Throat Diseases Georg-Thieme Verlag, Stuttgart 1994. ISBN: 3-13-671202-1
- 25 Rakel, R.E: Essentials of Family Practice. W.B.Saunders Co. 1998.
- 26 Taylor, R.B.: Fundamentals of Family Medicine. Springer, 1996.

INTERNAL MEDICINE I. - Metabolism, Endocrinology, Nephrology, Gastroenterology

Lecture: 1 hour per week Practice: 2 hours per week Credit: 4 Examination: semi-final

CARDIOLOGY – Cardiac Surgery, Angiology-vascular Surgery

Heart Center Department of Cardiology

Tutor: Dr. György Bárczi

Lectures (2 hours per week)

- Introduction. Differential diagnosis in acute cardiac care History, epidemiology Acute coronary syndrome, pulmonary embolism, aortic dissection
- 2.
- Ischaemic heart disease I. atheroslerosis Invasive/non invasive tests Stable coronary artery disease
- 4. Ischaemic heart disease II. Acute coronary syndrome
- "Cardiology Day" Live demonstrations, interactive lectures, resuscitation practice, etc.
- 6. Heart failure Cardiomyopathies
- 7. Arrhythmias I. Supraventricular arrhythmias
- Arrhythmias II. Ventricular arrhythmias Syncope, sudden cardiac death
- 9. Acquired valve diseases
- 10. Congenital heart diseases in children and in adults
- 11. Cardiac Surgery
- Indications and recommendations
- 12. Infective heart diseases, cardiac tumours
- 13. Primary and secundary prevention
- 14. Interactive case presentations

Practices (ward rounds, 4,5 hours per week)

- 1. Bedside practice ECG
- 2. Bedside practice heart failure, echocardiography
- 3. Bedside practice valvular heart diseases
- 4. Coronary care unit intraaortic balloon pump
- 5. Coronary care unit invasive haemodynamics
- 6. Coronary care unit cardiogenic shock
- 7. Out patient care ischemic heart diseases
- 8. Out patient care arrhythmias
- 9. Common practice invasive cardiology
- 10. Common practice non-invasive cardiology
- 11. Common practice electrophysiology
- 12. Common practice pediatric cardiology
- 13. Common practice cardiac surgery
- 14. Practical exam

Students are strongly recommended to visit regularly our website where updated informations are available: http://vszek.semmelweis.hu/education-cardiology

SURGERY I-II.

I. Department of Surgery Department of Transplantation and Surgery

Tutors: Dr. Ákos Szűcs

Dr. Gábor Telkes

Lectures (3 hours per week) History of Surgery. - Developments. Recent trends and perspectives. General Anesthesia. The resuscitation, (CPR), The Shock, Fluid, electrolite and metabolic disturbances. Artificial nutrition. Surgical infections I. -Pyogenic infections, wound infections. Anaerob infections. Tetanus and gas gangrene. -Artificial nutrition of septic patient. Surgical infections II. -Hepatitis. Aids, etc. The role of antibiotics in surgery. Asepsis, antisepsis. - Prevention of Surgical infections. Surgical complications. Preparation of the patients and problems of the perioperative period. Principles of operative surgery. Basic technics, sutures etc. Bleeding and blood clotting. Technics of haernostasis. Plastic surgery. Surgical oncology. Tissue and organ transplantation. Consultation. Questions/Answers. Practice (3 hours per week) Introduction of the Department. The OP, the instruments of OP. The organization. The wards, etc. The central sterilization station. The admission system of the patients. The preoperative wash-up. Asepsis, antisepsis, Get dressed for OP. The practical preparation of the skin. The surgical instruments. What and when. The treatment of wounds. The wound healing. The type of wounds. Bandaging procedures. Injections. - Hypodermic, intracutan, intra muscular etc.,-The suture technics. Sutures, knots, clips, etc.-Laparoscopic technics. Transfusion. The blood groups. Possible reactions and complications. Anaesthesiology. - General anaesthesia. Narcosis systems. The intensive care unit. The post operative treatments. The resuscitation. - The CPR. - The latest pharmaceutical aspects of the CPR. - Demonstration on AMBU unit.

Ward practices. (5x) - Investigate the surgical patients. The method of physical examinations. The evaluation of the findings.

Form of EXAM:

a) Semester Closing Written Test (demonstration): for all students

b) Oral exam (final result is calculated on the result of the test and the oral presentation)
SURGERY

II. Department of Surgery

The course leader is the director of the clinic: *Dr. Gábor István* Study Responsible: *Dr. György Ledniczky* clinical chief physician All educators in the clinic participate in the education. ÁOK IV class **block study**

Surgery

Students will be introduced to the basics of general surgery. The training builds on the curriculum and courses of the Department of Experimental Surgery. Within the framework (35 contact lessons), we train the students in two-week turnovers. The 35 lessons are divided by the timetable.

Eight lectures will be held in the field of general surgery.

- 1. The concept, types and indications of surgery. Legal issues, Surgery.
- 2. Types of wounds, principles of wound treatment
- 3. Surgical infections
- 4. Bleeding, haemostasis, thrombosis prophylaxis
- 5. Intraoperative and postoperative complications
- 6. Diagnosis and care of severe abdominal injuries
- 7. Basic principles of surgical oncology
- 8. Laparoscopic surgical technique, video presentation

In the course of the practicals we recommend and expect each student to hold a 20 minutes presentation on the following topics:

- 1. Surgical infections of the hand
- 2. Leg ulcer, diabetic foot, decubitus
- 3. Medical aids in surgical practice
- 4. Wrapping, modern dressings
- 5. Forms of soft tissue infection and their treatment
- 6. Intraoperative Diagnostics
- 7. Precancerosis, oncological screening
- 8. Risk factors, thrombosis prophylaxis

Recommended Practical Activities:

- 1. investigating an acute patient,
- 2. Investigating a surgical patient
- 3. wound treatment, dressings
- 4. participation in the work of the surgical ambulance
- 5. surgical assistance, visiting the OR
- 6. case reports
- 7. surgical administration
- 8. postoperative treatment, medication

In the framework of block education, because of its strict themes, we will be able to replace the absences in one of the next rounds. On an individual basis, we offer students an opportunity to participate in acute care. This is possible every Sundays and Mondays. Participation in fire and safety training is mandatory at the beginning of education.

After the term of study, during the exam period, only students who are taught by our clinic are eligible to sit for an oral exam (colloquium). The exam items are published on our website and in the Neptun system at the beginning of the study period.

The items will be compiled from the themes of lectures and presentations.

With regard to the new form of education, there will also be items missing from lectures and presentations. Students can prepare themselves from textbooks and from other sources.

The course leader is the director of the clinic, Dr. Gábor István

Study Responsible: Dr. György Ledniczky clinical chief physician

All educators in the clinic participate in the education.

Surgery

Appendicitis Acute abdomen The oesophagus and diaphragm The stomach, duodenum and small intestine The large intestine and the ano-rectal region The ileus The liver The cholelithiasys and biliary surgery Pancreas I. - Acut pancreatitis Pancreas II. (Chr. Pancreatitis. Tumours) The artificial nutrition – Enteral, parenteral The acute gastrointestinal bleeding Catastrophic surgery. - Surgery of tropical diseases Pediatric Surgery Consultation - Questions-answers Site of lectures: (előadások helye): lecture hall

PRACTICALS: all in wards

Form of EXAM: semi-final

TRAUMATOLOGY

Department of Traumatology

Type of subject: Mandatory Code: AOKTRA063_1A credit points: 3 Head of Department: Prof. Dr. Hangody László

Dear 5th Year Students,

The Traumatology Department will not require an occupational health examination certificate nor certification of Hepatitis B vaccination for you 5th year Traumatology practice.

For 6th year students, the occupational health examination certificate is obligatory in order to begin your practice in Hungary.

Purpose of subject:

Traumatology as a specialty deals with the treatment of injured patients, independent of the injured organ, patient's age or previous diseases. In developed countries, the 4-5th leading cause of death is injury, while in the actively working population, the rate of death is even higher. Morbidity in children and in the elderly is also high. For this reason, the understanding of anatomy, physics, general surgery, neurology, radiology, and the clinical subjects (ENT, ophthalmology, urology), as well as physiology are prerequisites for the foundation of this subject. Traumatology treatment for the most part deals with extremity surgery in correlation to orthopedics, however cranial, thoracal, abdominal, spinal and pelvic injuries as well as the treatment of polytraumatized patients also belong to the field of trauma care.

Lectures

Traumatology lectures are available on Semmelweis University's E-learning portal (moodle)

"General Traumatology. Soft tissue injuries. Thermal injuries. Wound management."

Fracture management. Bone healing

"Immediate care and major accidents. (Multiple injuries, shock, major disasters)"

Thoracic and abdominal trauma

Neurotrauma. Spinal, cranial and facial trauma.

"Pelvic injuries. Femoral fractures (proximal femur and shaft)"

"Fractures of the tibia and fibula Injuries of the ankle, talus, calcaneus and the foot"

"Knee Injuries Cartilage repair, ligament surgeries"

Injuries of the upper extremity Hand injures

Pediatric trauma

"Management of open fractures. Septic and non-septic complications in Traumatology."

"Endoprosthetic replacement possibilities in Traumatology. Periprosthetic fractures and complication"

Traumatology block schedule for 5th year medical students (weekly)

Day 1.	Introduction to the Traumatology Department Polytrauma Bone healing, fracture management Practice: Trauma radiographs demonstration Practice at OPD – 4 students – 1 teacher (7 X 45' classes + 2 X 15' breaks)
Day 2.	Femoral fractures Arthroscopy, cartilage and ligament injuries of the knee, sport surgery Fractures of the knee Practice rotation: Suturing / Physical therapy Practice rotation: Suturing /Physical therapy Practice at OPD – 4 students – 1 teacher (7 X 45' classes + 2 X 15' breaks)
Day 3.	Injuries of the upper extremity Hand surgery Fractures of the tibia, ankle and the foot Practice: Wound dressing Practice at OPD – 4 students – 1 teacher (7 X 45' classes + 2 X 15' breaks)
Day 4.	Postoperative infections, septic complications Practice: Traumatology implants Paediatric trauma Practice rotation: Cast splinting / Ward/OPD Practice rotation: Cast splinting / Ward/OPD Practice at OPD – 4 students – 1 teacher (7 X 45' classes + 2 X 15' breaks)
Day 5.	Pract. rot.: Op / Septic compl. treatment Pract. rot.: Ward/OPD / Septic ward Pract. rot.: Ward/OPD / Septic ward Pract. rot.: Ward/OPD - 4 students – 1 teacher (7 X 45' classes + 2 X 15' breaks) During practices, students will have the opportunity to learn the following: physical examination of injured patients, bandaging, suturing, casting techniques, and the uses of orthesises and splints. Consultation of typical and the more frequent trauma cases, radiologic diagnostics, as well as videos in the operative theater are also part of the curriculum. During on duty shifts, students will have an opportunity to examine and participate in the trauma care of patients under supervision.

Attendance criteria and absences:

During the course of the block practices, a maximum of 25% absence is allowed, excluding the on duty shift, where attendance is mandatory. If the student is absent from 40% or more practices, he/she will not be allowed to take the exam, the subject will have to be repeated the following year. Absences between 25-40% must be repeated in the following manner: on-duty shift at the Traumatology Department. In this case, the student's must previously coordinate their attendance for this on-duty shift 2 weeks in advance with the secretary.

Verification of absences from lectures, practices or from the exam:

We can only accept hospital discharge papers for verification of more than 25% absences from practices or the absence from the exam, proving the student was continuously hospitalized during that time period.

Mid-semester test and quiz topics, dates, absences and retaking of these tests:

There will be no tests or quizzes during the semester. During practices the lectures material will be discussed.

Criteria for the signature at the end of the semester:

Students must open and read through all the lecture material available on Semmelweis University's E-learning portal.

Attendance of consultations and practices or repeating of unattended practices and the written exam result is required. We cannot verify the semester, or allow the student to take the midterm if the student did not attend at least 75% of practices during the semester.

Only those students will be allowed to take the exam, who have opened and read through the lecture material and have met the practice attendance minimal requirements.

Grading:

Written electronic exam (single answer and multiple choice test), on Semmelweis University's E-learning portal (moodle) (Several exam dates are available in Neptun)

Type of exam:

Written electronic exam (single answer and multiple choice test), on Semmelweis University's E-learning portal (moodle)

Exam requirements:

The knowledge of the given textbook, electornical lecture and practice material.

Exam registration:

Neptun program

Modification of exam registration:

Neptun program

Absence from the exam: -

List of textbooks, notes, study-aids and references:

The Trauma Manual: TRAUMA AND ACUTE CARE SURGERY Third edition Editors: Andrew B. Peitzman, Michael Rhodes, C. William Schwab, Donald M. Yealy, Timothy C. Fabian Publisher: Wolters Kluwer / Lippincott Williams & Wilkins

Internet: The lecture material can be downloaded from Semmelweis University's E-learning portal https://itc.semmelweis.hu/moodle/?lang=en

OTORHINOLARYNGOLOGY

Tutor: Dr. Beáta Bencsik

Lecture (1 hour per week)	Practice (2 hours per week)
The role of otorhinolaryngology in medicine. Clinical anatomy of the ear. Diseases of the external ear.	Clinical examinations.
Acute and chronic otitis media I. (etiology, diagnosis, pathology).	Diagnostical methods of the ear.
Acute and chronic otitis media II. (Complications and therapy)	Evaluation of different types of perforations of the tympanic membrane. Cadaver bone practice.
Types of hearing losses, etiology. Audiologica! diagnostic methods.	Routine audiology. Uning fork practice.
Surgical management of hearing losses. Otosclerosis. Cochlear implant.	Operating theatre. Video.
Physiology and lesions of the vestibular system.	Examination of the vestibular system. ENG. CCPG.
Neurological and ophthalmological aspects of ear diseases. Prevention and rehabilitation.	Evaluation of different otological cases.
Clinical anatomy and physiology of the nose and paranasal sinuses. Nasal obstruction. Epistaxis.	Anterior and posterior rhinoscopy. Clinical management of the epistaxis.
Infections and tumors of the nose and the paranasal sinuses. Therapeutical possibilities.	X-ray photos of the paranasal sinuses. Operating theatre. Video.
Clinical anatomy, physiology and diseases of the pharynx.	Advanced examination of the pharynx. Directoscopy, fiberoscopy.
Diseases of the tonsils and their complications. Indications and complications of the tonsillectomy.	Peritonsillar abscess. Dangers of the tonsillectomy. Tonsillectomy. Operating theatre.
Anatomy and physiology of the larynx. Disorders. Infections of the larynx and their managament.	Direct and Indirect of the voice. Laryngoscopy. Videostroboscopy.
Dyspnoe and suffocation with upper airway origin. Conicotomy and tracheotomy.	Emergency management of suffocation.
Tumors of the larynx and their therapy. Rehabilitation of patients after total laryngectomy.	Operating theatre. Video. Voice prostheses.
Diseases of the trachea and the oesophagus. Foreign bodies. Medial and lateral neck masses.	Oesophagoscopy, bronchoscopy. Case reports. Palpation and investigation of patients with diffe- rent neck masses.

ORAL SURGERY AND DENTISTRY

Course Leader: *Dr. Zsolt Németh* Department of Oro-Maxillofacial Surgery and Stomatology Dental Training Centre of the Faculty of Dentistry Department of Community Dentistry

Credit value: 2

Number of lessons per week: 28 hours lecture:0 practical course: 28 hours seminar: 0 Subject type: compulsory course Subject code: AOKSZB690 1M, AOKSZB690 1A, AOKSZB690 1N

Objectives of the subject, its place in the medical curriculum:

The main aim of the "Oral surgery and Dentistry" course for 4th year medical students is to introduce the most specific symptoms, recognition and treatment of the most common dental, oral and maxillofacial diseases. In addition, the knowledge of various specialisations of dentistry is important to medical students because later, as specialized medical doctors - regardless of their specialization – they will find numerous correlations and these skills will prove to be essential in case of many borderline diseases and to face diagnostic difficulties. During the course students learn about the method of oral examination and stomato-oncological screening. The practice focuses on the oral and dental contexts of disciplines of medicine. It is extremly important for future medical doctors to be aware of the symptoms of systemic diseases in the oral cavity and know which dental and oral diseases may lead to systemic diseases.

Successful completion of the subject results in the acquisition of the following competencies:

As practicing physicians they will be in the possession of modern theoretical and practical skills and will be able to perform medical practice on their own and build correct human relationships with their patients and family members as well as other health professionals. It is important that they will receive a comprehensive picture of the concept of oral health.

As practicing physicians they will be able to examine the oral cavity and the head and neck region, and interpret the lesions and altered func-

tions, initiate the diagnostic and therapeutic process. In accordance with the preventive approch that is characteristic for today's medicine, they will be able to prevent and detect tooth (oral) diseases of systemic effect at their early stage.

Course prerequisites:

Anatomy, Cell, Histology and Embryology IV. Basic Surgical Techniques, Surgery I.

Number of students required for the course (minimum, maximum) and method of selecting students:

Based on registration through the Neptun system.

How to apply for the course:

through the Neptun system

Detailed curriculum:

(Theoretical and practical lessons shall be given separately by numbering the lessons (by weeks). Please provide the names of the teachers of the lectures and practical lessons and indicate guest lecturers. Do not use attachments! Always attach a CV for guest lecturers!) The duration of the course is 1 week in one block.

According to the schedule of the 2020/2021 academic year, the English language practice will be on 2nd, 5th, 12th, 15th, 22nd, 25th, 32nd, 35th educational week.

The courses take places in the building of Department of Oro-Maxillofacial Surgery and Stomatology and in the Dental Training Centre of the Faculty of Dentistry during the semester.

The courses take places in the building of Department of Oro-Maxillofacial Surgery and Stomatology and in the Department of Community Dentistry of the Faculty of Dentistry during the semester exam period.

The schedule of the one-week block:

one - week block						
	Monday	Tuesday	Wednesday	Thursday	Friday	
from 8:00 am to 11:30 am (with half an hour break)	education	education	education		education	
lunch break from 11:30 am to 12:30 pm	break	break	break	day off (obligatory)	break	
from 12:30 pm to 16:00 pm (with half an hour break)	education	education	education	Ŭ,	exam	

About 20-25 students attends to the clinics weekly. The students are divided into six groups (2-4 students per little group) as the practice are taught by six disciplines of Faculty of Dentistry. The small groups of students (2-4 person) take part on practice in the rotating system on Monday, Tuesday and Wednesday. The practices are held in educational period (semester) in Department of Oro-Maxillofacial Surgery and Stomatology and the Clinics of Dental Training Centre of the Faculty of Dentistry, in exam period in Department of Oro-Maxillofacial Surgery and the department of Community Dentistry.

The schedule of rotating system for small (2-4 person) students groups:

The schedule of rotating system for small (2-4 person) students groups								
	Monday morning	Monday afrenoon	Tuesday morning	Tuesday afternoon	Thursday morning	Thursday afternoon		
А	conservative dentistry	prosthodontics	periodontology	oral and maxillofacial surgery	pediatric dentistry and orthodontics	oral diagnostic		
В	prosthodontics	prosthodontics	oral and maxillofacial surgery	periodontology	oral diagnostic	pediatric dentistry and orthodontics		
С	pediatric dentistry and orthodontics	oral diagnostic	conservative dentistry	conservative dentistry	periodontology	oral and maxillofacial surgery		
D	oral diagnostic	pediatric dentistry and orthodontics	prosthodontics	prosthodontics	oral and maxillofacial surgery	periodontology		
E	periodontology	oral and maxillofacial surgery	pediatric dentistry and orthodontics	oral diagnostic	conservative dentistry	conservative dentistry		
F	oral and maxillofacial surgery	periodontology	oral diagnostic	pediatric dentistry and orthodontics	prosthodontics	prosthodontics		

The list of Clinics and Departments are involved in rotating system:

- Department of Oro-Maxillofacial Surgery and Stomatology
- Department of Conservative Dentistry
- Department of Prosthodontics
- Department of Periodontology
- Department of Pediatric Dentistry and Orthodontics
- Department of Oral Diagnostics
- Department of Community Dentistry (in the exam period of Faculty of Dentistry)

The teachers/instructors of Clinics and Departments are involved in rotating system:

 Department of Oro-Maxillofacial Surgery and Stomatology Sándor Bogdán, Dr., Mihály Vaszilkó Dr., Tamás Huszár Dr., Iván Decker Dr., Péter Barabás Dr., Gergely Csókay Dr., Zsófia Somogyi Dr., Tamás Würsching Dr., Gábor Pintér Dr., Szófia Szentpéteri Dr., Lillik Péter Dr., Ákos Dora Dr., Lőrincz Zatik Dr.

- Department of Conservative Dentistry Eszter Szalai Dr., Andrea Demeter Dr., Ákos Mikolicz Dr., Gergely Hriczó-Koperdák Dr.
- Department of Prosthodontics Máté Jász Dr.
- Department of Periodontology István Gera Dr., Attila Horváth Dr., Zsombor Drajkó Dr.
- Department of Pediatric Dentistry and Orthodontics Fanni Juhász Dr., Dorottya Bányai Dr., Anna Zatik Dr., Adrienn Auth Dr., Levente Szegedi Dr., István Simon Dr., Gergely Kaán Dr.,
- Department of Oral Diagnostics Szabolcs Gyulai-Gaál Dr., László Simonffy Dr., Róbert Bernát Dr., Fruzsina Gyekiczki Dr.,

Topics of each sub-practices:

Maxillofacial and dentoalveolar surgery:

Benign neoplasms of the orofacial region. Praecancerous lesions, prevention of oral cancer, screening methods. Malignant oral tumors and its treatments. Developmental anomalies (craniofacial malformations, cleft lip and palate, dysgnathia). Reconstructive surgery. Traumatology. Inflammatory diseases and therapeutic options. Tooth extraction, dentoalveolar and preprosthetic surgery. Basics of dental implantology. Oral rehabilitation for patient with special needs.

Cons

Medical and dental history taking. Correlations between medical conditions and dental, periodontal status. High risk patients. Examination, evaluation of clinical findings and making diagnosis. Aspects of making treatment plan. Prevention options of oral diseases. Age-related changes in oral condition and its results. Diagnosis and treatment methods of caries. Importance of pulpal and periodontal diseases. Types of conservative dentistry procedures. Focal (dental) infection. Use of antibiotics in the field of conservative dentistry. Importance of regular dental examination considering medical status.

Prosthodontics:

Indications and contraindications of prosthodontics treatments. Making prosthodontic treatment plan: when and which type, fixed or removable and implant retained prosthetic appliances etc. Demonstration of the most frequently used fixed and removable prosthetic appliances emphasizing which types are must be removed from oral cavity of an unconscious patient. The significance of the control and care for patients after prosthetic treatment. Examination of the temporomandibular joint, its disfunction (TMD), diagnosis and conservative treatment options. The clinical team of treating TMD patients. Detection and treatment of early and late outcome of complete endentulousness.

Periodontology:

Survey of the patient's oral hygiene and setting professional oral hygiene. Examination of the oral mucosa and diagnosis. Opportunity to assist in subgingival depuration (in non-surgical pocket treatment) and surgical periodontic procedures.

Pediatric Dentistry and Orthodontics:

Dental examination in childhood, medical and dental history, dental screening. Opportunity to assist in paedodontic procedures e.g. sealent application, primary and permanent tooth filling, primary tooth extraction; alternative solutions to treatment of childhood caries. Characteristics of primary, mixed and permanent dentition. Difficulties and emergencies in paedodontics. Scanning and eliminating focal infections. Oral manifestations of childhood infections. Use of anaesthetics and drugs in childhood. The connection between paedodontics- orthodontics and other dentistry specialties. Opportunity to assist in activation of removable and fix orthodontic appliances. The most frequently used orthodontic appliances.

New methods of orthodontics, digitalized procedures and esthetic appliances. The importance of age in orthodontic treatment.

Oral diagnostics:

Patient with dental symptoms, making dental and medical history, making diagnosis. Considering correlations between medical conditions and dental problems. Examination of head and neck, stomato-oncological screening. Steps of the intraoral examination, making description of the clinical findings. Lesions of oral mucosa. Oral manifestation of systematic autoimmune diseases. Oral manifestation of infections. Symptoms of medicine side effects. Additional modalities in oral mucosa examination. Dentoalveolar and maxillofacial imaging techniques. Manifestations of medical conditions on dental X-ray. Imaging modalities in traumatic injuries. Imaging techniques in screening.

More specialties contain similar course topics:

Emergency cases and its treatments, the importance of prevention and connection of medical specialties.

Dental and dentoalveolar outpatient department connection to maxillofacial and otolaryngology departments work. Gerostomatology. Dental infectology.

The study materials of practices are available to students on E-learning interface.

Students can take a written exam on E-learning interface on the educational week on Friday from 7 pm to 8 pm. It is possible to repeat / replace the exam by priori arrangement, following the rules of Study and Exam Policy.

Other subjects concerning the border issues of the given subject (both compulsory and optional courses!).

Possible overlaps of themes:

- Cleft lip and cleft palate Pediatric surgery
- Sinus illnesses, head and neck cancers Otorhinolaryngology
- Allergy, mucosa skin diseases Dermatology, Internal Medicine
- Focal diseases Internal medicine, Dermatology, Rheumatology
- Hemorrhagic patients' care Hematology
- · Head and neck medical imaging Radiology
- Interventions in general anesthesy Anesthesiology
- Transfusion 2 week transfusion course
- Sepsis Intensive Therapy, Infectology, Microbiology
- Oncologic patients' care Oncology, Oncoradiology
- Dental, oral surgical care in elder patients Gerontology
- Injuries of teeth, maxillofacial bone and soft tissue Traumatology
- Facial pain Neutology
- Orbital diseases due to infections and traumatologic causes Traumatology, Ophthalmology
- Examination of tissue from orafacial area Pathology

Special study work required to successfully complete the course:

(E.g. field exercises, medical case analysis, test preparation, etc.) None

Requirements for participation in classes and the possibility to make up for absences:

At least 75% participation is obligatory of the practices, according to the Study and Exam Policy. The replacement of practices is available at the time of same language group by priori arrangement (respecting the students number).

Methods to assess knowledge acquisition during term time:

(E.g. homework, reports, mid-term test, end-term test, etc., the possibility of replacement and improvement of test results) During the short moduls of education there will be no exams. All through the interactive practices and consultations it is enabled to assess the students knowledge and the usage of the information which is provided, available.

Requirements for signature:

At least 75% participation.

Type of examination:

Written test exam on E-learning interface.

Requirements of the examination:

(In case of a theoretical examination, please provide the topic list; in case of a practical exam, specify the topics and the method of the exam) Written test exam on E-learning according to the practices. The study materials of practices are available for student on E-learning interface. The test questions (simple choice – 1 correct answer from 4 options) are made up by the Departments and Clinics participated in the education.

Method and type of evaluation:

(Method of calculating the final mark based on the theoretical and practical examination. How the mid-term test results are taken into account in the final mark.) Test exam.

Above 90% grade 5, 80-89% 4, 70-79% 3, 60-69% 2, under 60% 1.

How to register for the examination?:

On Neptun system.

Possibilities for exam retake:

According to the Study and Exam Policy.

Printed, electronic and online notes, textbooks, guides and literature (URL address for online material) to aid the acquisition of the material:

The study materials are available for students on E-learning interface: https://itc.semmelweis.hu/moodle/

The student can find more study materials, additional resources, notes, textbooks and literature links on the website of clinics and departments participated in education.

DERMATOLOGY

Department of Dermatology-Venerology and Dermatooncology

Head of the Department: **Dr. Miklós Sárdy** Tutor: **Dr. Béla Tóth**

Credits: 4

Lectures: 1,5 hours/week; practices: 2,5 hours/week

Objectives of the course:

Morphology, structure, physiology and general pathology of the skin. Bacterial, viral and other infections of the skin. Sexually transmitted diseases (STD). Dermatoallergology. Dermatoimmunopathology. Basics of the skin immune system (SIS). Bullous skin disorders. Psoriasis. Skin symptoms of autoimmune diseases. Skin symptoms of vascular diseases. Oncodermatology. Skin symptoms of internal diseases. Basic principles of general and topical dermatological treatment.

The goal of the training:

- a. Knowledge of diagnostics, ethiopathogenesis and treatment of skin diseases concerning the competency of general practitioners.
- b. Problem-oriented assessment of skin symptoms and the knowledge of their connections to general medicine.

1,5 hours every week. Half of the fourth year students takes the subject in the first semester, the other half in the second semester. The curriculum contains the following topics: anatomy and functions of the skin, dermatoinfectology, oncodermatology, atopic dermatitis, ekzema, drug eruptions, bullous diseases, allergic skin diseases, autoimmun skin disorders, sexually transmitted diseases.

2,5 hours every week. Half of the fourth year students takes the subject in the first semester, the other half in the second semester. Students examine patients, master the description of skin symptoms, evaluation of symptoms and dermatological treatment options.

Fungal infections are discussed during a special practice.

Important notes:

All preclinical modules are required. Registration in the Neptun system is imperative at the beginning of the semester.

Attendance of the lectures and practices is compulsory. Three absences are accepted.

Lectures are compulsory. Each student should attend the practice of one particular teacher. Attendance of a practice at another teacher is accepted for the missed practices. The deputy teacher's signature is required.

Semester requirement: One mid-term exam (written test) – around the 10th week of the semester. Optional: at the end of semester a competition for clinical examination (a written quiz with projected clinical cases) is announced. The best students are dispensed from taking the practical part of the semi-final examination.

Sign up in the Neptun system is imperative.

Evaluation: Practical part (clinical examination and discussion of one patient) and theoretical part with randomly selected three main topics compose the semi-final examination.

Exam: Semi-final examination.

Sign up and modifying exam: Via Neptun.

Absence from the exam: Only an official medical certificate is accepted within 3 working days.

PULMONOLOGY

Department of Pulmonology

Tömő str. 25-29., Budapest, Hungary 1083 http://semmelweis.hu/pulmonologia/english/

Course director: **Prof. Dr. Veronika Muller** Course tutor: **Dr. Gabor Horvath**

Subject code: AOKPUL047_1A Credits: 3 Hours: 42 hours/2-week course

Lectures (14 hours)

- Lung cancer
- Chronic obstructive pulmonary disease
- Pneumonia. Tuberculosis
- Respiratory insufficiency. Non-invasive mechanical ventilation
- Bronchial asthma
- Pulmonary rehabilitation. Smoking cessation
- Lung transplantation. Cystic fibrosis
- Pulmonary embolism
- Sleep related breathing disorders
- Chest surgery: lung cancer, pneumothorax, pleural effusion, lung transplantation

Practices (28 hours)

Practical demonstrations/laboratory visits:

- Lung function measurement laboratory techniques
- Pulmonary diagnostics
- Non-invasive ventilation methods
- Oxygen therapy methods
- Inhalation therapy methods
- Pulmonary hypertension

Interactive demonstrations/skill development:

- Bronchology/skill laboratory examinations
- Non-invasive ventilation patient care
- Allergology tests
- Sleep laboratory tools/methods
- Pulmonary rehabilitation procedures
- Chest drainage

General/specific patient examinations:

- Pulmonary dept.
- Pulmonary-oncology dept.
- Transplantation dept.
- Chest surgery dept.

Attendance: lectures and practices are compulsory. Absence hours less than 25% of total are accepted. Exam type: oral Exam sign up: Neptun system

Textbook:

Bourke SJ, Burns GP: Lecture Note: Respiratory Medicine. 9th ed. 2015. ISBN 978-1-118-65232-9

ONCOLOGY AND RECONSTRUCTIVE ONCOPLASTIC SURGERY

Department of Oncology and Department of Clinical Oncology Credits: 3 Total number of hours: 40 lecture: 14 practice: 26 seminar: 0 Course type: obligatory Academic year: 2020/21 1st semester Course code: AOKONK752_1M Name of the person in charge of the subject: Prof. Dr. Polgár Csaba

The aim and place of the teaching of the subject in the curriculum of medical education: To get acquainted with the epidemiology, etiology, biological properties, prevention (primary and secondary prevention), diagnostics and multidisciplinary therapy of cancer diseases, to acquire the complex oncological approach. To get acquainted with the modern treatment of the most common solid tumours (surgical, radiation, chemo-, hormone, immunological and biological therapy) and their results. Understanding the possibilities of oncological reconstructive and oncoplastic surgeries. Early and late side effects of oncology treatments, their possible prevention and treatment. Palliative treatment, analgesia, somatic and mental rehabilitation of oncology patients. Oncological emergencies and their treatment. Defining the role of the practitioner in the prevention, early detection of tumours and in the care and care of cancer patients.

Place of teaching the subject (address of lecture hall, seminar room, etc.):

Semmelweis University Department of Oncology, National Institute of Oncology, Budapest, 1122 Ráth György u. 7-9. Semmelweis University Department of Oncology Department of Clinical Oncology, Budapest, 1083, Tömő u. 25-29. IV. floor

Successful completion of the subject results in the acquisition of competencies: Acquisition of general oncological knowledge in 4th year medical students, based on preliminary studies, knowledge of the main etiological factors, epidemiology, early detection, diagnosis and 3 main therapeutic modalities of tumours (tumour surgery, radiotherapy, drug treatments) and the main solid tumour type treatment and rehabilitation, including mastering the basics of oncoplastic surgical solutions.

Prerequisite (s) required for the admission or acquisition of the subject: anatomy, physiology, pathology, microbiology, clinical pharmacology, translational medicine, laboratory medicine, surgery I-II, oral surgery, otolaryngology, internal medicine I.

Student headcount conditions for starting the course (minimum, maximum), method of selecting students: Based on registration in the NEPTUN system, it is 1/8 of the class

How to apply for the course: In the NEPTUN system

Detailed topics of the subject:

Classroom lectures (14 hours):

Block Day 1:

- 1. Etiology, epidemiology and biology of tumours, methods of prevention and screening. Principles of complex oncotherapy (45 minutes) (Cs. Polgár, J. Lövey, Z. Takácsi-Nagy)
- 2. Imaging diagnostics of tumours (45 minutes) (M. Gődény, P. Manninger)
- 3. Histological and molecular pathological diagnosis of tumours (Szőke J./Tóth E.)
- 4. Principles of tumour surgery, surgical reconstruction, oncoplastic options, and oncological rehabilitation options (T. Mersich, F. Oberna, Z. Mátrai)
- 5. Basics of radiotherapy and radiochemotherapy of tumours (Cs. Polgár, J. Lövey, Z. Takácsi-Nagy)
- 6. Basics of oncological drug treatments (chemo-, hormone, biological and immunotherapy) (Dank M., Rubovszky G.)

Block Day 2:

- 7. Oncotherapy of head and neck tumours (Takácsi Nagy Z.)
- 8. Oncotherapy of gastrointestinal tumours (Lövey J.)

Block Day 3:

- 9. Oncotherapy of gynecological tumours (Polgár Cs., Vízkeleti J.)
- 10. Complex treatment of breast tumours (Cs. Polgár, N. Mészáros)

Block Day 4:

- 11. Complex treatment of lung tumours (Lövey J.)
- 12. Oncotherapy of urological tumours (Ágoston P., Jorgo K.)

Block Day 5:

- 13. Treatment of central nervous system / bone and soft tissue tumours (Lövey J./Ágoston P.)
- 14. Oncological emergencies / Oncological rehabilitation and follow-up (Dank M., Szentmártoni Gy.)

Block practices (26 hours):

Block Day 1:

Tumour Diagnosis I: Cytological, Histological, Molecular Pathology Practice (2x45 minutes)

Block Day 2:

Tumour Diagnosis II: Imaging Diagnostic Practice 1. (4×x45 minutes; 1 hour mammography / UH, 1 hour CT, 1 hour MRI, 1 hour PET-CT) Tumour Radiation I: Treatment Planning Practice (2×45 minutes)

Block Day 3:

Tumour surgery (surgical practice) $(4 \times 45 \text{ minutes})$ Oncoteam practice $(2 \times 45 \text{ minutes})$

Block Day 4:

Systemic treatment of tumours I: Chemotherapy, hormone therapy (2x45 minutes) Systemic treatment of tumours II: Targeted biological and immunotherapy (2x45 minutes) Systemic treatment of tumours III: Supportation, treatment of side effects (2x45 minutes)

Block Day 5:

Radiation Treatment of Tumours II: Practice of External Radiation Treatment (2x45 minutes) Tumour radiotherapy III: Brachytherapy practice (2×45 minutes) Consultation (2×45 minutes)

Other subjects concerning the border issues of the given subject (both compulsory and optional subjects!). Possible overlaps of themes:

Urology: diagnosis and surgical treatment of urological tumours

Clinical genetics: hereditary tumours

Special study work required for successful completion of the course:

There is no such

Requirements for participation in classes and the possibility to make up for absences:

According to the study and exam regulations, 75% of the classes are compulsory

How to check the acquired knowledge during the diligence period:

During the short period of education available to us, there is no intermediate, formal examination. However, the interactive nature of the practices and consultations allow teachers to test the students' knowledge and how they use the information available to them. At least 75% participation in classes. Checking each session by keeping a catalog.

Type of exam:

Oral exam based on a pre-issued line of items.

Exam requirements:

General oncology and radiotherapy line items

- 1. Etiology of cancer
- 2. Epidemiology of cancer
- 3. Screening and early detection of tumours
- 4. Imaging methods and their role in the treatment of tumours
- 5. Imaging diagnostics of major tumour groups
- 6. Histological diagnosis of tumours
- 7. Molecular pathological diagnosis of tumours
- 8. Methods of treatment of tumours surgery
- 9. Methods of treatment of tumours radiation therapy
- 10. Methods of treating tumours medication
- 11. Physical, chemical and biological bases of radiation therapy
- 12. Basic concepts of dosimetry
- 13. Computer treatment planning, significant volumes in radiation therapy
- 14. Structure and operating principle of teletherapeutic devices
- 15. Structure and operating principle of brachytherapy devices
- 16. Brachytherapy applicators
- 17. Brachytherapy planning system, imaging devices
- 18. Interstitial brachytherapy
- 19. Image Guided Radiation
- 20. Intensity Modulated Radiation Therapy
- 21. Stereotaxic Radiotherapy and Radiosurgery
- 22. Basics of chemotherapy
- 23. Side effects of chemotherapy
- 24. Basics of simultaneous radio-chemotherapy
- 25. Basics of targeted, biological therapy
- 26. Side effects of targeted, biological therapy
- 27. Basics of immunotherapy
- 28. Side effects of immunotherapy
- 29. Basic elements of oncopharmacology
- 30. Clinical pharmacology studies in cancer
- 31. Evaluation of objective clinical response and general condition

Detailed line of oncology and radiotherapy items

- 1. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of head and neck tumours.
- 2. Radiation therapy, surgical and pharmacological treatment of head and neck tumours.
- 3. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of oesophageal tumours.
- 4. Radiation therapy, surgery and systemic treatment of oesophageal tumours.
- 5. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of gastric tumours.
- 6. Radiation therapy, surgical and pharmacological treatment of gastric tumours.
- 7. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of colorectal tumours.
- 8. Surgical and pharmacological treatment of colorectal tumours.
- 9. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of rectal tumours.
- 10. Radiation therapy, surgery and systemic treatment for rectal tumours.
- 11. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of pancreatic tumours.
- 12. Radiation therapy, surgical and pharmacological treatment of pancreatic tumours.
- 13. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of liver tumours.
- 14. Radiation therapy, surgery and systemic treatment for liver tumours.
- 15. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of cervical tumours.
- 16. Radiation therapy, surgery and systemic treatment for cervical tumours.
- 17. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of uterine tumours.
- 18. Radiation therapy, surgery and systemic treatment for uterine tumours.
- 19. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of vulvar, vaginal and ovarian tumours.

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- 20. Radiation therapy, surgery and systemic treatments for tumours of the vulva, vagina and ovaries.
- 21. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of penis, testis and kidney tumours.
- 22. Radiation therapy, surgery and systemic treatment for penile, testicular and kidney tumours.
- 23. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of prostate and bladder tumours.
- 24. Radiation therapy for prostate and bladder tumours.
- 25. Surgical and pharmacological treatment of prostate and bladder tumours.
- 26. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of lung tumours.
- 27. Radiation therapy of lung tumours.
- 28. Surgical and pharmacological treatment of lung tumours.
- 29. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of breast tumours.
- 30. Radiation therapy of breast tumours.
- 31. Surgical and pharmacological treatment of breast tumours.
- 32. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of central nervous system tumours.
- 33. Radiation therapy of central nervous system tumours.
- 34. Surgical and pharmacological treatment of central nervous system tumours.
- 35. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of bone tumours.
- 36. Radiation therapy, surgical and pharmacological treatment of bone tumours.
- 37. Epidemiology, etiology, histology, staging, symptoms and pre-treatment examination of soft tissue tumours.
- 38. Radiation therapy, surgery and medication for soft tissue tumours.
- 39. Oncological emergencies.
- 40. Radiation treatment of distant metastases and oncological rehabilitation.
- 41. Principles of the possibilities of reconstructive plastic surgery.
- 42. Oncoplastic surgery for head and neck tumours.
- 43. Oncoplastic surgery for breast tumours.

Method and type of rating:

Activity during the block (20%) + oral exam (80%) Marks: Excellent above 90%, good 80-89%, satisfactory 70-79%, pass 60-69%, fail 60%

How to apply for the exam:

Students apply for the exam exclusively with the help of the NEPTUN unified study system according to the regulations described in the TVSZ (Study and Examination Regulations-SER).

Options for retaking the exam:

According to the Study and Examination Regulations (SER)

Printed, electronic and online notes, textbooks, aids and literature (html title in case of online material) can be used to acquire the study material:

Curriculum: University Note on Oncology and Radiation Therapy (Ed .: Csaba Polgár):

- in Hungarian, English and German in the form of an electronic note
- in Hungarian in print (Semmelweis Publishing House, Budapest, 2018)

Recommended reading:

Basics of oncology (Ed .: Miklós Kásler), university textbook (2nd edition Medicina Könyvkiadó Zrt., Budapest, 2018

ORTHOPEDICS

Tutor: Dr. Gergely Holnapy

Lectures

- Subject of Orthopedic Education. Organization.
- Orthopedic care in Hungary. Possibilities of prophylaxis.
- Inflammatory diseases in orthopaedics.
- Anatomy and biomechanics of the spine. Mai posture.
- Scheuermann's disease. Vertebra plana, Calve.
- Scoliosis. Theories concerning the etiology of various kinds of scoliosis. Pathological, clinical and radiological symptoms and appearance. Symptomatology and therapy of the functional scoliosis. Symptoms and therapy of scoliosis with recognized etiology (congenital, paralytic, rachitic).
- Degenerative diseases of the spine. Etiology of low back pain, clinical symptoms, therapy. Low back of disc origin. Significance of the intervertebral discs under normal and pathological conditions. Symptomatology of the ischias syndrome and its therapy.
- Spondylolysis and spondylolisthesis. Lumbalization and Sacralization.
- Deformities and diseases of the neck and the upper extremity.
- Congenital torticollis, Klippel-Feil deformity. Cervical rib. Sprengel deformity.
- Obstetricalisparalysis. Recurrent dislocation of the shoulder. Cervicobrachial syndrome.
- Periarthritis of the shoulder. Dupuytren contracture. Kienböck disease. Tennis elbow.
- Madelung deformity. Sudeck dystrophy of the upper extremity.
- Osteoarthritis of the hip. Etiology, pathology, clinical and radiological symptoms.
- Methods of conservative and operative Treatment.
- Diseases of the child's hip. Legg-Perthes-Calve disease. Slipped capital femoral
- epiphysis. Acute and chronic arthritis of the hip.
- Congenital dislocation of the hip. Anatomy and development of the hip joint. Concept of dysplasia. Subluxation and luxation. Pathology. Early and late clinical and X-ray signs. Early and late conservative therapy. Various methods of operative treatment. Palliative operation.
- Diseases of the knee. Recurrent dislocation of the patella.
- Osteochondritis of the tibial tubercle (Osgood-Schlatter disease). Ostechondrosis of the tibia. Varus, valgus and hyperextension deformity. Osteoarthritis. Chondromalacia of the patella. Meniscus lesions.
- Diseases of the foot. Congenital clubfoot. Tarsal synostosis. Hallux valgus. Aseptic
- necrosis of the bones of the foot. Osteoarthritis of the joints of the foot. Flatfoot.
- Neuromuscular diseases. Classification and treatment. Infantile cerebral palsy. Disturbances of the development of the vertebral body and neural arch. Muscular defects. Progressive muscular dystrophy and other diseases of the muscles.
- Primary tumors of bones and their classification. Benign bone tumors. Osteoid osteoma. Semimalignant and malignant tumors (giant cell tumor, chondroma, osteosarcoma, chondrosarcoma, multiple myeloma, Ewing sarcoma). Main pathologic features... '
- Bone disorders. Osteoporosis, osteomalacia, osteogenesis imperfecta, Paget disease.
- Developmental anomalies. Congenital anomalies of the extremities.

Consultation.

Practices

- Instruction of correct behaviour in the Hospital and during practicals. Introduction to the Hospital. Therapeutic aims of Orthopedics. Methods of the clinical practicals.
- Methodology of learning Orthopedics.
- Diagnostic and therapeutic methods of Orthopedics. Anamnesis. Inspection, palpation, examination of motions.
- Basics of radiological examination of the musculoskeleta! system. Normal Roentgen anatomy of the bones and joints. Form and function. Methods of examination of limb shortening and alterations of the forms. Contracture. Limping.
- Fixation, relief of weight bearing, plaster splints, plaster bandages. Examination of patients. Examination of the diseases and deformities of the spine, malposture (Calves deformity, spondylarthrosis).

- Preparation of plaster splints, bandages. Examination of patients with lumbago, ischias syndrome, spondylolysis, spondylolisthesis.
 Demonstration of Roentgenograms.
- Examination of scoliotic patients. Preparation of plaster and other corsets.
- Examination of patients. Tuberculous spondylitis. Demonstration of Roentgenograms.
- Preparation of plaster beds.
- Examination of patients with congenital dislocation of the hip. Early and late symptoms of this disease. Demonstration of Roentgenograms.
- Examination of patients with congenital dislocation of the hip. Demonstration of the means and methods of therapy and their application.
- Examination of patients with juvenile osteochondritis of the hip. Epiphyseolysis.
- Infantile coxa vara. Demonstration of Roentgenograms and methods of treatment.
- Preparation of hip spica.
- Examination of patients with osteoarthritis of the hip. Examination of contractures of the hip. Demonstration of Roentgenograms.
- Examination of patients with recurrent dislocation of the patella, Osteoarthritis, tuberculous arthritis of the knee. Punction of the knee joint. Methods of fixation of this joint, preparation of plaster bandage.
- Examination of patients with diseases and deformations of the neck, upper extremity. Torticollis, cervicobrachial syndrome, periarthritis
 of the shoulder, tuberculosis of the shoulder joint. Demonstration of Roentgenograms. Application of the methods of hand and arm
 fixation.
- Examination of patients with congenital clubfoot and flatfoot. Therapy. Application of the methods of foot and lower leg fixation.
- Demonstration of the methods of gymnastics and physiotherapy.
- The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester.
- Exam: Practical exam at the time of last practice.
- Semester Closing exam registration has to be done through the NEPTUN system for the days set by the department up to the limits.
- Students have to fill -during semester- the trial test on Semmelweis University's e-learning system. Modifying of exam dates through the NEPTUN system, as it allows.
- Semester Closing exam is a written test. The material for examination is based on the lectures.
- Test results of exam are available within one day.

MEDICAL IMAGING

Department of Radiology

www.semmelweis.hu/radiologia Tutor: Dávid László Tárnoki MD, PhD associate professor

Course Director: Prof. Dr. Viktor Bérczi med. habil. PhD, department chair

Lectures (1 hour) Practices (2 hours) Credit: 3

Course topics (order of lectures could change)

Clinical importance of imaging modalities: X-ray, CT, US. Abdominal imaging. Cardiovascular imaging. Chest imaging. Urogenital radiology. Musculoskeletal imaging. Neuroradiology & MR principles. Head and neck imaging. Oncologic imaging. Pediatric imaging. Emergency radiology.

Vascular interventions. Non-vascular interventions. Breast imaging. Radiation biology, Radiation protection. Nuclear Medicine, Molecular imaging. Artificial intellingence in imaging. Radiogenomics.

Practices

Demonstration of imaging methods. Clinical radiology by interactive case reviews. Ultrasound practice (skill centre). Consultation. (Must-see-images: image collection on our website)

Useful and update information about the Institute and the subject can be found at home page: www.semmelweis.hu/radiologia.

LABORATORY MEDICINE

Department of Laboratory Medicine

Address H-1089 Budapest, Nagyvárad sq 4. Floor XIV Phone +36-1-210-0278 ext: 56318

Acting Directors

General: **Prof. Barna VÁSÁRHELYI MD., PhD., DSc.** (vasarhelyi.barna@med.semmelweis-univ.hu) Education: **Prof. Antal SZABÓ PhD., DSc.** (szabo.antal@med.semmelweis-univ.hu)

Background

The Department of Laboratory Medicine was founded in 2010 with missions on the following areas:

Education. The main goal is the introduction of basic principles of Laboratory Medicine to graduate medical students. The Department also provides post-graduate education for health-care specialists including physicians and clinical biochemists.

Diagnostics. It coordinates laboratory tests at the majority of University and provides professional support for clinical decision making. Research. The Department actively participates in research studies involving laboratory tests; it also manages research projects of its own. The Department manages its own PhD program.

Education

The Laboratory Medicine curriculum is based on knowledge acquired during studies of Pathophysiology and Clinical Laboratory Diagnostic obtained during the third year. The major goal is to present some approach and diagnostic algorithms that are required for efficient test ordering and evaluation of lab test results. As part of education the students obtain information regarding:

the procedure that generates laboratory test results (from test ordering to laboratory reports)

laboratory tests needed to establish a diagnosis

the major aspects that the medical doctors should take into account when they evaluate a laboratory report

novel techniques used in general laboratory (with their drawbacks and benefits).

Classroom lectures "Laboratory Medicine" for 4th year medical students

The participation in the tuition is obligatory.

The digital slides are available for the students via our website (www.labmed.usn.hu).

The participation on lectures is highly recommended, since the exam is partly based on them.

The topics of the lectures include the elements of general and practical clinical laboratory.

The areas to be covered by the planned lectures:

- 1. Introduction in Laboratory Medicine (Specimen collection and processing. Preanalytical variables. To identify the major factors interfering with laboratory tests. Establishment and use of reference values/intervals.)
- 2. Concepts in Laboratory Medicine (Interpretation of laboratory test results: sensitivity and specificity of a laboratory test, predictive values. Quality control, quality assurance in clinical laboratories.)
- 3. Laboratory investigations of hematology diseases. (To understand the basic principles of modern hematology analyzers in clinical laboratories.)
- 4. Laboratory investigations of hemostatic disorders. (Identify the appropriate laboratory tests for evaluation of the bleeding patient and the thrombotic patient.)
- 5. Laboratory investigations of inflammation and tissue damage. (To understand how cell injury and inflammation can be tracked through plasma markers.)
- 6. Immunological investigations in laboratory medicine. (Learn the diagnostic tests required to the assessment of autoimmune disorders.)
- 7. Laboratory enzyme diagnostics

- 8. Endocrine investigations in laboratory medicine (Understand the laboratory tests used in the diagnosis of the more commonly encountered endocrine disorders.)
- 9. Molecular genetics investigation in laboratory medicine
- 10. **Therapeutic drug monitoring** (To learn when therapeutic drug monitoring is required and how it is performed for commonly monitored drugs. To identify the common drugs of abuse and learn how they are detected.)
- 11. Laboratory investigations of tumor markers
- 12. Laboratory investigations of cerebrospinal fluid and ascites, pleural fluid
- 13. To learn the laboratory tests used near patients (Point of care testing)
- 14. To learn the rationale for selection of laboratory tests in pediatrics including neonatal screening programs.

We provide consultation and laboratory visit during the semester.

Exam

The exam is a written test.

The material for examination is based on the lectures. The questions are prepared by lectures.

The exam consists of 50 questions. The students have 60 minutes for writing test.

The test questions include simple choice (one correct answer out of 4 or 5 options).

Test results of exam are available within one day.

Evaluation:

0-60% = 1 (Failed) 61-70% = 2 71-80% = 3 81-90% = 491-100% = 5

Exam dates: You will be notified about the dates offered by the Department before the exam period and they will be finalized at the Staff-Student meeting.

Taking examination before the exam period is not allowed.

The sign up procedure is controlled and regulated by the NEPTUN software and the Department cannot interfere with system. The officially signed up student will be scheduled for examination. The list of examinees is completed 2 days before the date of exam; then NEPTUN system automatically closes the sign up list.

Diagnostic profile of the Department

The Central Laboratory at Semmelweis University forms the basis of the Department. It performs more than 400 different tests in the field of clinical chemistry, hematology, hemostasis, serology, endocrinology, therapeutic drug level monitoring and clinical microbiology with an annual number over 3 million. The laboratory is classified as FJ-3 meaning that it provides a 24 hour service for 7 days a week. Laboratory reports are provided through GLIMS lab informatics system integrated to eMedSolution.

Research at the Department

Laboratory tests are performed in the majority of clinical studies and drug research. In order to use the results more efficiently the colleague who is directly involved in performing the lab tests also participates in study design and evaluation. Therefore, clinical laboratories at the University are active partners of researchers and medical doctors. The major research profile of the Institute is to characterize specific patterns of biomarkers predictive for specific disorders. Characteristic examples are the determination of immune phenotype and analysis of kinetic alteration of intracellular analytes with flow cytometry, measurement of cytokine levels with biochips, genomic analyses (genotyping and gene expression arrays). These instruments and the professional knowledge are also available for research purposes. Medical students are welcome to do research in any of the fields listed above.

Useful and update information about the Institute and the subject of Laboratory Medicine can be found at home page: Semmelweis.hu/ laboratorium

EMERGENCY MEDICINE and OXYOLOGY

Dept. of Anesthesiology and Intensive Therapy

Division of Emergency Medicine and Oxyology

Tutor: Peter Vass MD, (Tel: +36 1 459-1500/62037, 62038, E-mail: seemgrad@gmail.com)

Compulsory subject: Emergency Medicine and Oxyology (EMO)- program and topics

2 credits

Lectures	Remarks
Pictures and sounds from the 20th century – birth of a new phylosophy of pa- tient care. How do we err? Importance of communication in acute medicine	Historical perspectives, approach and emphasis. SBAR principles. Patient pathways.
Pain syndromes. As long as it hurts you know that you are alive.	Headache, chest and abdominal pain, backpain. The basics of pain management.
Environmental accidents.	Electrocution, drowning, near-drowning, heat exhaustion, heat stroke, hypo- thermia. What to do on the scene and in the ED.
Group of symptoms in emergency	Dyspnoe, vertigo, syncope, nausea and vomiting, diarrhoea, weakness. Allergic reactions.
Prehospital emergency services as integral parts of emergency care.	First aid, primary emegency systems, levels of rescue, connection of ambu- lance with hospital care.
Perfuse it or lose it.	Things you've missed from pathophys but will surprise you in acute situations.
Emergency cardiac care. From the sliding door to the PCI.	Syncope, heart failure, ACS.
Acute neurological deficit. Time is brain.	Stroke, altered mental states, convulsions.
Paediatric emergencies. The same but downsized?	The most requent emergency situations in kids. Special view of paediatric emergency care.
The severely injured patient. The future: Die Hard 6.	Trauma, burns, compartment syndromes.Integration, teamwork, damage control.
Massive bleeding. The dynamic approach of coagulopathies.	How to deal with bleeding patients?
Toxicology. Alle Ding sind Gift-any stuff is a poison. Two steps above earth.	Toxidromes. Aspecific and specific care. Substances of abuse.
Fever, infections, sepsis. "Blood poisoning" in the 20th century.	Severe heat imbalance, the emergency aspects of sepsis.

Types of practices in Emergency Medicine - Oxyology:

OMV-OV-NOT-Compulsory: (2x45 min) The basic rules of treatment of a critical ill patient during simulation. Basic airway skills during simulation. Oxygen therapy workshop. IV access or alternative ways in critical ill patient during simulation. **OMV-M-RF-1-NOT-Compulsory** (2x45 Min): Monitorising, basics of red flag treatment and team skills. Diagnostic and therapeutic approach of critical ill patient with basic technical and non technical skills. Basic monitorising technics in treatment of emergency patient during simulation. Presentation and practice during simulations of non-technical skills to make teamwork better. Team member non-technical skills presentation and practice during simulations.

OMV-M-RF-2-NOT-Compulsory (2x45 Min): Monitorising, basics of red flag treatment and team skills. Diagnostic and therapeutic approach of critical ill patient with basic technical and non technical skills. Basic monitorising technics in treatment of emergency patient during simulation. Presentation and practice during simulations of non-technical skills to make teamwork better. Team member non-technical skills presentation and practice during simulations.

PBL-SBAR-Compulsory: Problem Based Learning SBAR communication practice (2x45 min) Acquaintance and practice of SBAR-communication method in emergency situations. Communication with patient and relatives in critical situations and during end of life care procedure. Communication practice between dispatch and HCP on the scene.

PBL-Triage-Compulsory: Problem Based Learning – Priorisation practice (2x45 min) Basic technics to solve different problems, with priorisation techniques and the usefulness of different early warning scores. How to organize and prioritize to maintain Patient safety.

4 hour ER rotation compulsory (4x45 Min): 4 hour rotation at an Emergency Unit Practices. Structure and operation of the Emergency Room/Unit, examination, triage and management of the patients, debriefing of the cases. Examination of emergency patient. Decision making in practice. Make a plan for patient route. Planning and management of diagnostic for emergency patient. PoCT. Planning of treatment of emergency patient. Communication with help of SBAR. Basics of PoCT. Pearls of BGA.

4 hour ER rotation NOT-compulsory: 4 hour rotation at an Emergency Unit Practices (4×45 Min) Structure and operation of the Emergency Room/Unit, examination, triage and management of the patients, debriefing of the cases. Examination of emergency patient. Decision making in practice. Make a plan for patient route. Planning and management of diagnostic for emergency patient. PoCT. Planning of treatment of emergency patient. Communication with help of SBAR.

MEDICAL ETHICS

Institute of Behavioral Sciences

Tutor: Prof. Dr. József Kovács

Course Syllabus.

Course objectives:

- a) To enable students to recognize ethical issues when encountered in everyday clinical practice and research
- b) To provide students with a conceptual-logical system, which helps them to address ethical questions and to resolve ethical dilemmas in an efficient way
- c) To introduce students to a body of knowledge, which helps them to understand, respect and protect the rights of patients research subjects and fellow health care professionals
- d) To help the would be health care professional to understand the responsibility of the individual, of the health care system and of the society as a whole in maintaining health

Topics:

- 1. week Principles of Medical Ethics
- 2. week Informed Consent I.
- 3. week Competence and Capacity to Make Health Care Decisions
- 4. week Infomed Consent II. (Orsolya Peter)
- 5. week Information Disclosure to Terminally III Patients. Telling the Truth to Patients
- 6. week Confidentiality and Medical Records. Reportable Illnesses, HIV-Related Issues, Sexually Transmitted Diseases (STDs)
- 7. week Reproductive Issues
- 8. week End of Life Issues
- 9. week Organ and Tissue Transplantation
- 10. week The Rights of Patients
- 11. week Malpractice
- 12. week Doctor-Patient, Doctor-Doctor Relationship
- 13. week Doctor and Society
- 14. week Ethical Questions of Human Research

Course Faculty:

Prof. József Kovács, MD, PhD, (Head of the Department), 210-2930/56123; Imre Szebik, MD, PhD: (Room 1914) (Tel: +36-20-824-3195)

Secretary: Jozefa Barreto

Department:

Institute of Behavioral Sciences Department of Bioethics NET Budilding, 19th, 20th floor 1089. Budapest, Nagyvárad tér 4. Tel: 210-2953 Secretary: NET Building, 20th floor, Room-2005

List of questions

- 1. Deontological theories of ethics.
- 2. Utilitarian theories of ethics.
- 3. Kant and the categorical imperative
- 4. Virtue ethics
- 5. The principles of medical ethics
- 6. Justice and medical ethics: the allocation of scarce medical resources.
- 7. Paternalism in medical practice
- 8. Informed consent
- 9. Information disclosure for terminally ill patients
- 10. Advance Directives
- 11. Surrogate and Substitute Decisions
- 12. Medical confidentiality
- 13. Experimentation on human subjects
- 14. Objection to Transplantation of Organs and Counterarguments
- 15. Ethical problems of live organ donation
- 16. Organ donation from brain-dead donors: the system of donor cards.
- 17. Organ donation form brain-dead donors: presumed consent
- 18. Stages of Dying
- 19. No-Code Decisions
- 20. Withholding Fluids and Nutrition in terminally ill patients
- 21. Active and Passive Euthanasia
- 22. Withdrawing and withholding life sustaining treatment.

Textbook:

Conrad Fischer—Caterina Oneto (2016): Medical Ethics fot the Boards. (Third edition) New York: McGraw-Hill Education. ISBN: 978-1-259-64121-3 MHID 1-25-964121-X

Important:

To participate on at least 75% of the total number of lessons is a prerequisite of getting the signature. Doctor's certificate is required to justify absence from the lessons and the exam.

Exam type: semi-final

Sign up for the exam: through the Neptun system.

PHARMACOLOGY AND PHARMACOTHERAPY

Tutor: Dr. Pál Riba

Department of Pharmacology and Pharmacotherapy

Total credits: 10 Course Director: Dr. Ferdinandy Péter

Thematics:

Pharmacology and Pharmacotherapy (two semesters)

Topics of Pharmacology and Pharmacotherapy I:

- Introduction into the Pharmacology (history of pharmacology, pharmacogenomics, general principles of toxicology). General Principles
 of Pharmacodynamics (drug receptors, signaling mechanisms and drug action, pharmacodynamic principles, dose-response curves
 and quantal dose-effect curves, therapeutic index, tolerance).
- 2. Pharmacokinetics (drug absorption, distribution, elimination). Clinical pharmacokinetic principles Drug interactions
- 3. Development and Regulation of Drugs (clinical trials: phase I. II. III. IV.). Evidence Based Medicine (ethic disciplines, role of placebo in clinical trials). Pharmacovigilance (reports on adverse events and reactions). Registration of Drugs. ATC code. Biological Drugs. Orphan Drugs. Generic products, biosimilar products. Drug formulations. Prescription writing.
- 4. Introduction to the Neurotransmission (central and autonomic system). General Anesthetics
- 5. Pharmacology of Cholinergic Transmission. Skeletal Muscle Relaxants. Local Anesthetics.
- 6. Pharmacology of Adrenergic Transmission (sympathomimetic drugs). Pharmacotherapy of COPD. Drugs Used in Bronchial Asthma. Antitussive Drugs. Expectorants. Pharmacotherapy of Asthma.
- 7. Pharmacology of Adrenergic Transmission (sympatholytics drugs). Antipsychotics.
- 8. Sedative-hypnotic and Anxiolytic Drugs.
- 9. Antidepressants and Mood-stabilizing Agents. Antiseizure Drugs.
- 10. Treatment Strategy of Psychiatric/Neurological Disorders. Pharmacological Management of Neurodegenerative Disorders. Nootropic Drugs. Centrally Acting Skeletal Muscle Relaxants (spasmolytics).
- 11. Antiviral Agents. Pharmacotherapy of Viral Infection
- 12. Pharmacotherapy of Bacterial Infections. Cell Wall- and Membrane Active Antibiotics.
- 13. Pharmacotherapy of Bacterial Infections. Antibiotics Inhibiting the Protein- and Nucleic Acid Synthesis. Miscellaneous Other Antibiotics.
- 14. Antifungal and Antiprotozoal Agents. Drugs against pathogen insects. Disinfectants. Antiseptics.

Topic of Pharmacology and Pharmacotherapy II:

- 1. Drugs Used in Coagulation Disorders. Agents Used in Cardiac Arrhythmias
- 2. Drugs Used in Angina Pectoris. Antihyperlipidemic Agents. Diuretics and antidiuretics.
- 3. Drugs Used in Heart Failure. Antihypertensive Agents.
- 4. Treatment Strategy of Cardiac Failure. Treatments Strategy of Ischemic Heart Disease. Drugs Used in Peripheral Vascular Diseases. Agents Used in Anemias.
- 5. Pancreatic Hormones and Antidiabetic Drugs. Hypothalamic and Pituitary Hormones. Adrenocorticosteroids and Adrenocortical Antagonists. Thyroid and Antithyroid Drugs. The Gonadal Hormones and Inhibitors. Hormonal contraception.
- 6. Treatment Strategy of Hypertension. Metabolic Syndrome. Treatment Strategy of DM Type II.
- 7. Basic Pharmacology of Inflammation and Fever. Non-opioid Analgesics. Non-steroid Anti-inflammatory Drugs. Drugs Used in Gout. Agents that Affect Bone Mineral Homeostasis. Treatment Strategy of Osteoporosis.
- 8. Basic Pharmacology of Opioid Analgesics. Drugs of Abuse. Drugs Acting on Smooth Muscles. Autacoids. Agents Affecting the Function of Uterus. Drugs Used for Treatment of Migraine and Cluster.
- 9. Treatment Strategy of Pain. Agents Acting via the Opioid Receptors. Adjuvant analgesics.
- 10. Immunopharmacology (immunosuppressive and immunomodulatory agents). Treatment Strategy of Rheumatoid Arthritis. Pharmacology of Nutrition (appetizers, agents improving digestion, prokinetic drugs). Laxatives and Antidiarrheal Drugs. Drugs Affecting the Liver and the Biliary Function. Vitamins, antioxidants, dietary supplements, traditional plant medicines.

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- 11. Pharmacology of the Gastrointestinal System (agents for treatment of peptic ulcer, gastroesophageal reflux disease (GERD), irritable bowel syndrome and inflammatory bowel diseases (IBD)). Emetics and Antiemetics. Treatment strategy of peptic ulcer, GERD and IBD.
- 12. Cytotxic and cytostatic anticancer drugs, other agents used within the frame of cancer chemotherapy. Treatment strategy of cancer. General and Detailed Toxicology.
- 13. Pharmacokinetic Differences and Variations in Drug Responsiveness according to Age or State of Health. Factors Affecting the Drugbody Interaction. Drug Treatment in Pregnancy.
- 14. Pharmacological Aspects of Emergency Medicine..

Maximum number of absences is 25 percent of the number of practices in the semester.

Certifying absence from the lesson:

Medical certificate is accepted

In each semester two written midterms are arranged (in both semesters on the 6^{th} and 10^{th} week). The results of the midterm exams influence the marks of the semifinal and final exam. The topics of the midterms are the material discussed from the beginning of the semester or after the previous midterm.

The number of absences must not be more than 25 percent of the number of practices in the semester.

Grading: Written test: according to the scores. The semi-final exam is oral. If the result of both midterms in the first semester reaches 80% the student will be offered a third, oral midterm. According to the student's knowledge in the 3rd midterm we can offer either 4 or 5 as the result of the semifinal exam in the last week of the first study period.

Final exam consists of three parts. The grade will be decided after the oral part of the exam (three questions), taken into consideration the results of the preceding two parts (see below).

Exam type:

1st semester. Semi-final, oral **2nd semester.** Final exam has three parts. **1**. Preceding exam from toxicology. **2**. Written test from clinical pharmacology. **3**. Oral exam.

Exam sign up:

Registration has to be done through the NEPTUN system for the days set by the department up to the limits.

Modifying: Through the NEPTUN system, as it allows

Certifying absence from the exam:

Medical certificate is accepted.

Literature:

- 1 Basic and Clinical Pharmacology (Eds. B. G. Katzung, A. J. Trevor), 13th edition, McGraw-Hill Education, 2015. ISBN 978-1-25-925290
- 2 Materials discussed during lectures and seminars.

FAMILY MEDICINE

Tutor : Péter Torzsa MD Tel: 355-8530, e-mail: torzsa.peter@med.semmelweis-univ.hu Lectures Exam: Test exam

Minimum/maximum group size: 55/210

Key elements of these seminars include:

- The structure and functioning of the Hungarian Primary Health Care System. Activity of the general practitioners.
- The ranges of normality as they will assist in recognizing and anticipating deviations from normal and the earliest manifestations of disease
- Quick diagnoses. Applying the best available evidence in investigations and and management of common family medicine conditions.
- The different roles of the physician and awareness of their own personal strengths and weaknesses and how it affects the Patient-Doctor relationship.
- The appropriate selection and use of screening methods for the early detection of disease. The principles of preventative care and methods to implement appropriate screening and patient education programs
- Assessing patients' illness experience within their family and social context
- Learn to manage in-hospital urgent and emergency situations in primary care.
- Management/treatment approaches of commonly presenting conditions
- Rural medicine
- Arrangement for the 1 week practice (rotation)

PHYSICAL EDUCATION VII-VIII.

Practice: 1 hour per week

ELECTIVE SUBJECTS

Detailed programs see in the 5th year Study Program of Medicine!

SUMMER (SURGERY) PRACTICE

Credit point: 1 Total hours: practical: 160 Type of course: compulsory Responsible for course: Dr. László Harsányi Workplace, contact details: 1st Department of Surgery, phone: +36-1-333-5343 Position: university professor, director Date and number of habilitation: 09/Jun/2011, 319.

Aim of the course, its position in the medical curriculum:

The main aim of the fourth semester surgery practical is introduction to the general symptomology, diagnostics, and specifics of therapeutic decisions of surgical conditions. In addition to the basics of surgery, students learn about surgical conditions of the organ systems, their diagnosis and surgical treatment. Our primary task is to teach an approach of cooperation with accompanying specialities, we guide students through the process of outpatient specialist treatment through surgery to postoperative care.

Acquired competences after successfully completing the course:

Education of surgery starts in the 4th year, and it embraces the whole curriculum until the 4th year comprehensive surgery exam, providing the framework of clinical training. During this time our main goal is to blend the knowledge provided by theoretical courses and accompanying clinical specialities with the surgical approach and decision making.

Prerequisite(s) for admission to the course:

- According to the Study and Examination Policy.
- Student enrolment requirements (minimum, maximum), method of student selection:
- Based on registration in the Neptun system.

How to apply for course:

In Neptun system

Detailed syllabus:

The surgery summer practical, based on "block" syllabus education for the 4th year, provides practical knowledge involving students in daily patient care.

Recommended practical activities:

- Examination of acute surgical patient
- Examination of elective surgical patient
- Wound care
- Participation in the work of the surgical outpatient clinic
- Surgery assistance
- Surgery administration
- Postoperative care, medication

Cross-border issues of the given course related to other courses (compulsory and elective). Possible overlaps in curriculum:

- internal medicine gastroenterology, endocrinology
- oncology
- anaesthesiology and intensive therapy
- radiology

Special study work required to complete the course:

none

Requirements for participation in classes and opportunities to make up for absences:

There is an attendance register for the practical and lectures.

According to Chapter 3, Section 17 § 7 of the Organisational and Operational Rules of the Semmelweis University, attendance at min. 75-75% of lectures and practices is compulsory

Further general information on attendance at lectures and practical can be found in the Studies and Exams Code (Section 17 § 7; 8) of the Semmelweis University.

Examination of acquired knowledge during term:

There is no intermediate exam during the short practical time. The interactive features of the practical and consultations provide an opportunity to continuously assess students' knowledge.

The criteria for end-of-term signatures:

Attendance at min. 75% of classes.

Type of exam:

Practical exam based on previously defined syllabus

Exam requirements:

Practical exam items:

Knowledge of the below exam items will be tested based on information acquired from literature and practical:

- 1. What is vital indication?
- 2. How can free abdominal air be detected by means of percussion?
- 3. What are the most common complications of thyroid surgery?
- 4. What is a fundoplication?
- 5. What can cause dysphagia?
- 6. With what tissue can the oesophagus be replaced?
- 7. Draw the Billroth's gastric resections.
- 8. List the blood supplying vessels of the stomach.
- 9. Draw/describe the Calot's triangle.
- 10. What are the 3 main signs of cholangitis, what is the name of the triad?
- 11. What are the surgical indications of a benign liver tumour?
- 12. What are the blood supplying vessels of the liver?
- 13. What imaging diagnostic(s) is necessary to diagnose a liver tumour?
- 14. What are the pillars of the diagnosis of acute pancreatitis?
- 15. Name the typical symptoms of chronic pancreatitis.
- 16. Which laboratory parameter indicates obstructive jaundice?
- 17. What is the Courvoisier sign? What is the Murphy sign?
- 18. With which surgical process can a caecal tumour be removed?
- 19. Why is "short" bowel resection the aim in case of a Morbus Crohn?
- 20. When is a rectum extirpation performed?
- 21. What is an indirect inguinal hernia?
- 22. Which is the most common benign breast tumour?
- 23. What is a sentinel lymph node?
- 24. What is a Hartmann surgery?

- 25. What is an R0 resection?
- 26. Name 3 precancerous signs in surgery.
- 27. What is a neoadjuvant therapy?
- 28. What is pseudomembranous colitis?
- 29. When is nasojejunal feeding applied?
- 30. Where is the McBurney's point?
- 31. What are the indirect signs of acute appendicitis?
- 32. List the conditions of wound healing.
- 33. Define the phases of wound healing in chronological order.
- 34. How can nosocomial infections be prevented?
- 35. What is the difference between an abscess and a phlegmon?
- 36. List the inflammatory conditions (min. 3) of the skin and cutaneous annexes.
- 37. What is a relative indication?
- 38. What is the difference between a curable and a resectable case/tumour?
- 39. How is a bite wound and a gunshot wound to be treated?
- 40. What is the LES?
- 41. What is diastasis recti?
- 42. What are (surgical) complications of peptic ulcers?
- 43. What is the surgical relevance of a Meckel's diverticulum?
- 44. What are surgical indications in inflammatory bowel diseases?
- 45. Which perianal diseases are emergency surgical conditions?
- 46. What vaccination is necessary in case of a planned splenectomy?
- 47. What causes haematemesis?
- 48. What causes haematochezia?
- 49. What are the 3 groups of ileuses based on aetiology?
- 50. Which is more critical, urgent: ileus of the small or large intestine?

Method and type of class marks:

Practical test of one exam item

How to apply for the exam:

In Neptun system

Opportunity to repeat the exam:

As described in the Study and Examination Policy

The list of printed, electronic and online notes, textbooks, study aids and literature to be used to learn the curriculum (in case of online sources, html address):

Sebészet Horváth, Örs Péter - Oláh, Attila (editors) Sebészet (10th edition) Gaál, Csaba (editor) Sebészeti műtéttan Boros, Mihály (editor) Littmann Sebészeti műtéttan Horváth, Örs Péter - Kiss, János

CLINICAL MODULE



Faculty of Medicine 5th year

STUDY PROGRAMME

Fifth Year in the 2020/2021 academic year

4th and 5th Years (7th-10th semesters)

Teaching is done in "clean" blocks: Theory + Practice + Exam. (Practices are taught by "shadowing") The time span of each block depends on the credit value of the subjects: 1 to 5 weeks For example: based on a subject of 2 credits:

- 2 credits × 14 lessons = 28 lessons (1 semester consists of 14 weeks. The number of credits are equal with the lessons in a week)
- Education is provided as 8 lessons in a day: 4 days x 8 lessons = 32 lessons
- the training and the exam must be completed in 2 weeks
- approx. 40 students will be trained by providing 4 days of training and 2 days of exams within 10 working days.

9th and 10th semester

	hours				
course name	lecture (h/week)	pratice (h/week)	credit	prerequisite(s)	examination
Internal Medicine (Hematology, Infectology, Immunology, Rheumatology)	2	5,5	7	Internal Medicine I., Laboratory Medicine, Medical Imaging	semi-final
Forensic Medicine	1	1,5	2	Pathology II., Genetics and Genomics, Pharmacology II.	semi-final
Obstetrics and Gynecology	2	4	6	Pharmacology II., Medical Imaging, Surgery I-II.	semi-final
Pediatrics	2	6	8	Internal Medicine I., Laboratory Medicine, Medical Imaging	semi-final
Urology	1	2	3	Pharmacology II., Surgery I-II.	semi-final
Anesthesiology and Intensive Therapy	1,5	2,5	4	Internal Medicine I., Pharmacology II.	semi-final
Ophthalmology	1,5	2,5	4	Pharmacology II., Medical Imaging, Surgery I-II.	semi-final
Neurology and Neurosurgery	2	4,5	6	Internal Medicine I., Medical Imaging	semi-final
Psychiatry and Psychotherapy	2	4	6	Pharmacology II.	semi-final
Sports Medicine	0	2	2	Internal Medicine I., Cardiology, Cardiac Surgery, Angiology, Vascular Surgery	semi-final
Clinical Genetics	0	1,2	2	Pharmacology II., Genetics and Genomics, Pathology II.	semi-final

	hours				
course name	lecture (h/week)	pratice (h/week)	credit	prerequisite(s)	examination
Medical Rehabilitation	0	2	2	Cardiology, Cardiac Surgery, Angiology, Vascular Surgery, Orthopedics	semi-final
Public Health	3	4	7	Cardiology, Cardiac Surgery, Angiology, Vascular Surgery Oncology and Plastic Surgery, Medical Statistics, Informatics	semi-final
PE IX.	0	1	0	PE VIII.	signature
PE X.	0	1	0	PE IX.	signature

LIST OF TEXTBOOKS (The list may change!)

- 1 William W. Hay, Jr., Myron J. Levin, Robin R. Deterding, Mark J. Abzug: Current Diagnosis & Treatment Pediatrics. 23rd edition, Lange, 2016. ISBN: 978-0071848541
- 2 Lecture Notes of Forensioc Medicine Ed. by Péter Sótonyi, Éva Keller, Semmelweis Publisher, 2008.
- 3 Knight's Forensic Pathology. 3rd ed. 2004. Arnold.
- 4 Kaplan & Sadock's Synopsis of Psychiatry; Behavioral Sciences/Clinical Psychiatry. 11th ed. Eds: B.J. Sadock, V.A. Sadock, P. Ruiz. Wolters Kluwer, 2014
- 5 N.C. Andreasen-D.W. Black: Introductory textbook of Psychiatry. American Psychiatric Press, Washington.
- 6 Lang, G.K.:Ophthalmology. A Pocket Textbook Atlas. Thieme Flexibook. Stuttgart, 2000. ISBN 3-13-126161-7
- 7 Hacker N.F-Moore J.G-Gambone J.C.: Essentials of Obstetrics and Gynecology. 4th ed. W.B. Saunders Co. ISBN 0-721601790 Paperback
- 8 Smith's General Urology. E.A.Tanagho, J.W.McAninch (ed.) Appleton & Lange. 15th ed. McGraw-Hill Professional Publ. 2000. ISBN 0-83-858607-4
- 9 P. Nyirády, I. Romics (ed.): Textbook of Urology, Semmelweis Publisher, Budapest, 2009.
- 10 Arányi Zs., Kamondi A., Kovács T., Szirmai I.: Investigation of neurological patients.
- 11 Adams: Principles of Neurology. McGraw-Hill
- 12 Lindsay, Bone, Callender: Neurology and Neurosurgery Illustrated. Churchill Livingstone
- 13 Marini J.J.-Wheeler A.P.: Critical Care Medicine The Essentials. Williams and Wilkins. Baltimore, 2nd ed. 1997. ISBN 0-683-05555-0
- 14 The New Public Health: An Introduction for the 21st Century. By:T.Tulchinsky, E.A. Varavikova. 2000. ISBN 03350-5 Note: The list of the textbooks in Public Health, please find after its syllabus!

Recommended textbooks:

- 1 T.E.OH: Intensive Care Manual.
- 2 Basic Ophthalmology for Medical Students and Primary Care Residents. Ed.by: C.A.Bradford. 1999. 7th ed.
- 3 Derek I. Johnston: Essential Paediatrics. 4th edition. Churchill Livingstone, 1999. ISBN: 978-0443059582
- 4 Silver, Kempe Bryn and Fulginiti's Handbook of Pediatrics. Appleton and Lange. ISSN 0440-192
- 5 Mecleod's: Clinical Examination. J.Munro. CRW Edards Churchill Livingstone Ed.
- 6 Papp Z.: Obstetric Genetics. Bp. Akadémiai K. 1990. ISBN 963-05-5689-8
- 7 Papp Z.: Atlas of Fetal Diagnosis. Elsevier, London, 1992. ISBN 0-444-98675-8
- 8 Knight B.: Simpson's Forensic Medicine. E.Arnold Co. London. 1991.
- 9 Marsden, Fowler: Clinical Neurology. Raven Press
- 10 Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers
- 11 Gilroy: Basic Neurology. Pergamon Press
- 12 Weiner- Lewitt: Neurology of House Officer. Williams and Wilkins
- 13 Bannister: Brain an Bannister's Clinical Neurology. Oxford University Press
- 14 Mumenthaler: Neurology. Georg Thieme Verlag.
- 15 Manual of Emergency Medicine. 5th ed. Jon L.Jenkins, G.R.Braen. 2004. Lippincoott Williams and Wilkins. Prod.Nr. 479531-1019
INTERNAL MEDICINE – Hematology, Infectolotgy, Immunology, Rheumatology

Lecture: 2 hour per week Practice: 5,5 hours per week Credit: 7 Examination: semi-final

OBSTETRICS AND GYNECOLOGY

Dept. of Obstetrics and Gynecology

Tutor: Dr. Gyula Richárd Nagy

Lectures (2 hours/week) Practices (4 hours per week)

- Introduction. General information. The menstrual cycle. Conception. Normal pregnancy.
- Normal labor and delivery. Obstetrical examinations.
- Changes in maternal anatomy and physiology during pregnancy.
- Prenatal care. Symptoms and signs of pregnancy.
- Spontaneous abortion. Ectopic pregnancy. Basic knowledge of ultrasonography.
- Maternal diseases complicating pregnancy. Gestational diabetes.
- Abnormalities of pregnancy.
- Abnormalities of labor and delivery.
- Monitoring of the fetus.
- Hypertensive disorders in pregnancy.
- Premature delivery. Intrauterine growth retardation (IUGR).
- Neonatology.
- Twin pregnancy. Operative delivery.
- Normal and abnormal puerperium.
- Major issues in current obstetrics.
- Gynecological endocrinology. Menstrual disorders.
- Inflammatory diseases in obstetrics and gynecology.
- Sterility, infertility. Assisted reproduction.
- Cervical cancer.
- Cervical Cancer.
- Tumors of the ovary.
- Tumors of the vulva, vagina and corpus uteri.
- Principles of cancer therapy.
- Endometriosis. Polycistic ovary syndrome (PCOS).
- Genetic Counseling.
- Prenatal genetic diagnosis.
- Fetal anomalies. Dysmorphology.
- Perimenopausa.
- Genital prolapse. Urogynecology.
- Vital statistics. Medical legal problems in obstetrics and gynecology.
- Occasionally the topics are interchangeable.
- Practical education will be in groups of ten students. They spend a week in the Department rotating between major divisions and special outpatient clinics. They will take part in the night duties twice during the week.

PEDIATRICS

1st Dept. Tutor:Dr. Dóra Krikovszky2nd Dept. Tutor:Dr. Dániel Erdélyi

LECTURES IN PEDIATRICS FOR 5th GRADE MEDICAL STUDENTS

Location: I. Department of Pediatrics, Budapest VIII, Bokay J. u. 54. I. floor

ΤΟΡΙΟ

- The care of newborns and preterm babies.
- Fever of infants and children. Congenital malformations Introduction to paediatrics. Newborn physiology
- Nutrition of infants. The care of the healthy baby
- Presenting symptoms. Methods of paediatric diagnosis Inborn errors of metabolism
- Diseases of the respiratory tract
- Renal diseases in childhood
- Psychomotor development of the child.
- Mental retardation
- Fluid and electrolyte disturbances. Care of the child with diarrhea
- Malnutrition. Chronic malabsorption disorders
- Intrauterine infections. Anaemia. Infant mortality.
- SIDS
- Seizures during infancy and childhood.
- Status epilepticus
- Congenital heart diseases
- Disturbances of the lipid metabolism
- Collagen-vascular (autoimmune) diseases
- Leukemia. Haemophilia. Malignant tumors
- Diseases of the neuromuscular and skeletal systems
- Surgical diseases of childhood. Acute and recurrent abdominal pain
- Infectious diseases immunization
- Meningitis, encephalitis. Differential diagnosis of the headache
- Urinary malformations/infections. Urolithiasis.
- Hypertension
- Obstructive (wheezy) bronchitis. Bronchial asthma
- Immunology
- Endocrinology I.
- Genetic counselling. Screening programs
- · Methods for clinical investigation of infants with perinatal brain damage
- · Laboratory investigations in paediatrics
- Endocrinology II.
- Location: I. Department of Pediatrics, Budapest VIII, Bokay J. u. 53–54. II. Department of Pediatrics, Budapest IX, Tűzoltó u. 7-9.

Practice

- ECHO
- Fever
- Vomiting
- Abdominal Pain diff. dg.
- Diarrhea
- Follow up of Patients With Chronic Diseases
- Pediatric Emergency (surgery)
- Prevention (screening, vaccination, vitamins)
- Neurological Examination of Newborn Infant
- The Patient With Glycosuria, Proteinuria etc.
- Anaemia
- Outpatients' Clinic Practice
- Pediatric Otorhinolaryngology (examination)
- Endocrinology (puberty)
- Pediatric Oral Health

Each lesson starts with physical examination of children (at least 3 children) and discussion of one of the subjects above, depending on the examined patients.

Announcement of the 1st Department of Pediatrics – Regarding the exam for the 5th year English speaking students:

- 1. The first part is a practical exam at the patients bedside on the last day of your 2 week practice in the clinic. Paediatric patient examination.
- 2. The second part is a written exam at the end of the semester, based on our paediatric lectures. Your final mark is the mean of these two exams, with the written test exam having the bigger impact.

Note concerning the 6th year's rotations: Only legibly, completely and accurately filled out, institutionally sealed, original acceptance letters are recognized by the I. Department of Pediatrics!

PSYCHIATRY, PSYCHOTHERAPY

Tutor: Dr. Attila Pulay

Lectures

- Introductory lecture: curriculum, objectives, exams
- Gene-environment interactions in psychiatry.
- Stress and psychiatric disorders
- Classification of mental disorders
- Organic mental disorders: diagnosis and treatment
- EEG and event related potentials in Psychiatry
- Substance abuse: diagnosis and treatment
- Alcohol abuse and dependence: diagnosis and treatment
- Consultation and liaison psychiatry
- Somatoform disorders, Somatization and Conversion disorders, Hypochondriasis
- Psychosomatic and Eating Disorders: diagnosis and treatment
- Schizophrenia and other psychotic disorders
- · Personality Disorders
- Posttraumatic stress Disorder
- Sleep disorders: diagnosis and treatment
- Child and adolescent psychiatry (ADHD, autism, tick disorders)
- Suicide
- Affective disorders: diagnosis
- Affective disorders: treatment
- Geriatric psychiatry
- Pharmacotherapy in psychiatry
- Adult ADHD (symptoms, comorbidity, disease course, therapy)
- Psychotherapy I: Cognitive and behavioural therapy

- Psychotherapy II: Family therapy, autogenic training, hypnosis
- · Community psychiatry, rehabilitation of psychiatric patients
- Anxiety disorders: diagnosis and treatment
- Emergency Psychiatry
- Legal and ethical issues in psychiatry

The semi-final exam in Psychiatry is a written test of 50 items which comprises multiple choice types, true and false and case recognition questions.

Practice

- The psychiatric examination
- Stress-related and somatoform disorders
- Eating disorders
- Mood (affective) disorders (incl. suicide)
- Organic mental disorders (incl. mental retardation)
- Schizophrenia, schizotypal and delusional disorders
- Personality disorders
- Alcohol/substance abuse and dependency
- Gerontopsychiatry
- Clinical psychology in psychiatry
- Emergency psychiatry/crisis intervention
- Cognitive and behaviour therapy
- Consultation /Questions and answers/; one/semester

The semi-final exam of Psychiatry I. is a written test of 50 items comprising three types of questions: i.e. multiple choice, true and false, questions related to psychiatric cases.

FORENSIC MEDICINE

Tutor: Dr. János Bokor

Lectures

- The forensic medicine and its connection with law
- The scene of death, suspicion of accident, suicide and homicide
- Hurts and injuries I.
- Hurts and injuries II.
- Sudden death
- The SIDS syndrome
- Traffic medicine I.
- Traffic medicine II.
- Toxicology I.
- Toxicology II.
- Alcohol, alcoholism
- Narcotics, narcomania
- Asphyxia
- Identification
- Test writing
- Forensic Pediatrics
- Forensic gynecology and obstetrics
- Forensic traumatology
- Forensic neurotraumatology
- Forensic points of internal medicine I.
- Forensic points of internal medicine II.
- Forensic psychology and psychiatry
- Environmental damages, occupational diseases
- Medical risk, diagnostic problems
- · Genetics, serology
- Transplantation, euthanasia

Practice

- 50 per cent of the practical lessons will be interpreted in the autopsy room.
- Once a semester each student has to make a written test in the framework of the consultation lessons.
- 50 per cent of the practical lessons will be "consultative lessons".
 - The role of the medical expert in the legal procedures.
- Forensic autopsy and forensic autopsy report.
- Expert patient connection, general rules of forensic examination.
- Expert in front of the court (ethical, legal rules, the interpretation of the expert's opinion, the controversial reports, expert witness).
- Legal points of medicine, patients' rights.
- Examination of hurts and wounds, the first documentation.
- Special points of examining different wounds.
- Forensic examination of children and adolescents.
- Forensic obstetrical and gynecological examinations.
- Forensic psychological and psychiatric examinations.
- Social and medical insurance, the medical risk, malpractice.
- Paternity problems serological identification.
- Rules and ethics of human clinical experiments.
- Consultation (topic chosen by the students).

UROLOGY

Tutor: Dr. András Horváth

UROLOGY

Head of Department: **Prof. Dr. Péter Nyirády** Tutor: **Dr. András Horváth**

Aim of education: Our aim is to teach our students for a basic knowledge in urology (the most important differential diagnostic steps, urological physical examination, imaging techniques, different treatment options) and also to educate them to perform the most important, minor urological procedures (like urethral and suprapubic catheterization).

Syllabus:

Embryology of the urological tract History of urology, Symptoms, Diagnostic Measures Urolithiasis. Diagnosis and Treatment Incontinency, Neurogenic Bladder Benign Prostatic Hyperplasia Prostate Cancer Renal Tumours Tumours of the Urinary Bladder Injuries to the GU Tract Testicular and Penile Tumours Male Infertility Endoscopic Urology (Endourology) Emergency in Urology Paediatric Urology Nonspecific Infections of the GU Tract

Attendance

Lectures: 1 lecture weekly

Practice: 2 weeks course in rotation system at the Department of Urology.

During practices all parts of urology are covered and as many as possible physical examinations and procedures are shown.

Absence from practice: 20% absence is accepted, in case of more absence it has to be compensated by joining another group's practices. **Exam:** oral exam, topics are available at our website.

The mark depends on the practice score given by the tutor of the student and also on the oral exam result.

Absence from the exam: Only an official medical certificate is accepted.

Exam sign up: Through the Neptun system.

ANESTHESIOLOGY AND INTENSIVE THERAPY (ITO)

Tutor: Dr. András Kállai Dr. Dóra Konczig

Lectures:

1. Introduction

Cardiopulmonary resuscitation (CPR, BLS, ALS), the periarrest period and the Post Cardiac Arrest Syndrome (PCAS). Chain of survival. In-hospital BLS and ABCDE-approach. Managing ALS (defibrillation, 4H-4T, iv./io., drugs) and PCAS. Importance of non-technical skills (task management, team work, situation awareness, decision making, communication). Organizing CPR. CPR on CPR-Bas and CPR-Sim practices

- 2. Acid-base balance. Fluid electrolyte homeostasis. Metabolic disorders in diabetes mellitus
- 3. Disorders of salt water homeostasis. Disorders of electrolyte homeostasis, hypokalaemia and hyperkalaemia. Enteral and parenteral nutrition
- 4. Basics of respiratory failure. Obstructive pulmonary diseases. ARDS: definition, classification, diagnosis and therapy
- 5. Principles of ventilatory support. Postoperative respiratory failure. Weaning
- 6. Shock states: pathophysiology, classification, diagnosis and therapy
- 7. SIRS, sepsis and septic shock
- 8. Volume therapy: crystalloids and colloids. Hemostasis management. Massive hemorrhage protocols
- 9. Basics of intensive therapy and anesthesiology. Diseases requiring intensive therapy. Patient safety. Psychological methods (hypnosis, suggestive communication) in anesthesiology and intensive therapy
- 10. Pulmonary embolism. Stroke. Disseminated intravascular coagulation (DIC)
- 11. Acute renal failure, acute kidney injury. Hepatic failure
- 12. Preoperative risk stratification, preconditioning, premedication. Cardiopulmonary protection. Perioperative approach of heart and lung transplantation
- 13. General anesthesia using intravenous and/or volatile anesthetics. Airway management. Analgetics. Muscle relaxants. Antidotes
- 14. Regional (spinal and epidural) anesthesia: anatomy, techniques, indications, practice and complications. Local anesthetics. Pain management

Lecture attendance:

Recommended. Attendance will not be taken.

Practices:

ICU bed side practices:

- 1. Introduction, ABCDE-approach (BEV)
- 2. Respiratory intensive care practice (RespInt)
- 3. Shock practice (Shock)
- 4. Anesthesiology practice (ANE)
- 5. Anesthesiology and intensive care of trauma patients (TraumIA)

Simulation practices:

- 1. CPR-Basic
- 2. ALS-Sim1 (CPR Simulation 1)
- 3. ALS-Sim2 (CPR Simulation 2)
- 4. HiFi-Sim (High Fidelity Simulation)

Attendance criteria and absences:

In order to complete Intensive Therapy and Anesthesiology you need to be present on 7 out of 9 practises (CPR Basic, CPR Simulation 1 or 2, High Fidelity Simulation are compulsory!). Also you need to pass a practical exam in In-Hospital Basic Life Support (CPR) that is built in the one-week rotation.

Bed-side practices will be held at the Intensive Care Unit of the new building "Központi Betegellátó Épület" (Klinikák metro station, Bp. 1082 Üllői út 78., building section "B", 4th Floor). TraumlA practices will be at the Trauma-ICU of OBSI ("Országos Baleseti Sebészeti Intézet", 1081. Budapest, Fiumei út 17., 7th floor). Simulation practices will take place at Simulation Center (Nagyvárad tér metro station, Bp. IX. Ernő u. 7.) Practice schedule will be uploaded in Moodle.

Keep in mind that before the HiFi-sim and CPR-sim practices you need to pass a 5-minute "pre-practice test" in order to attend. For bed-side practices we kindly ask you to wear a white coat and have a stethoscope on you. For changing clothes please use the ward-robe located under the escalator at the enterance of the 2nd Dept. of Gyne/Obs. (In the case of TraumIA practices our colleagues on the 7th floor of OBSI will give you coats for the practice.)

In case of a missed practice you have two options. You can find another group (on a different week) in Moodle with the same theme as the practice you have missed and join them (please note that the group limit is 7 students). Or at the end of the semester you can join the extra practices we will hold, but please note that the capacity of these practices will be limited to 7 person just like the ones during the semester.

Grading:

1.Written (multiple choice test

2. Retaking of the written exam is also possible. Repeating of the examination can be taken in the form of oral exam.

Type of exam: written (multiple choice test) Make-up exam: written or oral

Exam requirements:

The knowledge of the given textbook, lecture and practice material.

If there is anything we can help you with feel free to contact us via int.ane.edu@gmail.com.

OPHTHALMOLOGY

Dept. of Ophthalmology

Tutor: Dr. Miklós Resch

Lectures:

- Introduction. History of ophthalmology.
- Ophthalmology in medicine.
- Functions of the eye. Optics.
- The conjunctiva. Ocular surface diseases. The "red eye".
- Diseases of the eyelids.
- The lacrimal system function and diseases.
- The cornea keratitis, degenerations, dystrophies.
- Keratoplasty. Refractive surgery.
- Diseases of the sclera.
- The cristalline lens. Aetiology of cataract.
- Management of infantile and adult cataract.
- The orbit. Signs and symptoms of orbital diseases. Thyroid ophthalmopathy Infections.
- Lacrimal gland diseases.
- The uvea and its diseases.
- Glaucoma. Clinical diagnosis. Classification. Treatment.
 Disturbances of ocular circulation.
- "Medical,, retina (vascular diseases, macular disorders) and "surgical" retina (retinal detachment).
- Ocular manifestations of systemic diseases. The vitreous and its disorders.
- Pediatric ophthalmology. Strabismus, amblyopia.
- Diseases of the optic nerve and optic pathways.
- Neuro-ophthalmology. Normal and abnormal eye movements.
- Pupillary reactions.
- Tumours of the eye.
- Modern diagnostic and imaging techniques in ophthalmology.
- Trauma of the eye and adnexa.
- The role of the general practitioner in the management of eye diseases.
- Multiple choice questions. Diagnostics (slides).
 Demonstration material: slides, handouts, videotapes, case studies.

Practice:

- Anatomy of the eye and adnexa. Dissection of a pig's eye.
- General notions on the examination of an eye patient.
- The normal ophthalmological status.
- Functions of the eye. Determination of visual acuity (distant, near). Refractive errors of the eye. Retinoscopy.
- Correction of visual refractive errors. Prescription of glasses. Javal-Schiötz ophthalmometer.
 Corneal topography. Contact lenses. Photorefractive keratectomy.
- Visual field, colour vision, examination of dark adaptation, critical flicker fusion frequency. Tonometry.
- External examination of the eye (diffuse light, focal illumination, slit lamp), exposing the palpebral fissure, eversion of the eyelids. Differential diagnosis of the red eye.
- Óphthalmoscopy I.
- Red reflex. Direct and indirect ophthalmoscopy. Examination of the pupil.
- Ophthalmoscopy II.
- Fluorescein angiography. Scanning laser ophthalmoscopy.
- Surgical management of cataract. Ultrasound biometry. Planning of the refractive power of IOL. One - day surgery.
- The glaucoma patient, screening and follow-up. Antiglaucomatous interventions.
- Surgery of the vitreous body.
- Ophthalmoscopy III. Pediatric ophthalmology. The examination of concomitant squint and its treatment. Binocular vision. Differential diagnosis of paralytic strabismus.
- Ultrasonographic examination. Diseases of the retina and vitreous body, intraocular tumors, retinopathy of prematurity. Demonstration of the ultrasound diagnostics of the aforementioned diseases.
- Ophthalmoscopy IV. Ward round, examination of patients.
- Electrophysiology of vision (ERG, EOG, VEP).
- Emergency in ophthalmology. (Sudden and progressive loss of vision)
- First aid in ophthalmology. Forms of patching, treatment of eye injuries.
- Ophthalmological tasks of the family's physician. The most common eye complaints and disorders. Ward round, examination of patients.
- Consultation.

NEUROLOGY – NEUROSURGERY

General information

Tutor: Dr. Róbert Debreczeni Tel.: 210-0330, Fax: 210-1368

Office hours at the Department of Neurology: Responsible Secretary: Andrea Kovács (Andi) Monday 13,00-14,00 Friday 10,00-12,00

Official textbooks for 5th year:

1. Arányi Zs., Kamondi A., Kovács T., Szirmai I.: Investigation of neurological patients.

2. Lindsay, Bone, Callender: Neurology and Neurosurgery Illustrated. Churchill Livingstone

Other suggested books:

- 1. Marsden, Fowler: Clinical Neurology. Raven Press
- 2. Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers
- 3. Gilroy: Basic Neurology. Pergamon Press
- 4. Weiner- Lewitt: Neurology of House Officer. Williams and Wilkins
- 5. Bannister: Brain an Bannister's Clinical Neurology. Oxford University Press
- 6. Mumenthaler: Neurology. Georg Thieme Verlag.

Hours per week: lecture 2, + block system practical 4,5 **Form of tuition:** lecture, bedside practice

Lecture title

- Basic principles of neurological diagnosis. The anamnesis. The connection between symptoms, localization and causes of neurological diseases.
- Patient examination I. Cranial Nerves (part 1).
- Patient examination III. Motor system (part 1)
- Patient examination IV. Motor system (part 2)
- Patient examination II. Cranial Nerves (part 2)
- Patient examination V. The sensory system
- The spinal cord. The peripheral nervous system.
- The brainstem. The thalamus
- The cerebellum
- Altered states of consciousness
- Organization of speech, language
- The temporal and the parietal lobe
- Control of behaviour. Memory and related structures
- Neuroradiology (CT, MRI, angiography)
- Classification and treatment of cerebrovascular disorders
- Tumors of the central nervous system
- Dementias
- Movement disorders
- Diagnosis and treatment of epilepsy
- Neurological Emergencies
- Neurosurgical aspects of Neurology
- Neuromuscular disorders. Myopathies. Neuropathies
- Motoneuron diseases.
- Multiple sclerosis
- Neurological consequences of craniospinal traumas
- Alcohol related nervous system disorders
- Headaches and neuralgias
- Inflammatory neurological disorders. AIDS.

Block Practice

- Signs of meningeal irritation.
- Examination of the I. and II. Cranial nerve. The visual fields.
- Examination of the III., IV., VI. Cranial nerves. The eye movements. Gaze disorders.
- The V cranial nerve. The facial nerve palsy. The nystagmus. Dizziness and vertigo. The vestibular system.
- Motor functions of cranial nerves. Bulbar, pseudobulbar and suprabulbar paresis.
- Assessment of the paresis. Examination of muscle tone and trophy.
- The mono- and polysynaptic reflexes. The pyramidal signs. The upper and lower motoneuron lesion.
- Examination of the sensory system. Examination of the spine and spinal cord. The vegetative functions.
- The coordination. The cerebellar functions (neo-, paleo-, and archicerebellum).
- The reticular activating system. Examination of speech and higher cerebral functions
- Examination of patients suffering from Cerebrovascular Disorders
- Movement Disorders, Hyperkinesias
- Hypnoid and non-hypnoid unconsciousness. Epilepsy
- Multiple Sclerosis, Neuropathies
- · Dementias and cognitive functions

Neurology Examination Question List for 5th year Students

I. Neuroanatomical, physiological and biochemical basis of neurology

- 1. The visual system
- 2. Innervation of extraocular muscles. The oculomotor nuclei.
- 3. Gaze control. Gaze disturbances
- 4. Pupillary reflex arcs. Disturbances of pupillary reflexes.
- 5. Trigeminal nerve
- 6. Facial nerve
- 7. The vestibular system
- 8. Hearing
- 9. Glossopharyngeal, vagus, accessory and hypoglossal nerves
- 10. Organization of motor control
- 11. Sensory systems
- 12. Gross anatomy of the hemispheres
- 13. Basal ganglia and the thalamus
- 14. The limbic system
- 15. The cerebellum
- 16. Blood supply of the hemispheres. Cerebral metabolism
- 17. Blood supply of the brainstem, cerebellum and the spinal cord
- 18. The cerebrospinal fluid

II. Basic Neurology

- 1. Classification of reflexes (stretch, superficial, abnormal and primitive reflexes)
- 2. Characteristics of upper and lower motoneuron lesion
- 3. Paresis syndromes according to the site of lesion
- 4. Symptoms of spinal cord damage
- 5. Medulla oblongata (bulbar) syndromes caused by circulatory disorders
- 6. Pontine syndromes caused by circulatory disorders
- 7. Mesencephalic syndromes caused by circulatory disorders
- 8. Muscle tone control

- 9. Nystagmus
- 10. Vertigo and dizziness; peripheral and central vestibular syndromes
- 11. Symptoms of cerebellar lesions
- 12. Symptoms of frontal lobe damage
- 13. Symptoms of temporal and occipital lobe damage
- 14. Symptoms of parietal lobe damage
- 15. Symptoms of occipital lobe damage
- 16. Thalamic syndromes
- 17. Clinical examination and types of aphasia
- 18. Structural basis and types of unconsciousness
- 19. Physical examination of the unconscious patient
- 20. Increased intracranial pressure, brain herniations, hydrocephalus
- 21. Hyperkinesia
- 22. Gait disturbances
- 23. Bladder and bowel dysfunction
- 24. Symptoms of intervertebral disc herniation
- 25. Lesions of the peripheral nerves of the upper extremity. Tunnel syndromes on the upper limb.
- 26. Lesions of the peripheral nerves of the lower extremity.

III. Neurological Disorders

- 1. Classification of ischaemic cerebrovascular disorders
- 2. Intracranial bleedings, subarachnoideal hemorrhage
- 3. Symptomatology of Parkinson's disease
- 4. Classification of headaches. Trigeminal neuralgia
- 5. Focal epilepsies
- 6. Generalized epilepsies
- 7. Meningitis. Examination of the CSF in inflammatory neurological diseases
- 8. Encephalitis
- 9. Diagnosis of polyneuropathies
- 10. Emergency in neurology
- 11. Traumatic CNS diseases
- 12. Diagnosis of dementia
- 13. Multiple sclerosis: signs and diagnosis
- 14. Intracranial tumors
- 15. Spinal tumors
- 16. Disorders of the nervous system due to alcoholism
- 17. Myasthenia gravis
- 18. Guillain-Barre syndrome
- 19. Encephalopathies
- 20. The motor neuron diseases
- 21. Muscular dystrophies

SPORTS MEDICINE

Lecture: 0 Practice: 2 hours per week Credit: 2 Examination: semi-final

CLINICAL GENETICS

Lecture: 0 Practice: 1,2 hours per week Credit: 2 Examination: semi-final

REHABILITATION

Lecture: 0 Practice: 2 hours per week Credit: 2 Examination: semi-final

PUBLIC HEALTH AND PREVENTIVE MEDICINE

Institute: Department of Public Health

Location: NET building, 1089 Budapest, Nagyvárad tér 4., 13th, 14th, 19th and 21st floors.

NET 13th floor, room 1314 Phone: 061 210-2930, extension 56313 E-mail: terand@net.sote.hu

Course lecturer: *Prof. Dr. Károly Cseh* Course tutor: *Dr. András Terebessy*

Lectures:

- Introduction, history of public health
- Concepts and levels of prevention.
- Health determinants. Health status of the Hungarian population.
- Epidemiology of smoking and related diseases
- Epidemiology of alcohol and illegal drug consumption
- Epidemiology of cardiovascular diseases
- Epidemiology of cancer
- Basics of health policy, public health programs.
- The structure and financing of healthcare.
- Quality assurance in healthcare.
- Basic concepts of health promotion
- Mother-, infant and youth health.
- Public health aspects of handicapped people. Gerohygiene
- Mental hygiene, suicide
- General epidemiology of communicable diseases: Epidemics and the primary and secondary factors of the epidemic process
- Infection control: Nosocomial infections. Antibiotic-resistance.
- Environmental medicine: ecological basics, air pollution, smog
- Environmental medicine: water, the water cycle of Earth, water supply, water mangement
- Environmental medicine: Ionizing radiation, types, effects and limits
- Environmental medicine: Chemical safety, basics of toxicology, risk assessment
- Environmental medicine: Housing and settlement hygiene
- Occupational medicine: The basics of occupational medicine, occupational diseases, exposition
- Occupational medicine: Physical agents
- · Occupational medicine: Chemical agents
- Occupational medicine: Ergonomics. Stress at the workplace.
- Nutrition: Evaluating the nutritional status
- Nutrition: Diet-related diseases
- Nutrition: Food safety

Seminars:

- Basics of demography, standardization
- Epidemiology I: Basic concepts, basic measures. Overview of statistical knowledge
- Epidemiology II: Risk and cause. Epidemiological analysis
- Epidemiology III: Screening. Clinical epidemiology. Evaluation of epidemiological analyses.
- Epidemiology IV: Midterm. Critical reading
- Smoking prevention and cessation programs.
- Alcohol and illegal drug prevention programs
- Prevention of cardiovascular diseases and cancer. Screening methods.
- Evaluation of public health programs
- Health care planning, quality assurance.
- Different levels of health promotion. Health plan.
- Mother and yout hygiene.
- Field trip
- Consultation
- Communicable diseases I.: Basic concepts of communicable diseases. Classification of communicable diseases, international statistics
- Communicable diseases II.: Vaccination. Sterilization, disinfection
- Communicable diseases III.: Airborne and enteral diseases
- Communicable diseases IV.: Haematogenic-lymphogenic and animal derived diseases
- Communicable diseases V.: STD
- Basic concepts of toxicology
- Toxicology of certain chemicals.
- Impact of environmental factors on health
- Occupational diseases I.: The definition of occupational diseases. Policy, financing, supervision Notification.
- Occupational diseases II.: Biological occupational agents, occupational diseases in healthcare. Accidents.
- Occupational diseases III.: Physical and chemical occupational agents.
- Nutrition I.: Assessment of nutritional status, nutritional fact charts
- Nutrition II.: Diet planning. Food intoxication / infection.
- Field trip

ELECTIVE SUBJECTS

(basic/pre-clinical/clinical modules) - curricula

It is compulsory to choose one subject each semester.

ANTIBIOTIC THERAPY AND INFECTOLOGY

Held in both semesters. Lectures: 2 hours/week Credits: 2 Exam type: multiple choice test Participation: min. 70% is obligatory

Obligatory elective subject for medical students already trained in microbiology, pharmacology and basic clinical subjects.

The subject gives an overview on the basic principles and practice of antimicrobial therapy. The antibiotics represent one of the most important classes of drugs that are prescribed practically in all branches of clinical medicine. It seems easy to use them and that is why we abuse them. Discussing the most important clinical features of the frequent infections, the subject shows the optimal approach to patients with infections diseases and antimicrobial treatment.

The first two lessons discuss the specific features of antimicrobial therapy, the basic principles of empiric treatment and the pharmacokinetic/ pharmacodynamic concept that substantiates the application of antimicrobials in term of choice, dosage and combination. The following seven lectures deal with the specific features of the most important infections, such as respiratory tract infections, urinary tract and intraabdominal infections, endocarditis, meningitis, sepsis. Obviously, the lecturers bring into focus the considerations concerning antibiotic therapy. In the second half of the course, some of the nosocomial infections, infections of immunocompromised hosts and zoonoses are discussed, followed by the problems of antibiotic prophylaxis and antibiotic policy.

The course is organized only in the first semester

Course director: Prof. Dr. Endre Ludwig.

The venue of course: *Szent László Hospital* 1097 Budapest, Gyáli út 5-7. Building N. 19 Lecture Room

Textbooks:

- 1. E. Ludwig: Antibiotic therapy, Medintel, Budapest, 2003.
- 2. A. Szalka, L. Tímár, E. Ludwig, Zs. Mészner: Infectology, Medicina, Budapest, 2005.
- 3. Reese and Betts: A practical approach to infectious diseases. Lippincott Williams and Wilkins 2003.
- 4. Material of the lectures online availability

Lectures:

- Basic principles of antimicrobial therapy. Microbiological diagnosis, as the basis of antimicrobial therapy. The concept of "drug of choice"
- Diagnosis of infectious diseases: clinical relevance of the various diagnostic tests
- Optimisation of antimicrobial therapy. The pk/pd approach, correlation of dosage and clinical efficacy.
- Infectious diseases with exanthemas
- Upper respiratory tract infections (common cold, acute and chronic rhinosinusitis, acute otitis, tonsiliopharyngitis). Epidemiology, the influence of age. Theoretical considerations and practice.
- Community acquired pneumonia. Epidemiology, the difficulties of etiological diagnosis. The impact of emerging bacterial resistance on the clinical efficacy of antibiotics. The modern approach and practice based on it
- The nosocomial infections. Nosocomial pneumonia, difficulties of etiological diagnosis. Antimicrobial treatment. Iv catheter-associated infections.
- Intraabdominal infections (primary and secondary peritonitis, cholecystitis). Urinary tract infections.
- Central nervous system infections. Meningitis, etiological diagnosis, antimicrobial treatment.
- Infections of the immunocompromised hosts. Diagnosis, and the principles of treatment. Invasive fungal infections. Colonisation and infection. Treatment of Candida and aspergillus infections.
- Tropical diseases. HIV and AIDS.
- The modern concept of sepsis. The basis of antimicrobial therapy. Indication of antibiotic combinations. The toxic shock syndrome.

Important note: Attendance at 70% of the lectures is compulsory. The end semester grade is the result of the multiple choice test.

Recommended textbooks:

- 1. Ludwig E. (szerk): Antibiotikum terápia 2003 Medintel, Budapest, 2003.
- 2. Szalka A., Tímár L., Ludwig E., Mészner Zs. (Szerk.): Infektológia. Medicina, Budapest, 2005.
- 3. Reese and Betts: A practical approach to infectious diseases. Lippincott Williams and Wilkins 2003.
- 4. Figures of the lectures are available elctronically

BASICS OF MEDICAL CHEMISTRY

Department of Medical Chemistry, Molecularbiology and Pathobiochemistry

Lecturer: Prof. Dr. Gábor Bánhegyi

Lectures: compulsory

Credit: 1

Topics:

- 1: Basics of atomic and molecular structure, periodic table, bondings.
- 2: Chemical equations, stoichiometry, reaction types. Acids, bases, salts. Solutions. Concentrations.
- 3: Laws of diluted solutions. Electrolytes, ionization of electrolytes. Conductivity. Acid-base theories.
- 4: Chemical equilibria. Le Chatelier principle, law of mass action. Equilibria in aequous solutions, principle of pH. Buffers. Carbon dioxide/ hydrocarbonate buffer.
- 5: Consultation: preparation for the 1st midterm. Focused on calculations: ionization, pH, buffer, solubility product.
- 6: Chemical thermodynamics. Principles of enthalpy, entropy, free enthalpy. Hess' law. Basics of reaction kinetics. Activation energy and catalysis.
- 7: Electrochemistry. Oxidation and reduction, redox systems in the living cells.
- 8: A short summary of inorganic chemistry. Metals and non-metals. Complexes.
- 9: Calculations in electrochemistry and thermochemistry.
- 10. Basics of organic chemistry, hybrid states of carbon, organic reaction types. Isomerism, structural isomerism. IUPAC nomenclature.
- 11. Stereochemistry. Geometric and chiral isomerism, nomenclature. Prochirality.
- 12. The most important groups of organic compounds. Aliphatic and aromatic skeletons, their reactions. Repetitions of their structures. Consultation before the 2nd midterm focused on organic chemistry.
- 13. The most important groups of organic compounds according their functional groups, their reactions. Repetitions of their structures.
- 14: Closing test. 30 multiple choice questions and 10 structures

Exam: closing test. 30 multiple choice questions and 10 structures

Note: Material of the lectures is available on the website of the Department.

Max. 3 absences are allowed.

VALUE OF ULTRASONOGRAPHY IN THE CLINICAL DIAGNOSTICS

(Lecturer: Dr. Ágnes Szebeni M.D., D. Sc.)

- 1. a) Basic physics of medical ultrasound
- b) Demonstration of the ultrasound laboratory; technique of ultrasound scanning.
- 2. a) Sonography of the liver, the spleen, the gallbladder and the bile ducts.
- b) Patient demonstrations and training
- 3. a) Sonography of the pancreas and the pancreas and the lymph nodes.
- b) Patient demonstrations and training
- 4. a) Invasive sonography (US guided biopsies and punctions, endosonography, intraoperative sonography).b) Videodemonstrations.
- 5. a) Urogenital sonography.
 - b) Patient demonstrations and training
- 6. a) Small part scanning.
 - b) Patient demonstrations and training
- 7. a) Vascular sonography
 - b) Patient demonstrations and training

INTRODUCTORY LECTURES OF TRADITIONAL CHINESE MEDICINE

The topics:

- 1. Chinese way of thinking about medicine Introductory lecture
- Basic principles in Chinese anatomy and physiology (Yin-yang, Chi, meridian, points, cun, etc.) – 1 lecture
- 3. The twelve meridians and their points (locations and indications) 6 lectures
- 4. The rules of the point selections 2 lectures
- 5. The five- element theory, future trends in research and in the clinical use 1 lecture

LIBRARY INFORMATICS - AOVKPK088_1A

Lecturer: Dr. Lívia Vasas PhD. – Central Library Institute: Semmelweis University Central Library, 1088 Budapest Duration: One semester, 30×45 minutes (10×3 lessons)

SUGGESTED SEMESTER 5-10.

Practical mark
3 credit-points
8/200
Teaching students how to use/search in literature sources of medicine, analyse the result of their work supporting the proper competencies.
Medical e-catalogues, e-books, e-libraries, databases, scientific resources of internet
Anna Berhidi, Edit Csajbók, Skultéti Attila, Szluka Péter
September 4 -8 2019
There isn't

1. Introduction, technical details, VPN access, technical details, about the history of the Central Library's Homepage: www.lib.semmelweis.hu and its facilities, UpToDate, ClinicalKey, HS talks: Biomedical & Lifesciences Collections, EBSCOhost, ProQuest, Pharmacopoeia, Turnitin Dissertations: Dart Europe, Open dissertations, OATD

2. Catalogs: books, online books

Semmelweis University catalog Hunteka: http://hunteka.lib.semmelweis.hu/search Online book catalog: https://lib.semmelweis.hu/nav/ekonyvek National Library of Medicine (Bethesda, USA) NLM catalog: https://www.ncbi.nlm.nih.gov/nlmcatalog Worldcat: https://www.worldcat.org/ Copac: https://copac.jisc.ac.uk/ Books PPT

3. Scientific publishers and periodicals:

printed/electronic/open access

- Browser and matching searching, archive and the newest editions Characterization of periodicals/reviews/journals, ISSN, DOI, Crossmark, Article metrics Online attention
- Publishers: Springer, LWW, Wiley, video journal: JOVE
- Nature: https://www.nature.com/%0A
- BMC https://www.biomedcentral.com/
- PLOS https://www.plos.org/, DOAJ https://doaj.org/, etc.

4. New routes: Open Science, Open Access

The dangers of publishing on Open Access https://lib.semmelweis.hu/nav/open_access_general_information Support for Open Access Communication at Semmelweis University https://lib.semmelweis.hu/nav/open_access_tamogatas The Semmelweis repository https://repo.lib.semmelweis.hu/ The concept of plagiarism, its forms of appearance, Plagiarism Search: Turnitin, Copyright questions

- NLM databases: history, Openl: https://openi.nlm.nih.gov/ PubMed https://www.ncbi.nlm.nih.gov/pubmed/ value added services: registration, advances search. MeSH, PMC, etc. Dictionary: https://www.merriam-webster.com/
- 6. OVID databases, online books, electronic periodicals, Evidence Based Medicine databases: the role of the EBM in research, full text journals in Ovid databases MEDLINE, PsycINFO, subject heading systems, value-added services, access to the full text version, WHO https://www.who.int/
- 7. Bibliographic and citation databases, search engine: Web of Science platform, Google Scholar; citations, general searching in the databases, bibliographic and citation searching on keywords, using Boolean operators, value-added services Scientometrics: quality of journals: Clarivate Analytics InCites JCR (Science Edition and Social Science Edition), IF: calculating Impact factor; SCImago: SJR
- 8. Reference Manager: EndNote, EndNote Online; the role of reference softwares in modern publishing, Literature searching: Importing and exporting records (from Web of Science, OVID Medline, PubMed) creating own records search facilities within our records and from PubMed; data handling: creating groups, filtering duplicates Semmelweis Knowledgebase, Scientific Discovery of the Internet: find medical information you can trust, Building search strategies, Google Scholar, Medworm
- 9. Summary of the course, Test writing
- 10. Consultation, Retake the 1st/2nd test OR Renewal opportunity for each tests

INTRODUCTION TO CLINICAL ANATOMY

This elective course is for medical students having finished successfully three semesters in Anatomy.

Course Director: Prof. Dr. Tibor Wenger

Time and location: Every second year in spring semester 2 hours weekly in the lecture hall of the Department of Human Morphology and Developmental Biology (district 9, Túzoltó u. 58.)

Exam: written

Value of the course: 2 credit points

Subject:

The proposed subjects are the followings (the order is subject to possible changes).

- General introduction, surface anatomy.
- Slide anatomy I-II.
- Application of slide anatomy in CT and MRI pictures.
- Psychiatric neuroanatomy.
- Neuroanatomy and cannabis.
- Anatomical relations of the endoscopy pictures, particularly in lesser pelvis.
- Anatomical changes in hypertonia.
- Applied anatomy in family medicine and daily practice.
- Special anatomical relations in premature and newborn children.
- Anatomical changes during pregnancy.
- Anatomical bases of the traditional eastern medicine.

CLINICAL GENETICS

1st Dept. of Obstetrics and Gynecology

First Semester

- The fundamentals of classical genetics
- Polygenic inheritance, multifactorial determination
- General cytogenetics
- Basic principles of embryology and teratology
- Clinical molecular genetics
- Amniotic fluid cell culture for cytogenetic analysis
- Alphafetoprotein (AFP)
- Genetic amniocentesis
- Pathology of multiple pregnancy
- Genetic counseling
- General aspects of decision making regarding the fate of pregnancy
- Elements of phenotype analysis
- Embryopathology and fetal pathology
- Sphingolipidoses
- Mucopolysacharidoses and mucolipidoses
- Disorders of carbohydrate metabolism

- Diseases of amino acid metabolism
- Haemophilia and other bleeding disorders. Congenital immunodeficiencies. Congenital hypothyroidism. Cystic fibrosis
- · Hereditary muscular and neurological diseases
- Congenital disturbances of ossification
- Neural tube defects (NTDs). Hydrocephalus. Other craniospinal malformations
- Thoracic and abdominal malformations
- Cystic kidney disease. Obstructive uropathies
- Down syndrome. Further autosomal trisomies
- Duplication and deficiency (deletion) syndromes
- Fragile X mental retardation syndrome (MartinBell syndrome)
- Disturbances of sex differentiation.
- Intrauterine bacterial infections. Congenital rubella syndrome. Further viral and chlamydial infections. Congenital toxoplasmosis
- Prenatal screening for fetal malformations and trisomies

ANESTHESIOLOGY AND INTENSIVE THERAPY

Dept. of Anesthesiology and Intensive Therapy

First Semester

Lectures

- 1. Central venous access and other invasive procedures: indications, performance and pitfalls
- 2. Advanced cardiac and hemodinamic monitoring. Swan-Ganz catheter, PiCCO, measured and calculated parameters, relevancies (45') Advanced antiarrhythmic therapy: decision between electric and pharmacological treatment (45')
- 3. Polytrauma, head trauma, chest trauma
- 4. Ultrasound: stethoscope of the 21st century (45')
- Ultrasound in regional anesthesia (45')
- 5. Acute pancreatitis (45')
- The confused patient: principles of management (45')
- 6. Pathophysiology of thermoregulation: malignant hyperthermia, NMS, hyper- and hypothermia syndromes, fever in the ICU (45') Anesthesia for one-day-surgery (45')
- 7. Principles of antibiotic therapy in the ICU (45')
- 8. Principles of antibiotic therapy in the ICU (45')
- 9. Difficult airway management (45')
 - Special respiratory therapy: high frequency and jet ventilation (45')
- 10. Organ transplantation. End stage organ failure, long term mechanical support, organ transplantation, donor management
- 11. (Respiratory) Physiotherapy in the ICU
- 12. CRM: aviation safety and human factors in healthcare
- 13. Obstetrical intensive therapy: toxaemia, HELLP, Mendelson's syndrome, pulmonary embolisation, amniotic fluid embolisation (35') Pediatric anesthesia (35')

MCQ test (compulsory!) (20')

Topics may change depending on lecturers' availability.

NEONATOLOGY

Course Director: Prof. Dr. Istvan Seri

Second Semester

- Physiology of the Fetus and Newborn. Transition to Extrauterin Life.
- Maternal and Fetal Problems in Neonatology. Prenatal Care.
- Delivery Room Management of Newborns. Resuscitation. Infant Transport.
- Respiratory Disorders of Newborns.
- Ventilation of the Neonate.
- Cardiac Diseases of Newborns.
- Surgical Diseases of Newborns.
- Metabolic Problems of Newborns.
- Neonatal Hyperbilirubinaemia. Anaemia. Polycytaemia. Blood Proucts Used in the Newborns.
- Parhophysiology of Body Fluids. Fluid and Electrolyte Management.
- Neonatal Neurology.
- Infections of the Newborns. Prevention and Tratment.
- Neonatal Pharmacology. Surfactant replacement.
- Neonatal Radiology.
- Follow up of High-risk Newborns.

CLINICAL ENDOCRINOLOGY

2nd Department of Internal Medicine

Second Semester

Lectures

- Introduction to clinical endocrinology. Case Presentations.
- Use of hormone measurements in the diagnosis of endocrine diseases.
- Molecular genetics of endocrine diseases.
- Radiological imaging methods of endocrine organs.
- New developments in surgical treatment of endocrine tumors.
- Case presentations: pituitary gland disorders.
- Case presentations: adrenal gland disorders.
- Case presentations: thyroid gland disorders.
- Case presentations: parathyroid gland disorders.
- Sex determination and its disorders.
- Hormone-replacement therapy
- Inherited disorders presenting with endocrine tumors.
- Osteoporosis.
- Endocrine hypertension.

EMERGENCY IN SURGERY

Course Director: Prof. Dr. Pál Ondrejka

Second Semester

Purpose of the subject: In the practice of surgery is very important the early detection of emergency cases. For this reason the collaboration with the representatives of other medical professions is indispensable. The goal of our lectures is to present the appropriate procedures of physical examination, laboratory and radiological findings in order to recognize the correct diagnosis; to know what is necessary, what is possible and what is enough to do in a case of surgical emergency; when to ask for a consultation for adequate therapy.

The inborn errors, injuries, inflammations and tumors of the organs are also presented. In order to make the lectures more interesting we are going to review the relevant episodes in history of medicine and final arts.

Main topics:

- Introduction, life threatening disorders in surgery, emergency in gastrointestinal surgery, acut abdomen.
- Gastric, duodenal, small bowel emergencies.
- Peritonitis acuta.
- Abdominal trauma.
- Surgery of the wound, infections, anaerob infections in surgery (MRSA, Furnier, tetanus, anaerob)
- Small bowel obstruction, large bowel obstruction.
- Esophageal emergencies.
- Biliary emergencies.
- Complications of peptic ulcer.
- Gastrointestinal bleeding.
- Pancreatitis acuta.
- Pancreatitis chronica.
- Appendicitis, diverticulitis, sigmoiditis, typhlitis.
- Surgical intections.

Minimum 80% attendance rate for getting the signature is obligatory.

CLINICAL HEMATOLOGY

2nd Dept. of Internal Medicine

Course Director: Prof. Dr. Tamás Masszi

Second Semester

Topics of interest in the field of hematology, state of the art of various hematological and hemato-oncologic diseases

2 hours per week

Main topics:

- 1. Place and significance of hematology. Normal blood production, basics of hematologic diagnosis.
- 2. Classification of anemias, diagnosis.
- 3. Myelodysplastic syndromes.
- 4. Diagnosis and treatment of acute leukemias.
- 5. Acute leukemias of the childhood.
- 6. Classification and treatment of lymphomas I.
- 7. Classification and treatment of lymphomas II.
- 8. Clinical picture and diagnosis of hemorrhagical diatheses. Prophylaxis and treatment of venous thrombosis.
- 9. Gastroenterological complications of hematological diseases.
- 10. Dermatologic manifestations of hematological diseases and hematological symptoms of dermatologic diseases.
- 11. Immunocytopenias.
- 12. Hematological emergencies.
- 13. Stemcell transplantation.
- 14. Infectious complications of hematological diseases

HISTORY OF MEDICINE

Institute of Public Health

Lecturer: Dr. Judit Forrai

The history of medical science, considered as a part of the general history of civilization The study of the history of medicine helps us to describe and understand how people in different times and cultures experienced and dealt with these fundamentals of human existence. This knowledge can inform debate about the present and the future, and help to bring medicine and science to a wide audience. All human societies have medical beliefs that provide explanations for birth, death, and disease. Many cultures in ancient times treated illnesses with magic and herbal remedies. Ancient Egyptians thought that their gods healed them. The ancient Greeks pursued medicine as a science. Hippocrates, the most famous physician of the time (c. 400 B.C.), believed that diseases had natural causes, not supernatural ones. By the Middle Ages, Europe was hit with a terrible epidemic that killed millions of people called the plague, or Black Death. The Renaissance marked a new period of interest in art and science throughout Europe. Despite new medical discoveries, many doctors still practiced old ways. Most sick people could not afford to see a trained physician. Instead, they consulted midwives who assisted with childbirths and made herbal remedies to treat illnesses. Minor surgeries were not done in the hospital but at the local barbershop. Medical research and training improved in the 18th century but there were still no cures for diseases like smallpox, a disease that killed millions of people over thousands of years. Middle Eastern doctors gave people mild doses of the smallpox to combat the disease. The portraval of the history of medicine becomes more difficult in the 19th century. Discoveries multiply, and the number of eminent doctors is so great that the history is apt to become a series of biographies. Nevertheless, it is possible to discern the leading trends in modern medical thought. In the beginning of 20th century the research and technology have expanded medical knowledge and improved medical practices like surgery. Today, doctors are able to perform less invasive surgical procedures. The science of medicine has progressed dramatically in just the last 50 years. Career opportunities in health care have also expanded. There is a need for more skilled medical professionals, not only in hospitals, but in dentist and doctors' offices, research labs, rehabilitation centres, mental health clinics, nursing homes and even schools.

Topics/week

- 1. Introduction. What is Medicine? Methods and sources of Medical History. The birth of paleomedicine (bones teeth, mummies). Prehistoric medicine. Far East.
- 2. Far East Medicine. Chinese civilization, Japan, India.
- 3. Medicine of ancient civilizations, rivers valley's culture: Mesopotamia, Egypt, and the medicine knowledge. Medicine in the Bible time Heritage of the empirical knowledge. Practitioners. Theories of diseases.
- 4. Greco-Roman Medicine. Homeric medicine. Asclepius, Hippocrates. Corpus Hippocraticum- the concept and doctrine of his theories about the nature and diseases (the four humors). The Oath. Hygiene and health education. Post-Hippocratic schools the golden heritage in the school of Alexandria. The roman physicians, diseases. Advance of public health. Water supply and sanitation, climate, soil and health, diseases, endemics. The workers' health, provision of medical care. (Celsus, Galenus)
- 5. Medieval medicine. Byzantine Healers, Arabian Hakims, Monks, Crusaders and medieval "doctors." The Arabian medicine: chemistry, pharmacy, hospitals. Razes, Avicenna, Abulcasis. The medieval Monasteries (Monte Cassino). The growth of European cities, sanitary problems of urban life. The first religious medical school in Salerno. Medieval Universities, medical humanists, and Christian caritas.
- 6. Medicine in the Renaissance. The Arts and the humanism. The new mentality of medicine: Paracelsus. The revolution of anatomy: Vesalius and his contemporaries. The first step toward the specialization. Botany and mineralogy. The printing of book's role in medicine. Foundation of the administration of Public Health. Epidemic diseases: communicable and non-communicable diseases. Theories, therapies, and medical care, hospital. Quarantine.
- 7. Experimenters, Teachers and Theoreticians in the Sixteenth and Seventeenth Centuries. Body as machine -old schools: iatrochemical, iatrophysical theories. New schools: animism, tonus, vitalism, stimulation, homeopathy. The circulation of the blood. Harvey's method-ology Malpighi. Microscopy. Birth of modern clinical medicine: Sydenham. Boerhaave and his pupils.
- Industrialism in the Eighteenth Century. Clinical medicine- schools of clinical (French, English, German, and Habsburg). The first Vienna School: van Swieten. surgery (Hunter, Valsalva), pathology (Morgagni, Bichat). Public health and hygiene. Occupational health, prison reform, general health (death rate, statistics), Ramazzini, Frank. Smallpox. Infant mortality. Nursing, dispensaries and hospitals, development of obstetrics. Sanitary conditions – filthy towns.
- 9. Clinical medicine in the second half of the nighteenth Century. Bacteriology a new science in medicine. Revolution, concepts and theories under the microscope. New discoveries Pasteur, Koch. Social revolution, industrialism, public health. National and international movements and health reforms, and medical care. Period of great epidemics. International health organization. The Red Cross.

- 10. Development of surgery and gynaecology. The man-midwife (Smellie, Hunter), History of anaesthesia. General and local possibilities. Wells, Morton, Simpson, Jackson). Asepsis and antisepsis. Early efforts to develop aseptic techniques. Semmelweis, Lister. Progress in surgery, Billroth. Cholecystostomy, appendectomies.
- 11. Emergence of specialism. Logical outgrowth of locality pathology, new instruments. Initially the medical professions: Paediatrics, Psychotherapy, Ophthalmology, Otology, Rhinology and Laryngologist, Dentistry, Neurology and Psychiatry, Dermatology and Venerology.
- From the black death to the AIDS. The history of epidemics. The theories and therapies. Tropical medicine. The development of epidemics, the bacteriology and immunology. The new medicaments. Ehrlich and the chemotherapy, sulphonamides, antibiotics. Virology. Salk and Sabin. New diseases and screenings methods.
- 13. Consultation

Important: 3 absences are allowed. Doctor's certificate is required to certify absence from the exam. **Exam requirement:** written test

Textbook:

Chrestomathy on the History of Medicine. Ed. Dr. Forrai J., Dr. Ballér P., Budapest, 1992. SOTE

CLINICAL CARDIOVASCULAR PHYSIOLOGY

AOVKIK102_1A

Elective course for medical students in the 3rd, 4th and 5th years.

The purposes of the course:

- To refresh and extend in selected topics the basic knowledge related to normal and pathological functions of the human circulatory system
- To integrate the latest scientific results related to different organization levels from molecular physiology to system physiology of the cardiovascular system.
- To discuss and demonstrate measurement principles and techniques, as well as physiological and pathophysiological mechanisms related to the application of modern non-invasive cardiovascular diagnostic procedures in the clinical practice.

Program:

- 1. Investigation of blood pressure regulation by use of transgenic technologies
- 2. Complement-related immunological and cardiopulmonary responses (CARPA). Modern methods for measuring and monitoring arterial blood pressure
- 3. Hemodynamic background of normal and pathological cardiovascular functions
- 4. Pathophysiology of chronic venous insufficiency
- 5. Physiological mechanisms supporting venous return of blood; orthostatic tolerance
- 6. Recent results in control of cerebral blood supply, physiological and clinical aspects
- 7. Clinical physiology of the microcirculation
- 8. Interventional radiological procedures on arteries and veins

- 9. Age related changes in the vascular system, role of sexual hormones
- 10. Role of endothelial mechanisms in clinical symptoms
- 11. The cardiovascular risk and the protection of menopausal women. Coronary circulation
- 12. Biomechanical properties of cerebral aneurisms, their computer modeling
- 13. Visit to the MRI cardiovascular diagnostic unit of the Semmelweis University Heart Center
- Ultrasonic investigation of the human heart: theoretical background; 2D-, M-, Doppler-mode, color Doppler imaging, echocardiography; diagnostics of valve insufficiency and coronary diseases. Duplex ultrasonic investigation of large vessel function: measurement of vessel wall elasticity, Doppler-indexes

Students who meet the following criteria will receive 2 credit points: regular attendance of classes and successful written exam. Material for the exam includes lecture topics and textbooks suggested by the lecturers.

Faculty of Medicine

CARDIORESPIRATORIC AND NEUROPHYSIOLOGICAL MEASURING METHODS

AOSKIK151_1A

Elective course for medical students in the 3-6th years

Course director: Dr. Habil. László Dézsi, Private Professor of Physiology, Semmelweis University

The purpose of the course: To review the theory and practice of modern measuring methods in experimental and clinical medicine, and providing practical knowledge to medical students on cardiorespiratoric and neurophysiological measurements. The course is based on but further extends the material delivered during the course of Medical physiology. Throughout the lectures we put an emphasis on potential methodological errors of measurements and examinations, as well as how to avoid them.

Detailed Program:

- 1. Introduction. Biomedical engineering. Design and safety requirements of biomedical equipments
- 2. Computerized data acquisition and analysis. Telemetry systems
- 3. General metrology. Basics of measurement and control theory
- 4. Home monitoring of cardiovascular health status. Determination of blood glucose and tissue glucose concentrations
- 5. Sampling of continuous signals. Digitizing analogue signals
- 6. Direct and indirect methods to determine cardiac output and peripheral blood flow
- 7. Experimental study of pulmonary function. Measurements of blood gases and the acid-base balance.
- 8. Significance of objective studies in the practice of audiology. Neurophysiological measurements (action potentials, brain stem evoked potentials)
- 9. Investigation of adaptive processes in the cardiovascular system. Investigative methods of experimental angiology
- 10. Measuring blood pressure in the lab and clinics (invasive and noninvasive methods)
- 11. Complement-related immunological and cardiopulmonary responses
- 12. Studying brain function by functional imaging systems
- 13. Experimental methods to study nociception
- 14. Investigating the electrical activity of the heart. Design of ECG amplifiers

Acknowledgement of the course: Prerequisite of the course is the completion of the first 2 years (Theoretical module). Regular attendance (maximum 3 absences) is required. Signature in the Index and 2 credit points will be awarded after successful exam. Source: material of the lectures, supplementary literature will be provided by the lectures.

Applications: via Neptun system. Contact person: Dr. László Dézsi (e-mail: dezsi.laszlo@richter.hu; phone: 06-1-431-4823; phone/fax: 06-72-536-019). The application of min. 5 students is required.

CLINICAL PHYSIOLOGY OF RESPIRATION AND RESPIRATORY DISEASES

AOVKIK099_1A

Elective course for medical students in the 3rd, 4th and 5th years.

The aims of the course are to strengthen knowledge on basic physiological principles related to respiration, summarize the most important aspects of cardiorespiratory adaptation in sport activities and also its changes in respiratory diseases and to provide integrated information about the physiological and pathophysiological background of the most important respiratory disorders in light of results from cutting edge research.

Program:

- 1. Physiological function of the respiratory system
- 2. Smoking, e-cigs, supporting cessation
- 3. Lung development
- 4. Inhalation therapy
- 5. Sleep related respiratory disorders.
- 6. COPD and COPD exacerbation
- 7. The lung in systemic diseases
- 8. Cystic fibrosis
- 9. Pulmonary circulation
- 10. Bronchoscop
- 11. Cardiovascular exercise testing, COPD
- 12. Asthma bronchiale
- 13. Non-invasive ventilation
- 14. Chest imaging

Acknowledgement of the course: regular attendance (maximum 3 absences) is required; signature in the Index, and 2 credit points will be provided

MEDICINAL, EPIDEMIOLOGICAL, AND SOCIAL ASPECTS OF DRUG ABUSE

Department of Pharmacology and Pharmacotherapy

Course director: Prof. Dr. Susanna Fürst

Second semester

Credit: 2

Topics:

Introduction, general concepts. Non-medical use of drugs. Drugs of abuse. Classification of scheduled drugs under WHO control. Vulnerability. Tolerance, physical and psychological dependence. Molecular basis of drug addiction.

Opioids. Pharmacological action of opioid agonists and antagonists. Opioid receptors, endogenous ligands. Characteristics of opioid dependence.

Psychomotor stimulants. Pharmacological action of amphetamine, its derivatives (methamphetamine, MDMA-"Ecstasy", etc.) and cocaine. Role of the dopaminergic transmission in the drug abuse.

Hallucinogens. Ethanol. Pharmacological action of hallucinogens, (LSD, mescaline, phencyclidine, etc.). Role of the serotonergic transmission in hallucination. Characteristics of ethanol dependence.

Marihuana (hasis, THC) Pharmacological action of cannabinoids. Cannabinoid receptors and their endogenous ligands.

Sedative-hypnotics. Pharmacological action of benzodiazepines, barbiturates, other sedative-hypnotics. Characteristics of prescription drug dependence. Polydrug-abuse.

Epidemiological data. Significance of epidemiological data collection. Forms of questionnaires. Tendency of drug abuse, national (Hungarian) and international data. High risk groups.

Pharmacological treatment. Traditional medicinal treatment and new methods. Medical treatment of withdrawal symptoms, replacement therapy. Treatment of overdose. Prevention of relapse.

Psychotherapy. Individual and group therapy. The problems of long-term rehabilitation. Counselling.

Drug abuse and society. Legal issues. Statutory rules and regulations. Human rights.

Role of public and civil rystalline. Role, task and potential of governmental and non-governmental rystalline in the prevention of drug abuse. **Detection of drug consumption.** Laboratory analysis of blood and urinary samples. The role of objective laboratory control in prevention and reduction of drug abuse.

Prevention and harm-reduction. Primary, secondary and tertiary prevention. Demand-reduction and harm-reduction. Early recognition. Rehabilitation, social reintegration.

Psychosocial questions of drug abuse. Psychosocial aspects. Self-destructive attitudes. Psychological and social background. Role, task and possibilities of the medical doctor.

Absence: Maximum number of absences is 25 percent of the lectures in the semester

Absence justification: Medical certificate is accepted

There is no midterm

Requirement: Participation at the lectures

Evaluation: On the base of the scores of the written test

Exam: written test

The written test is on the last lecture, registration has to be done through the NEPTUN system How to modify the exam date: Personal discussion for another appointment

Exam absence justification: Medical certificate is accepted

BASICS OF FAMILY MEDICINE

Department of Family Medicine

Director: **Prof. Dr. László Kalabay** Location: Kútvölgyi Hospital, first floor, library

Family medicine as a speciality Past and present of family medicine in Hungary Daily routine of family doctor Dr. Kalabay László Doctor-patient relationship in family practices. Communication skills Dr. Torzsa Péter Emergency care in family practice Dr. Szabó János Cardiology and prevention in family practice Dr. Simon Judit **Diabetes mellitus in family practice** Optimal treatment of diabetes mellitus Dr. Dani Vilmos Prevention program in family practice **Optimal treatment of hypertension** Dr. Torzsa Péter Primary care in cities Dr. Torzsa Péter Primary care in the countryside Dr. Szabó János Care of gipsy patients Dr. Horváth Péter Medical ethics and law Dr. Vajer Péter Continuing home care Rehabilitation **Terminal illnesses** Summary

Prof. Dr. László Kalabay Dr. Péter Torzsa

HISTORY OF THE MEDICAL PROFESSIONALISM

Lecturer: Dr. Péter Balázs

Class Sessions: Medical professionalism as an ethical norm is an ancient behavioural pattern and theoretical construction alike based on sacral calling. Consequently, roots of the modern professional mythology may be traced back to the late Neolithic age, but the whole framework was systematized as soon as in the old Egyptian and Mesopotamian culture. Since the Hippocratic age, the medicine of craftsmen was based on teachings of natural sciences and the Middle Age supported the medicine with mythology of sciences, but only the Enlightenment provided the social environment for a de-sacralized professionalism, nevertheless it followed exactly the ancient religious patterns.

General part of the topic is concerning the onset of professionalism while discussing different manifestations and transitions related to ideologies, socio-economic circumstances and scientific teachings from the Neolithic age down to the latest market economies. Specific part demonstrates milestones and historic ages, which were decisive in this proceeding: Old Egypt, Mesopotamia, old age Judaism, early and consolidated Christianity, impact of Islam on Europe, Reformation of the Roman Catholic church, Enlightenment, the Communist ideology and the social market economy.

Attendance at lectures, options for additional lectures:

Basic requirement: attendance at 8 sessions. In case of justified non-attendance of more students at a specific session, additional lecture is available.

Justification for non-attendance at lectures

Up to 2 sessions no need for justification, in case of more than 3 sessions missed no confirming of the course.

Justification for non-attendance at the exam

Only certificates of administrative authorities.

Control of knowledge acquired within the time-frame of sessions

No control during the session period

Requirements for confirming the session attendance

Having attended less than 8 sessions no confirming of the course. Additional sessions, if organized, are parts of the 10 session contingent.

Preliminary and final marks

Type of marks: five degree evaluation (1-5). Preliminary mark on the written work, which becomes a final mark automatically except additional questions answered (see below).

Type of exam

Base of exam: homework written about the history of medical professionalism sent by e-mail to the lecturer (deadline: 7 days before the exam, 5-6 A4-pages, margins, fonts, space agreed at the first session) Type of exam: each student will get several questions based on his/her own homework to determine the final mark.

Entering for examination

Student Administration System (NEPTUN)

Modification of data entered for examination

When registered in NEPTUN only after consulting the lecturer

Justification for non-attendance at the exam

Only certificates of administrative authorities.

Note on readings

Handout of Power Point presentations at the beginning of each relevant session.

HEALTH INFORMATICS

Institute of Digital Health Sciences

Credit: 2

Lecture: 2 hours/week

Themes	
1.	Classification and Coding Systems
2.	ICD-10 Coding System
3.	Electronic patient's Record
4.	Electronic patient's Record
5.	DRG System
6.	Hospital Information Systems
7.	WEB 2.0
8.	WEB 2.0 Solutions in Health Care
9.	Introduction to Health Databases
10.	Oncology Database
11.	Evaluation of Country data. Presentation
12.	Evaluation of Aggregated data
13.	Principles of Documentation Making
14.	Documentation of Breath cancer: case study
	Self work: Stomach Cancer Documentation (data collection, evaluating, presentation, documentation) Deadline: half semester. Sending: via Internet

JEWISH MEDICAL ETHICS I - II.

Institute of Behavioral Sciences

Course Director: Rabbi Baruch Oberlander

Credit: 4 credits (2 credits for each semester; I and II)

Attendance at 75% of lectures is compulsory. Missed lectures cannot be made up for. In case of missing more than 25% of lectures (3 lectures) a note from a healthcare professional is required.

Semester grade requirement: A written report (paper) based on list of topics and recommended reading material.

Successful completion of semester I is the prerequisite of signing up for semester II.

Obligatory: Handouts given during lectures

Recommended: Dr. Avraham Steinberg (Translated by Dr. Fred Rosner): Encyclopedia of Jewish Medical Ethics, Feldheim Publishers, Jerusalem-New York, 1988, ISBN: 1-58330-592-0

Fred Rosner: Pioneers in Jewish Medical Ethics, Jason Aronson, New Jersey, 1997

Fred Rosner: Medicine in the Bible and the Talmud: Selections from Classical Jewish Sources, Ktav Publishing House, New York 1977

Rabbi Moshe Tendler-Fred Rosner: Practical Medical Halachah, Association of Orthodox Jewish Scientists, New Jersey 1990

David J. Bleich: Judaism and Healing: Halakhic Perspectives, Ktav Publishing House, New York 1981

Faitel Levin: Halacha, medical science, and technology: Perspectives on contemporary Halacha issues, Maznaim Publishing Corporation, New York-Jerusalem, 1987

Fred Rosner: Medicine and Jewish Law II, Jason Aronson, New Jersey, 1993

Semester I.

	1-2.	Lecture:	The religious	orders and	the duty	y of saving a	a life
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- 3-4. Lecture: Doctors and God The function of healing and prayer in Jewish ethics
- 5-6. Lecture: Euthanasia The questions of death and dying in society
- 7-8. Lecture: Smoking and use of light drugs from the aspect of Judaism
- 9-10. Lecture: Medical malpractice in the light of Jewish law and ethics
- 11-12. Lecture: The possibilities for artificial insemination in Jewish law
- 13-14. Lecture: The advantages, disadvantages and conditions of cloning

Semester II.

- 1-2. Lecture: Genetics and Jewish law What rights do we have over our gene pool?
- 3-4. Lecture: Genetics and Jewish law The problem of the gene manipulated food products
- 5-6. Lecture: Siamese twins The question of valuation between two living persons
- 7-8. Lecture: Parasolvency What is the best method to compensate the doctor?
- 9-10. Lecture: Contraception in Jewish law
- 11-12. Lecture: Permitted and prohibited methods of organ transplantation
- 13-14. Lecture: The questions of DNA identification in Jewish law

CLINICAL ONCOLOGY

- elective for students in the 4th and 5th year Course Director: **Prof. Dr. Zsolt Tulassay**

2 hours/week, 2 credits

2nd Department of Internal Medicine

- Basic principles of clinical application of chemotherapy, principles of immunotherapy and endocrine therapy.
- Cancer prevention: tobacco dependence and its treatment, chemoprevention, role of surgery in cancer prevention.
- Cancer screening: principles, gastrointestinal, gynecologic, breast, lung.
- Specialized techniques in cancer management: vascular access, interventional radiology, RFA photodynamic therapy, molecular imaging and functional imaging of cancer.
- Cancer of head and neck: molecular epidemiology, treatment and rehabilitation.
- Cancer of the lung: molecular biology, NSCLC, SCLC.
- Cancer of esophagus and stomach: stage directed multimodality treatment.
- Pancreatic cancer: clinical presentation, evaluation, treatment of resectable and advanced diseases.
- Cancer of the liver: etiology, screening populations, clinical management, systemic therapy, regional therapy, radiotherapy.
- Colorectal cancer: molecular biology, screening, staging and prognosis, stage dependent treatment of colon cancer, combined modality treatment of rectal cancer.
- Kidney cancer: molecular biology of cancer, histologic types, localized and metastatic kidney cancer.
- Cancer of the breast: molecular biology, risk factors, diagnosis, prognostic and predictive factors, multimodality primary adjuvant treatment.
- Cancer of unknown primary site: histologic types of CUPS, management of CUPS.
- Immunosuppression related malignancies: AIDS, transplantation, chemotherapy.

The lecturers of the elective are the oncologists of Semmelweis University.

ORGAN TRANSPLANTATION

First Semester

Department: Faculty of Medicine, Department of Transplantation and Surgery

Time: 14x90 minutes For semesters: 7, 9 Type of exam: written Credits: 2 Minimum/maximum number of students: 20/140

Course thematics:

- 1. Introduction History, Terminology, Organ Donation
- 2. Pediatric Kidney Transplantation
- 3. Histocompatibility, Immunologic Aspects and Immunsuppression
- 4. Kidney Transplantation Indication, Operation, Results, Complications
- 5. Liver Transplantation
- 6. Pediatric Liver Transplantation, Hepatocyte Transplantation
- 7. Follow-up of the Transplant Patient
- 8. Small Bowel and Multiorgan Transplantation
- 9. Pancreas and Islet Cell Transplantation
- 10. Lung Transplantation
- 11. Heart Transplantation
- 12. Radiological Aspects of Transplantation
- 13. Ethics of Transplantation Case reports
- 14. Terminal Examination

Sign up: through the Neptun system Deadline of sign up: September 1
INFLAMMATION BIOLOGY

Department of Genetics, Cell and Immunobiology

Course director: *A. Kristóf Fülöp*, PhD Prerequisite subject: Immunology, Molecular Cell Biology II. **Credits: 2**

In Every Second Academic Year

Lectures (2 hours per week):

- The place of inflammatory processes in the immune response and in the health science
- Molecular mechanisms in the induction of acute inflammation
- Inflammatory cells I.
- Inflammatory cells II.
- Chemotaxis and chemokines in the inflammation
- The systemic acute phase reaction and the termination of inflammation
- Histaminology
- The systemic inflammation
- Chronic inflammatory diseases I.
- Chronic inflammatory diseases II.
- Genomics of inflammation and asthma bronchiale
- Inflammation, regeneration and tumorigenesis
- Inhibition of inflammation, biological therapies
- Review and consultation

Attendance of a minimum of 75% of the lessons is necessary for the end-term signature.

Exam: written test in the exam period.

Literature: see on the homepage

Homepage: http://gsi.semmelweis.hu

GENETICS OF SEX

Department of Genetics, Cell and Immunobiology

Course director: *Dr. Sára Tóth* No Prerequisites **Credits: 2**

Second Semester

Lectures (2 hours per week):

- 1. Genetic background of sex determination; asexual and sexual reproduction; reproductive strategies.
- 2. From sex determining gene to sex chromosome
- 3. Male and female sex determination
- 4. Abnomalities in sex determination I.
- 5. Abnomalities in sex determination II.
- 6. Abnomalities in sex determination III.
- 7. Mechanism and role of X inactivation
- 8. Epigenetic effects; genome imprinting.
- 9. Causes of male infertility. Y chromosome mutations and ICSI.
- 10. Importance of Y chromosomal and mitochondrial polymorphisms in population genetics
- 11. Influence of sex on heredity
- 12. Aggressivity and sex
- 13. Genetics of sexual orientation
- 14. Ecology and sex; role of endocrine disruptors

Attendance of a minimum of 75% of the lessons is necessary for the end-term signature. No possibility to make up of absences.

Exam: no midterms, practice grade

Core texts: Chapters from Strachan & Read: Human Molecular Genetics 2nd Ed. and Gilbert: Developmental Biology 8th Ed. Both are downloadable from Pubmed Bookshelf.

Lecture presentations and additional texts are available on the homepage: www.dgci.sote.hu

Homepage: http://gsi.semmelweis.hu

EPIGENETICS

Department of Genetics, Cell and Immunobiology

Course directors: *Dr. Sára Tóth* Credits: 2

First Semester

Lectures (2 hours per week):

- 1. Timeline of epigenetics; levels of epigenetic changes; targets of epigenetics
- 2. DNA methylation; de novo and maintenance methylation; Dnmt interactions
- 3. Histone modifications; histone code; histone modifying enzymes
- 4. Polycomb and trithorax complexes; Methylated DNA binding proteins
- 5. Transposons, and non-coding RNAs in epigenetic regulation; RNAi
- 6. Genome imprinting; skewed X inactivation their connection to DNA methylation
- Epigenetic changes during early development and gametogenesis; Epigenetic consequences of cloning and ART
- 8. Transgenerational epigenetics; epigenetics of endocrine disruptors; meternal behaviour and its epigenetic consequences
- 9. Paramutation, transvection and mitotic bookmarking
- 10. Role of epigenetics in carcinogenesis; epigenetic therapy in cancer
- 11. Epigenetics in aging and autoimmunity
- 12. Epigenetic changes in diseases of the central nervous system
- 13. Methods used for the detection and analysis of epigenetic alterations.

Important notes:

Only for third and upper year students. There are no midterm exams. Attendance of 75% of lectures is necessary for the end-term signature. Exam: Written or oral exam (depending on the number of students).

No possibility to make up of absences.

Core texts: CSHL Epigenetics textbook 2006. Downloadable from http://www-nmr.cabm.rutgers.edu/academics/biochem694/reading/Alli-setal_2006.pdf

Lecture presentations and additional texts are available on the homepage: www.dgci.sote.hu

Homepage: http://gsi.semmelweis.hu

CHEMOTAXIS - its significance in biology and clinical sciences

Department of Genetics, Cell and Immunobiology

Course director: Dr. László Kőhidai

Credits: 2

Second Semester

Lectures (2 hours per week):

Week	Lecture	Lecturer
1.	Migratory responses of cells – General significance of chemotaxis in biology	Kohidai László, MD, PhD
2.	Phylogeny of signaling molecules and their receptors with special respectial to chemotaxis	Kohidai László, MD, PhD
3.	Chemotaxis in invertebrates and vertebrates	Kohidai László, MD, PhD
4.	Chemotaxis in Inflammatory cells I.: Antigen presenting cell, monocytes-macrophages, eosinophils and neutrophils	Kohidai László, MD, PhD
5.	Chemotaxis in bacteria - A well studied signaling pathway	Kohidai László, MD, PhD
6.	Genetical backgrounds of bacterial chemotaxis	Kohidai László, MD, PhD
7.	Inflammation and chemotaxis	Kohidai László, MD, PhD
8.	Immunological aspects and their clinical implications in general	Kohidai László, MD, PhD
9.	Phagocytosis: the target reaction of chemotaxis	Szabó Rita, PhD
10.	Chemotactic ligands - Characterization of their genomics and proteomics	Kohidai László, MD, PhD
11.	Chemokines	Kohidai László, MD, PhD
12.	The optimal chemotactic ligand	Kohidai László, MD, PhD
13.	Clinical approaches – Tumor biology	Láng Orsolya, MD, PhD
14.	Does persist 'Life' without 'Chemotaxis'?	Kohidai László, MD, PhD

Important notes:

Prerequisite: Medical Chemistry. Max. allowed absences: 3. Attendance of 75% of lectures is necessary for the end-term signature. One individual oral presentation (not for grade) is compulsory. Exam: oral for practice mark Possibility to make up of absences from the material on the website: www.chemotaxis.usn.hu and www.dgci.sote.hu Homepage: http://gsi.semmelweis.hu

NEUROSURGERY – Introduction to neurosurgery with case presentations and operating room visit

Department of Neurosurgery

For 5th and 6th year students

Program Locations: Department of Neurology (1086 Bp. Balassa u. 6.) & National Institute of Neurosurgery (1145 Bp. Amerikai út 57.) Length of course: 14 weeks, 2 hours (lectures)/week Credit: 2

Final exam: multiple choice test

Detailed program (weeks): Every lecture includes a summary of the topic, 2-3 relevant case presentations and if possible video presentation of surgeries.

- Introduction to neurosurgery: history of neurosurgery
- Basics of micro-neurosurgical anatomy
- Neurological investigation of the neurosurgical patient
- Increased intracranial pressure. Hydrocephalus
- Head injury and neurotrauma basics
- Spine and spinal cord injuries
- Spinal tumours
- Brain tumours, neurooncology
- Vascular malformations of CNS
- Degenerative spine diseases
- Epilepsy surgery and investigations
- Functional neurosurgery and stereotactic procedures
- Radiosurgery
- Visiting the operating theatre and examination

Note: 2 absences are allowed. No possibility to make up of absences.

SOCIAL MEDIA IN MEDICINE

Institute of Behavioural Sciences

Course leader: **Prof. Dr. Ferenc Túry** Presenter of the course: **Dr. Bertalan Mesko**

credit: 2 credits; elective course

Second Semester

Course objectives:

To present the role of web 2.0 or social media, the new generation of web services, in a medical practice, medical education and communication through specific examples, case studies and practical solutions.

Course Syllabus:

Week 1:	Introduction: Web 2.0 or social media The role of social media in medicine
Week 2:	Medical search engines The Google phenomenon
Week 3:	Being up-to-date with RSS How to follow your field of interest online?
Week 4:	Medical communities online Facebook from the physician's perspective
Week 5:	Patients on the web The era of e-patients
Week 6:	The medical blogosphere From the first comment to blog carnivals: Step by step
Week 7:	Everything you have to know about Wikipedia Medical wikis
Week 8:	Second Life: Virtual medicine I. Second Life: Virtual medicine II.
Week 9:	Managing a medical practice online Should medical professionals use social media?
Week 10: Week 11:	Education online: medical resources Podcasts and medical videos The era of new media
Week 12:	A new way of collaboration: Google Docs
Week 13:	Dangers of social media Describing topics requested by the students
Week 14:	Future: is there a web 3.0? The results of the surveys

Participation and making up for absences:

A signature will be given with the prerequisite of participation (minimum 75% of the lectures and seminars). It is possible to make up for an absence by participating in another seminar group the same week. One absence can be overlooked by the teacher if the student writes an essay. The topic of the essay must be discussed with the seminar leader in advance.

Justification of the absence in the lectures and examinations:

Participation list will be recorded at the end of every lecture/seminar. In case of absence medical certificate has to be presented within three workdays to the course leader.

Checks during the semester (reports, written checks) :

One written exam on week 12. It can be made up during the semester.

Requirements for the signature at the end of the semester:

Regular participation on the lectures and seminars, filling in two surveys online (week 2 and 12). One written exam (week 12)

Method of the calculation of marks:

- Written exam: 60 points
- Two surveys: 30 points
- Work during classes: 10 points

Categories:

- 5: 85-100 points
- 4: 75-84 points
- 3: 65-74 points
- 2: 50-64 points
- 1:50 points

Requirements for the exam: fulfilment of the requirements of the semester

Application for the exam: Through the Neptun system.

Changing the application for the exam: Through the Neptun system.

Justification of the absence from the exam: Medical certificate has to be presented within three workdays to the course leader.

Course and recommended text books:

Pilling János (szerk.) (2011): Medical communication, Medicina Könyvkiadó, Budapest.

http://www.med20course.com http://www.scienceroll.com

CULTURE IN MEDICINE, CULTURE OF MEDICINE – Popular Themes of Current Clinically Applied Medical Anthropology

Institute of Behavioral Sciences

Course Director: *Prof. Dr. Ferenc Túry* Lecturer: *Dr. László Lajtai*

Credit: 2

Second Semester

Weekly topics of the seminars:

- 1. "We have never been modern?" An initiation to critical approaches to evidence base in medicine How to respond? / Discussion of the semester: Requirements and timescale.
- 2. Alternatives 1: Narratives and explanatory models Confusions and the lay perspective
- 3. Alternatives 2: Complementary medicine Competition at our doorstep
- 4. Alternatives 3: Healing and folk medicine Wisdom or beliefs?
- 5. Alternatives 4: Biomedicine for anthropology, or the twist of perspectives
- 6. Challenges 1: Migrants, refugees and minorities
- 7. Challenges 2: Reproduction, sex, age, death and other trends in "western" medicalization
- 8. Challenges 3: Nutrition and taboos biopower and social body
- 9. Challenges 4: Placebo, pharmaceuticals and the rule of pharmaceutical industry
- 10. Challenges 5: Public medicine, private medicine and the reproduction of inequities
- 11. Favourite themes 1: Alcohol, drug, and AIDS at crossroads of culture and law
- 12. Favourite themes 2: Shrinks and madness CBS and the mirage of the normal
- 13. Fieldworks: Discussion 1.
- 14. Fieldworks: Discussion 2.

Recapitulation, feedback and evaluation.

ART OF LEARNING

Institute of Behavioral Sciences

Course Leader: Dr. János Kollár

First and Second Semester

Objectives of the subject, its place in the medical curriculum:

Improving students' learning and presentation skills, increasing their performance in the acquisition of study materials.

Place where the subject is taught (address of the auditorium, seminar room, etc.):

Seminar room.

Successful completion of the subject results in the acquisition of the following competencies:

- knowledge of creativity development practices,
- increase in educational and presentation skills (including the development of individual skills and knowledge of technical innovations),
- knowledge of mnemonic methods,
- knowledge of the wide application of the possibilities offered by the Internet (information search, communication),
- knowledge of the theory and practice of relaxation.

Course prerequisites:

None.

Number of students required for the course (minimum, maximum) and method of selecting students:

Minimum: 3, maximum: 10.

How to apply for the course:

By using Neptun.

Detailed curriculum:

- 1. Meeting 1: Keys of Originality participants can learn simple but effective methods that can be used on a daily basis to develop their creativity.
- 2. Meeting 2: Lecturing technique mastering the basic rules of presentation, acknowledging modern presentation methods developed in recent years and their application. Rules for developing and exercising confident performing skills.
- 3. Meeting 3: Learning technique Acquiring mnemonic methods and appropriate time management to support learning.
- 4. Meeting 4: Advantages on the Internet learning the application of RSS, doing own research by using RSS. Mapping Internet resources that can be used for learning and research. Relaxation: Learning the basics of relaxation, mastering the creation of body-soul-spirit harmony.
- 5. Meeting 5: Exam Participants present their own presentation by using their knowledge acquired in the course, receive feedback from each other and from the course leader.

Lecturer: Dr. János Kollár

Other subjects concerning the border issues of the given subject (both compulsory and optional courses!). Possible overlaps of themes: None.

Special study work required to successfully complete the course:

Not required.

Requirements for participation in classes and the possibility to make up for absences:

Out of the 20 hours of the 5 meetings, a maximum of 4 hours of absence is accepted.

Methods to assess knowledge acquisition during term time:

The course ends with an exam at the 5th meeting.

Requirements for signature:

- 1. Making a presentation at an appropriate level.
- 2. Active participation, respect for the work of fellow students and active support.

Type of examination:

Practical grade based on the above mentioned requirements.

Requirements of the examination:

Preparing a presentation based on the topics discussed during the course at an appropriate level.

Method and type of evaluation:

5 grade evaluation.

Excellent: Active and constructive participation, high quality performance of tasks. Completing the exam presentation to a high standard.

Good: Active and constructive participation, good performance of tasks. Completing the exam presentation to a good standard with minor errors.

Satisfactory: Passive participation, completion of the exam presentation at an appropriate level.

Pass: Passive participation, preparation of a poor-quality exam presentation.

Failed: Passive participation, failure to present or failure to complete the exam presentation.

How to register for the examination?:

The exam is a part of the course. Special registration is not required.

Possibilities for exam retake:

In case of failure, the student will be given a one-time opportunity to improve his/her presentation.

Printed, electronic and online notes, textbooks, guides and literature (URL address for online material) to aid the acquisition of the material:

Books:

- 1. Kermani, K. 1990. Autogenic Training. Souvenir Press Ltd. London.
- 2. Herkert, R.. 1993. Die 90-Sekunden Pause. Integral Verlag, Wessobrunn.
- 3. Tracy, B. 2005. Focal Point. Amacom, American Management Association International, New York.
- 4. O'Connor, J., Seymour, J. 1993. Introducing NLP. Thorsons Publisher Ltd. London.
- 5. Metzig, W., Schuster, M. 1996. Lernen zu lernen. Springer-Verlag Berlin Heidelberg.
- 6. Burke, J. 2001. The Knowledge Web. Simon & Schuster. New York.

DISRUPTIVE TECHNOLOGIES IN MEDICINE

Supervisors: **Dr. Mária Judit Molnár Dr. Bertalan Meskó**

Code: AOSGRI374_1A Credit: 1

Disruptive technologies bring groundbreaking changes to medicine and healthcare. While medical students are being prepared for the present conditions, medical technology is going to add different values and require new skills by the time students graduate, therefore modern medical education must prepare them for a world they will have to face in their professional lives. This course was designed to present and analyze today's medical challenges with tomorrow's technologies in a meaningful way addressing skills that students will be able to implement in their everyday practices.

Second Semester

Topics

- I. Introduction
- II. Personalized medicine and point of care diagnostics
- III. Personalized medicine- Genomic health
- IV. Personalized medicine Imaging health
- V. Social Media and Medicine Introduction
- VI. Social Media and Medicine Filtering online
- VII. Social Media and Medicine Sharing information
- VIII. Harnessing big data in healthcare
- IX. Mobile health and telemedicine
- X. Biotechnology and gene therapy
- XI. Regenerative medicine
- XII. Medical robotics, bionics, virtual reality
- XIII. Future of medical technologies

Textbooks:

Social Media in Clinical Practice, Springer, 2013 The Guide to the Future of Medicine http://scienceroll.com/2013/10/30/whitepaper/

INTRODUCTION TO PHARMACOLOGICAL RESEARCH

Department of Pharmacology and Pharmacotherapy

Supervisors:

Dr. Péter Ferdinandy Dr. Tibor Zelles

HEALTHCARE MANAGEMENT

Course Leader: Dr. habil. Éva Belicza Ph.D. Prerquisite: Internal Medicine I. Credit: 2 Lecture: 2 hours / week Subject code: AOVEMK444_1A

Thematics:

1 st week:	Introduction: the role of management in healthcare, basics
2 nd week:	Healthcare economics I.
3 rd week:	Healthcare economics II.
4 th week:	Healthcare financing
5 th week:	Healthcare system models and their international comparison
6 th week:	Organisational management
7 th week:	Organisational behavior
8 th week:	Human resource management in healthcare
9 th week:	Change management in healthcare
10 th week:	Patient safety in practice
11 th week:	Quality management and development in healthcare
12 th week:	Health politics
13 th week:	Project and time management
14 th week:	Summary

MATHEMATICAL AND PHYSICAL BASIS OF MEDICAL BIOPHYSICS

Lecturer: Dr. Miklós Kellermayer

Credit: 1

14 hours lecture int he first four weeks of the semester.

Thematics:

- 1. Mathematics necessary for understanding biophysical laws
- 2. Physical quantities and units
- 3. Kinematics physics of motion
- 4. Statics changes of shape, forces, mechanical stress, pressure
- 5. Dynamics work, energy
- 6. Oscillations, waves
- 7. Fluid mechanics
- 8. Thermodynamics
- 9. Electricity charges in rest and in motion
- 10. Magnetism, magnetic induction

The presence in at least 75 % of the lessons is obligatory.

The grade is based on the result of test written on the 5th week. This test should be written by all students irrespective of taking this elective subject. The result of test is expected to be at least satisfactory (2) as a condition for signature in Medical biophysics 1. The elective subject helps in the preparation for this test.

Evaluation: practical grade based on the result of test written on the 5th week.

Textbook: Lecture notes on the homepage of the department.

High school physics textbooks.

MEDICAL GENOMICS

Deaprtment of Genetics, Cell and Immunobiology

Lecturer: Prof. Dr. Csaba Szalai

Medical genomics introduces the basic knowledge in medical and human genomics and the associated genomic methods. The main topic of the course is the genetic and genomic background of the most common multifactorial diseases, like asthma, allergy, type 1 diabetes mellitus, type 2 diabetes mellitus, obesity, high blood pressure, atherosclerosis, Alzheimer disease and Parkinson disease. The lectures show the most important genes and genetic variations in these diseases which can influence the susceptibility to the them and how these knowledges can be used to get to know the pathomechanisms of these diseases and to reveal novel therapy and drug tagets. There are also lectures about pharmacogenomics and how our genes influences our responses to different environmental effects. As genomics belongs to systems biology, a lecture introduces to basic terms of systems biology, and concentrating on diseases, some examples of the application and utilization of this scientific field are also be shown.

Planned lectures:

- Introduction to genomics, the human genom
- Multifactorial diseases
- Genomic methods
- Asthma, allergy
- Type 1 diabetes mellitus
- Type 2 diabetes mellitus
- Obesity
- High blood pressure
- Atherosclerosis
- Alzheimer and Parkinson diseases
- Gene-environmental interactions
- Pharmacogenomics
- Systems biology

Prerequisite subjects: Medical Biochemistry, Molecular and Cell Biology I, II and III.

SYSTEMS NEUROSCIENCE I–VI.

Faculty of Medicine, Department of Anatomy, Histology and Embryology

Type of course: optional course-unit credit: 2 Name of the responsible person: *Dr. Gábor Gerber*

Second Semester

Role of the course in the training of the Department:

The Systems Neuroscience program follows the approach of systems theory in understanding the brain. The aim is to provide students a view of the brain as a whole via unfolding, at least in part, its immense complexity. This is a major challenge of all time, but the right answer should be one that can integrate actual knowledge. As we are in the fortunate period of time when high performance tools (both hardware and software) and large datasets are getting more and more available, systems thinking is inevitable in brain research. Therefore, throughout the course students will learn how different approaches - reductionist, holist and functionalist – are all useful and necessary in understanding the brain.

In one way the course is structured by introducing the students the different levels of organization all being complex systems themselves. After an introductory about the systems science approach of the brain (course 2) we discuss the molecular machineries at the subcellular level (course 3) then turn into the cellular level by learning why and why not the neuron is considered as the unit of brain organization (course 4). In the next step it is shown how billions of neurons make up the cerebral cortex and how this evolutionarily new structure can perform diverse cognitive and other functions (course 5). Finally, whole brain functions and functioning will be approached via its role in behavior (course 6).

In other way, each course will show how the brain functions at lower organizational levels such that synaptic and neuronal populations of different structures as well as a whole. Such holistic approaches have high importance in recent efforts made in deciphering the neurobiological basis of neuropsychiatric and neurological diseases (courses 5,6). Finally, with the closing series of lectures (course 7,8) we aim to provide tools, rules and examples, which help integrating knowledge acquired throughout the courses and also provide an outlook whereby the brain can be compared to other complex systems (course 2). Another notable feature of the Systems Neuroscience program is its interdisciplinary nature: it will introduce the students into several state of the art methods both experimental (molecular biology, cellular and extracellular physiology, different kinds of imaging) and theoretical (data and network analyses, simulation and modelling).

Each course includes visiting the lecturers' lab.

The course will start with an introductory about the history and culture of the geopolitical region thought as Central Europe.

The program of the course:

Weekly schedule of the Courses

- 1. Central European Culture
- 2. Introduction to Systems Neuroscience
- 3. Genomic analysis of single neurons. Neuronal proteomics.
- 4. Single neurons and beyond
- 5. Neocortex: from structure to function
- 6. Neural rhythms: normal and pathological. Brain imaging: from normal to pathological.
- 7. Neuroelectricity
- 8. Statistics and the Brain

Practical courses: introduction into cutting edge research techniques during the lab visits

Consultations: personally with the actual course leader

Requirements of course participation and options to recover missed hours:

- 1. Total absence allowed: 10% of the total course hours
- 2. Recovering missing hours: studying the material provided by the course leaders, consultation

Eligibility: US grade point average (GPA) of 3.0. Students with a GPA lower than 3.0 should inquire with the Directors on the possibility of a waiver.

Justification of absence from course hours or exams:

Hungarian medical certificate

Number and schedule of the examinations:

The course is divided into eight blocks each covering different fields and scheduled in a weekly basis. Each block ends with an exam in the last teaching day of the actual week.

Requirements of the successful completion of the program:

written or oral test in each course material

Marks:

In case of a written test grades are given after obtaining points as follows: 0-50% fail, 51-60% pass, 61-75% fair, 76-90% good, above 90% excellent.

Types of exam: test, essay, verbal

Requirements of the examinations:

Verbal and electronic etc. material provided by the lecturers. Syllabus is available upon opening the program on the web page.

Registration for exams: NEPTUN

Rescheduling the tests:

N/A Each student has to take an examination in each block of the course.

Justification of absence from the exam:

Hungarian medical certificate (see above).

List of useful literature (books, papers etc):

It is made available for the students two weeks before the first lecture

PRECLINICAL AND CLINICAL NEUROPSYHOPHARMACOLOGY AND PSYCHOPHARMACOGENETICS

(Hungarian: Preklinikai és klinikai neuropszichofarmakológia és pszichofarmakogenetika)

Name of the Programme: Medicine, uninterrupted graduate programme English name of the course: Preclinical and clinical neuropsychopharmacology and psychopharmacogenetics Neptun-Code (planned): AOVGYH198_1A Institute: Department of Pharmacodynamics Name of the tutor/lecturer: Dr. Gyorgy Bagdy PhD, Dsc. Phone: +36-1-4591495, +36-1-2104411, +36-1-2102927 E-Mail: bagdy.gyorgy@pharma.semmelweis-univ.hu

Further tutors: Juhász Gabriella Associate Professor, PhD, Lévay György PhD, CSc, Gyertyán István PhD, Gonda Xénia PhD, Ujváry István PhD, Tamási Viola PhD, Vas Szilvia PhD, Eszlári Nóra researcher psychologist (MA)

Number of lectures /week:

blocked course (2X7 lessons) Credit points: 1

Brief course summary:

The aim of this course is to introduce the function of the central nervous system (CNS), diseases that impact the CNS as well as the (psychiatric, neurological, neurosurgical and addictological) way of their treatment for the interested students. The course creates a bridge between theoretical and clinical subjects. During the course, genetics, molecular sciences, animal models and human investigating methods are demonstrated as well as the possibilities and limits of their application using concrete examples.

Course data

Recommended semester of completing the course	Lecture (contact hrs/ week)	Practice (contact hrs/ week)	Seminar (contact hrs/week)	Individual lecture	Total number of contact hours/ semester	Semester	Consultation
from the 4 th semester	14				14	<u>Spring semester</u> * Winter semester* Both semesters*	

Semester program

I. Lecture topics/week

1. week:	Principles of the function and pharmacological modification of the central nervous system. (György Bagdy) (I-III.) Animal models of diseases affecting the central nervous system (György Lévay) (IV-V.) The dopamine theory of schizophrenia. Antipsychotic drug research (István Gyertyán) (VI-VII.) Experimental studies in learning and memory (István Gyertyán) (VIII.) Genetics of behavioural characteristics influencing psychiatric disorders (Nóra Eszlári) (IX.)
2. week:	Application of neuroimaging techniques in the neuropsychopharmacology (Gabriella Juhász) (X.) Pharmacogenetics (Xénia Gonda) (XI.) Sleep and behaviour. The neurotransmitter regulation of sleep (Vas Szilvia) (XII.) The phenomenon of hallucination: from tribal customs to chemical structures (Ujváry István) (XIII.) The role of "omic" methods in the innovation of psychopharmacons (Viola Tamási) (XIV.)

Course requirements

Prerequisites: previous attendance of courses in Biology, Physiology and Biochemistry

Semester acceptation conditions: (successful course attendance, mid-term tests, absence, etc.)

Attendance of 11 of 14 lectures is required.

Knowledge testing during the semester: -

Requirements of the signature at the end of the semester:

Attendance of 11 of 14 lectures. Repetition of the lessons during the course is not possible.

Individual activity of the student during the semester (protocol, etc.) -

Performance control in the examination period (*final, semi-final*) final examination

Performance control in the examination period (written, oral, written and oral) written, correction examination: oral

Prescribed external practice: -

List of teaching materials: (List of textbooks, hand-outs, scripts, etc.)

- 7. Kirilly E., Gonda X., Bagdy G.: CB1 receptor antagonists: new discoveries leading to new perspectives. ACTA PHYSIOLOGICA 205:(1) pp. 41-60. (2012)
- 8. Lazary J., Juhasz G., Hunyady L, Bagdy G.: Personalized medicine can pave the way for the safe use of CB(1) receptor antagonists. TRENDS IN PHARMACOLOGICAL SCIENCES 32:(5) pp. 270-280. (2011)
- 9. J.M. Monti, S.R. Pandi-Perumal, B.L. Jacobs and D.J. Nutt (Eds): Serotonin and Sleep: Functional, and Clinical Aspects, Birkhauser, Basel, 2008.
- 10. J.N. Crawley: What's Wrong with my Mouse? Wiley-Liss, New York, 2000.

List of course materials: classroom, projector

Scientific, course related researches, publications/essays:

- 1. Juhasz G, Hullam G, Eszlari N, Gonda X, Antal P, Anderson IM, Hökfelt TG, Deakin JF, Bagdy G. Brain galanin system genes interact with life stresses in depression-related phenotypes. Proc Natl Acad Sci U S A. 2014 Apr 22;111(16):E1666-73. doi: 10.1073/pnas.1403649111. Epub 2014 Mar 24. PubMed PMID: 24706871.
- Bagdy G, Juhasz G. Biomarkers for personalised treatment in psychiatric diseases. Expert Opin Med Diagn. 2013 Sep;7(5):417-22. doi: 10.1517/17530059.2013.821979. Epub 2013 Jul 22. PubMed PMID: 23875948; PubMed Central PMCID: PMC3786517.
- Kátai Z, Adori C, Kitka T, Vas S, Kalmár L, Kostyalik D, Tóthfalusi L, Palkovits M, Bagdy G. Acute escitalopram treatment inhibits REM sleep rebound and activation of MCH-expressing neurons in the lateral hypothalamus after long term selective REM sleep deprivation. Psychopharmacology (Berl). 2013 Aug;228(3):439-49. doi: 10.1007/s00213-013-3046-4. Epub 2013 Mar 21. PubMed PMID: 23515582.
- 4. Lazary J, Juhasz G, Hunyady L, Bagdy G. Personalized medicine can pave the way for the safe use of CB₁ receptor antagonists. Trends Pharmacol Sci. 2011 May;32(5):270-80. doi: 10.1016/j.tips.2011.02.013. Epub 2011 Apr 16. Review. PubMed PMID: 21497918.
- Adori C, Low P, Andó RD, Gutknecht L, Pap D, Truszka F, Takács J, Kovács GG, Lesch KP, Bagdy G. Ultrastructural characterization of tryptophan hydroxylase 2-specific cortical serotonergic fibers and dorsal raphe neuronal cell bodies after MDMA treatment in rat. Psychopharmacology (Berl). 2011 Feb;213(2-3):377-91. doi: 10.1007/s00213-010-2041-2. Epub 2010 Oct 30. PubMed PMID: 21052985.

PATIENT SAFETY

Lecturer: Zsolt Baranyai MD, Ph.D

The patient safety course with the code number BBSEB1 in the Moodle system, in the course category Independent from Faculty with the title "Patient safety from Semmelweis until today".

The late Ignaz Philipp Semmelweis is the best-known Hungarian physician in the world. Confirming this truth, Semmelweis is among the twelve most innovative individuals commemorated in the Hall of Immortals at the International Museum of Surgical Science (Chicago, IL, USA). In 2013, his discovery was inscribed on the list of the UNESCO Memory of the World Register, where it will remain with us until the end of human history. Tribute is even more important for a university named after Semmelweis; the heritage of our famous ancestor is a source of even greater pride for us. At the same time, however, it also requires us to live up to everything his name signifies for Hungary and the whole world. The value of his life's work cannot be overstated, because he succeeded – through perseverant work and major conflicts – in discovering the underlying cause the most serious obstetrical infection of his era on one hand, and in its prevention on the other. His achievement is a classical example of eternity and furthermore, his accomplishments have contributed greatly to the improvement of patient safety.

The Elearning course can be studied after registration. The course is successfully accomplished if the online test is solved with at least 60%. Students have 5 opportunities to take the test. At least 3 days have to be passed between each attempt, the system won't let students enter the interface.

After former request (email: baranyai.zsolt@med.semmelweis-univ.hu) there is a possibility for consultation in groups. Students are welcome who had difficulties to fill in the test or have questions regarding the course.

ULTRASONOGRAPHY IN OBSTETRICS AND GYNECOLOGY

Department: Department of Obstetrics and Gynecology

AOVNO1554_1A

Study time: In every second Semester 2×45 minutes. Advised Semester: between 6. und 12. Semester Exam: Written test and practical note Credit: 1 Minimal/maximal participants: (1/5 person) Application deadline: 1. December Prerequisite: Completion of second year

The knowledge gained in theoretical basic subjects (anatomy, physiology) can be used by medical students as practical knowledge in the clinic. As a result of more than four decades of experience, ultrasound examination has a fundamental role in modern obstetrical and gynecologycal diagnostic. The course helps you to acquire skill in this field. Performing obstetrical-gynecological ultrasound tests and assessment of findings can only be learned through appropriate training. This non-invasive procedure is also safe for patients. The modern ultrasound equipment of the Department and the wide range of patients and diseases provide the opportunity for learning. Not only obstetricians and gynecologists, but also other associate colleagues such as clinical genetics, radiologists, gynecological cancer surgeons, anesthetists, and intensive therapists can utilize the knowledge provided by the subject

Themes:

Physical basics of ultrasound examination. Parts of the ultrasound device. Application modes (amplitude, motion, brightness, Doppler). Gynecological ultrasound examination. Early pregnancy tests. Ectopic pregnancy. Standard planes of the first ultrasound screening during the 11-13th week of pregnancy. Neurosonography and fetal echocardiography. Standard planes of the second ultrasound screening during the 18-22th week of pregnancy. Ultrasound examinations in the third trimester. Amniotic fluid index and fetal Doppler examinations. 3-4-dimensional ultrasound examinations and their practical application.

Gyorgy Bagdy

CARDIAC ELECTROPHYSIOLOGY

Gestor Institute: Department of Physiology

Credits: 2 Total number of hours (semester): 28 lectures: 28 practices: – seminars: – Type of the course (mandatory/elective): elective

II. semester

Code of the course: AOVELT694_1A

Course director (tutor): András TÓTH, DSc.

Contact details: Semmelweis University, Department of Physiology; phone: +36-1-459-1500/60436

Position: External lecturer

Date of habilitation and reference number: 2009; reference number:

Aim of the subject and its place in the curriculum:

The course is intended to provide up-to-date and extended knowledge based on the latest literature for practically all medical students, especially those planning to be cardiologists or internists in order to meet a predictable future requirement of a strongly established knowledge related to the electrophysiological background and ion channel dependent pathomechanisms of severe, often lethal heart diseases and to facilitate their better understanding of the corresponding scientific literature. Their expected competent knowledge on cardiac electrophysiological mechanisms will significantly help young MDs to introduce novel, highly effective cardiopharmacological agents and/or to select optimal clinical therapeutic strategies. Via providing a detailed introspection into molecular and cellular basis of the electric activity of the heart the course is willing to offer the students an opportunity to collect an important section of these competences during their student years.

During the course the motivated students may collect a comprehensive knowledge on:

- the biophysical basis of cardiac electrophysiology; the principles of operation and regulation of major cardiac ion channels
- the kinetic properties and regulation of ion currents generating cardiac action potentials; the significance of the repolarization reserve; the molecular background of substantial differences between atrial and ventricular and among various ventricular action potentials; and the basic pathomechanisms of arrhythmogenesis
- the principles of intracellular Ca²⁺ homeostasis in cardiomyocytes; the major mechanisms of excitation/contraction coupling; functional
 adaptation of the Ca²⁺-cycle; pathomechanisms of Ca²⁺-dependent and Ca²⁺-facilitated heart diseases and several therapeutic strategies
- · common genetic disturbances leading to malfunction of cardiac ion channels
- most important experimental techniques and animal models applied in experimental cardiac electrophysiology and the human/clinical relevance of the collected data

Finally a practical demonstration (13-th week) based on the material of the lectures is organized in order to help realistic, problem-oriented application of the theoretical knowledge via jointly processing experimental data derived from a few running scientific projects.

Location of the course (lecture hall, practice room, etc.):

Semmelweis University; EOK; H-1094 Budapest, Tűzoltó u. 37-47.

Competencies gained upon the successful completion of the subject:

Understanding of the human physiology which is foundation of medical practice.

Prerequisite(s) for admission to the subject:

Medical Physiology 1 (the course is suggested for 2-4 year students)

Minimum and maximum number of students registering for the course: Minimum 5 and maximum 80 students

Student selection method in case of oversubscription: chronology of registration in the NEPTUN system.

How to register for the course:

Registration must be recorded through the NEPTUN system.

BIOMEDICAL INNOVATION FOR THE 21st CENTURY

We would like to bring to the attention of Semmelweis University students a newly started English course on the topic of engineering innovation in medical research and patient care. By Béla Merkely Rector, the course is being promoted with the Pázmány Péter Catholic University Faculty of Information Technology and Bionics. The course does not require any engineering previous experience. This course was designed for medical student with basic biophysical knowledge.

The aim of the course is to introduce those interested in areas where engineering opportunities are becoming increasingly important in patient care. Each lecture converges on a theme that is presented by a medical and an engineering specialist based on their own perspectives. This allows the audience to learn about the engineering and medical aspects of the same topic. On the other hand, this course provides a deeper insight into the specific field of medical engineering to facilitate the development of research collaboration between the two fields. We strive to promote medical developments and facilitating a safe but rapid transfer of research results into clinical practice.

Language English.

Exam: 2-page essay on a selected topic.

Held by Medical and Engineering specialists

Thematics

- Recent advances in biomedical engineering.
- Microfluidics for diagnostics and therapy.
- Robotics for healthcare: robotics surgery from minimal invasive surgery to DaVinci.
- Ultrasound diagnostics and therapy.
- Advances in bioimage processing.
- Deep learning algorithms in medical imaging.
- Proteomics: the new era of microbiology.
- 3D printing and 3D planning in medicine.
- Prostetics in medical and engineernig field.
- Biosignal processing for personalized treatment.
- Gene Therapy from the perspective of Systems Biology.
- Organ-on-a-chip, and investigation and development of stem cell based therapies.
- From patents to university spin-off companies.

CLINICAL HUNGARIAN from the second semester of the 3rd year

Division of Foreign Languages and Communication – Faculty of Health Sciences

H-1088 Budapest, Vas u. 17., room 130 Mailing address: H-1085 Budapest, Üllői út 26. Phone: +(36-1) 486-4960 Fax: +(36-1) 486-4962 Bakó Head of the Division: *Katalin Zöldi Kovács Ph.D.*

PHYSICAL EDUCATION IX-X.

Practice: 1 hour per week

OBLIGATORY ELECTIVE AND ELECTIVE SUBJECTS – SCHEDULE OF THE CLINICAL MODULE

OBLIGATORY ELECTIVE SUBJECTS									
Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite				
Anesthesiology and Intensive Therapy	2	-	2	pract. mark	Surgery II.				
Medicinal, Epidemiological, and Social Aspects of Drug Abuse	2	-	2	pract. mark	Pre-clinical module				
Clinicopathology II.	2	-	3	pract. mark	Pathology final				
Clinical Endocrinology	2	-	2	pract. mark	Basic module				
Clinical Hematology	2	-	2	pract. mark	Pre-clinical module				
Clinical practice	-	1	1	pract. mark	Pre-clinical module				
Clinical Oncology	2	-	2	pract. mark	Internal Medicine II.				
Health Informatics	2	-	2	pract. mark	Pre-clinical module				
Neonatology	2	-	2	pract. mark	Pre-clinical module				
Clinical cardiovascular physiology	2	-	2	pract. mark	Pre-clinical module				
Clinical Physiology of Respiration and Respiratory Diseases	2	-	2	pract. mark	Medical Physiology II.				
Healthcare Management	2	-	2	pract. mark	Internal Medicine I.				
Ultrasonography in Obstetrics and Gynecology	2	-	2	pract. mark					
Methodology of Clinical Experiments – Observational Experiments	2	-	2	pract. mark					

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ELECTIVE SUBJECTS								
Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite			
Antibiotic therapy & infectology	2	-	2	pract. mark	Pre-clinical module Pharmacology and Pharmacotheraphy II.			
Cardiorespiratorical and neurophysical measuring techniques	2	-	2	pract. mark	Medical Physiology II.			
Social media in medicine	2	-	2	pract. mark	Medical Communication			
Emergency Surgery	2	-	2	pract. mark	Surgery I.			
Neurobehavioral assessment of infants	2	-	2	pract. mark	Pre-clinical module			
Neurosurgery	2	-	2	pract. mark	Neurology			
Traditional Chinese Medicine	2	-	2	pract. mark	For 3rd year students and up			
Introduction to Epigenetics	2	-	2	semi-final	Immunology			
Clinical Hungarian	-	4	2	pract. mark	Hungarian Medical Terminology V.			
Inflammation Biology	2	-	2	pract. mark	Immunology, Molecular Cell Biology II.			
Introduction to Pharmacological Research	2	-	2	pract. mark	Molecular Cell Biology II., Medical Biochemistry			
Clinical work - Radiology	2	-	1					
Clinical Gastroenterology	2	-	3	pract. mark	Internal Medicine – Propedeutics			
Patient Safety			e-lear	ning course				
Medical and Dental Terminology on advanced level I-II.	2	-	2	pract. mark				
Hungarian Medical Terminology in semesters 6-12 on B2 level								
Cardio Electrophysiology	2	-	2		for 2-4 year students			
Network, Management, Career Building	2	-	2		for 3-5 year students			



Faculty of Medicine 6th year

COMPULSORY INTERNSHIPS AND RESPONSIBLE DEPARTMENTS

Internal Medicine

1 st Department of Internal Medicine

Budapest VIII., Korányi Sándor u. 2/A Phone: 459-1500 / ext 51465 Head of the Department: *Dr. István Takács* Tutor: *Dr. Péter Studinger*

2nd Department of Internal Medicine

Budapest, VIII. Szentkirály u. 46. Phone: 266-0926 ext. 55599, 55524 Head of the Department: *Prof. Dr. Péter Igaz* Tutor: *Dr. Krisztina Hagymási*

3 rd Department of Internal Medicine

Budapest, VIII. Szentkirályi u. 46. Phone: 459-1500 Head of the Department: *Prof. Dr. Tamás Masszi* Tutor: *Dr. Katalin Keltai*

Infectology

2nd Department of Medicine, Division of Infectology at Szent László Hospital Budapest, Albert Flórián u. 5-7. Head of the Department: *Prof. Dr. Gergely Kriván* Tutor: *Dr. János Sinkó*

Surgery

1st Department of Surgery Budapest VIII., Üllői út. 78. Phone: 313-5216 / ext. 52167 Head of the Department: *Prof. Dr. László Harsányi* Tutor: *Dr. Ákos Szűcs*

2nd Department of Surgery

Budapest VIII., Üllői út 78/A Phone: 06-20-666-3889; 375-4291 Head of the Department: **Prof. Dr. Gábor István** Tutor: **Dr. György Ledniczky**

Department of Transplantation and Surgery

Budapest VIII., Baross u. 23. Phone: 267-6000, 459-1500/ ext. **60857** Head of the Department: **Prof. Dr. László Kóbori** Tutor: **Dr. Gábor Telkes**

Traumatology

Department of Traumatology

Budapest VIII., Fiumei út 17. Phone: 461-4723 Budapest XIV., Uzsoki u. 29. Phone/fax: 467-3851 Mobile: 06-20-825-8680 Head of the Department: **Prof. Dr. László Hangody** Tutor: **Dr. Tamás Gál**

Vascular surgery

Department of Vascular Surgery Budapest, XII., Városmajor u. 68. Phone: (+36-1) 458-6700 Head of the Department: *Prof. Dr. Béla Merkely* Tutor: *Dr. Péter Banga*

Pediatrics

1st Department of Pediatrics

Budapest VIII., Bókay J. u. 53. Phone: **3142-858** Head of the Department: *Prof. Dr. Attila Szabó* Tutor: *Dr. Ádám Balogh*

2nd Department of Pediatrics

Budapest IX., Tűzoltó u. 7-9. Phone: 215-1380 / *ext. 52892* Head of the Department: *Dr. Gábor Kovács* Tutor: *Dr. Péter Hauser* (hauser.peter@med.semmelweis-univ.hu)

Obstetrics and Gynecology

Department of Obstetrics and Gynecology

Budapest VIII., Baross u. 27. Phone: 266-0473 Head of the Department: **Prof. Dr. Nándor Ács** Tutor: **Dr. Gyula Richárd Nagy**

Neurology

Department of Neurology

Budapest VIII., Balassa u. 6. **Phone: 210-0330** Head of the Department: **Prof. Dr. Dániel Bereczki** Tutor: **Dr. Róbert Debreczeni** (debreczeni.robert@med.semmelweis-univ.hu)

Psychiatry

Department of Psychiatry and Psychotherapy Budapest VIII., Balassa u. 6. Phone: 210-0330 / ext. 51100 Head of the Department: *Dr. János Réthelyi* Tutor: *Dr. Erika Szily*

Family Medicine in Daily Practice

Department of Family Medicine Budapest VIII., Stáhly u. 9. Phone: 355-8530 Head of the Department: *Prof. Dr. László Kalabay* Tutor: *Dr. Péter Torzsa*

Prehospital Emergency Medicine

National Ambulance Service Budapest XIII., Róbert Károly krt. 77. Phone: 350-6720 Director: Dr. Gábor Göbl

Transfusion Course

Department of Transfusion Medicine Budapest VIII., Nagyvárad tér 4.

Phone: 210-2940 Head of the Department: **Prof. Dr. Attila Tordai**

STUDY PROGRAM

6th Year in the 2020/2021 academic year

NEW CURRICULUM

	hours						
course name	course name lecture pratice credit prev (h/week) (h/week)		prerequisite(s)	examination			
Internal Medicine (final year's practice)	8 weeks (incl. 1 week Infectology and 1 week Family Medicine)		8 weeks (incl. 1 week Infectology and 1 week Family Medicine)		8	Internal Medicine II., Medical Imaging, Pulmonology and Thoracic Surgery	final
Surgery (final year's practice)	6 weeks (incl. 1 week Vascular Surgery, 1 week Traumatology)		6	Traumatology, Urology, Ophthalmology	final		
Pediatrics (final year's practice)	6 weeks (incl. 1 week Pediatrics Infectology)		6	Internal Medicine II., Pediatrics, Clinical Genetics	final		
Obstetrics and Gynecology (final year's practice)	4 weeks		4	Clinical Genetics, Obstetrics and Gynecology	final		
Neurology (final year's practice)	3 weeks		3	Neurology	final		
Psychiatry (final year's practice)	3 weeks		3	Psychiatry and Psychotherapy	final		
Ambulance	2 weeks		2	Anaesthesiology and Intensive Therapy, Emergency Medicine and Oxyology, Traumatology	pract. mark		
Transfusion	1 week		1	Anaesthesiology and Intensive Therapy, Internal Medicine II.	pract. mark		
Elective	6 weeks		6	Internal Medicine II., Surgery, Last course of the chosen field (announced in the 5th year at latest)	pract. mark		
PE XI.	0	1	0	PE X.*	signature		
PE XII.	0	1	0	PE XI.*	signature		
Thesis work	-	-	20				
elective subjects in all in the 1-6 years							
Optional subjects **			min. 18	As determined at the relevant subject.			
Obligatory elective subjects	Credits are need many as are mis credits adding u compulsory and	ded to be fulfilled using from the tot the credits ear d optional subjec	l: as al 360 ned from ts.	As determined at the relevant subject.			

* Simultaneous taking the courses is possible.

** 6 weeks of optional practice: It can be completed at any clinical department or clinic. Major subjects that end with a final exam are also eligible.

OLD CURRICULUM

	hours						
course name	lecture (h/week)	pratice (h/week)	credit	prerequisite(s)	examination		
Internal Medicine	9 weeks		9 weeks		9	Internal Medicine VI., Basic Imaging	final
Infectology (within Internal Medicine)	1 week			Bioethics – Medical Ethics	signature		
Family Medicine (within Internal Medicine)	1 week			-	signature		
Surgery	9 weeks		9	Surgery III.	final		
Vascular Surgery (within Surgery)	1 week			-	signature		
Traumatology (within Surgery)	2 weeks			Traumatology	signature		
Pediatrics	8 weeks		8	Pediatrics II.	final		
Pediatric Infectology (within Pediatrics)	1 week			-	signature		
Obstetrics and Gynecology	5 weeks		5	Obstetrics and Gynecology II., Urology, Pediatrics II.	final		
Neurology	4 weeks		4	Neurology II.	final		
Psychiatry	4 weeks		4 weeks		4	Psychiatry II.	final
Prehospital Emergency Medicine	1 week		1 week		0	Oxiology – Emergency Medicine	signature
Transfusion	1 week		1 week		0	-	signature
Elective	1 week		0	-	signature		
PE XI.	0 1		0	PE X.*	signature		
PE XII.	0	1	0	PE XI.*	signature		

* Simultaneous taking the courses is possible.

Comment:

Please read more about the rules concerning the criteria of selecting the foreign clinical practice positions and accepting the practice period spent abroad:

http://www.semmelweis-english-program.org

http://www.sote.hu/intezetek/oktatas/?inst_id=145&page_id=480

Certificates can be downloaded at http://www.semmelweis-english-program.org/index.php?option=com_content&task=view&id=79&Itemid=101

Please note the followings:

- 1. When **not at Semmelweis University** the two weeks Traumatology is to be completed at a surgical department providing **neurochirurgia** as well.
- 2. It is strongly required to keep the instructions of Article 24 of the Examination and Studies Regulations concerning the requirements of the **diploma work** focusing especially on the **deadlines**.
- 3. The final exams can be done only on the exam dates published by the clinical departments of Semmelweis University.

Please note: there are no individual requests and the rule should be kept strictly.

INTERNAL MEDICINE

To be present for at least 7 hours per day (35 hours per week), including 1 week Infectology and 1 week Family Medicine.

Activities should include the following subjects: general survey of hospital/department organization, examination of patients in the Medical Department, with special emphasis to case history taking and full physical examination.

The students should gain practice in patient documentation, problem-oriented medical record keeping, taking of pulse, blood pressure of patients.

Participate in the preparation of diagnostic and therapeutic plan for patients.

Be present at invasive and semi-invasive interventions (taps of abdominal and chest fluid, preparation of bone marrow smear etc.).

To spend time at the outpatient department.

To practice basic laboratory techniques needed in bedside diagnosis (urinalysis, stool examination, use of dip sticks etc.).

To be on night duty once during the period.

Consultations in gastroenterology, diabetes, hematology, endocrinology, cardiology, sonography, X-ray, ECG etc.

Watch endoscopy performed.

See the intensive coronary care unit.

Regular consultations with the doctor responsible for the student.

All these activities should be carefully supervised by members of the medical staff.

The students should also practice communication with patients and their relatives, while giving them relevant medical information on the disease but avoiding conflicts with medical confidentiality.

Students should take an active part in medical consultations concerning their patients, as well as in the medical conferences in the department.

INFECTOLOGY IN INTERNAL MEDICINE

One week Infectology practice within sixth year's rotation in Internal Medicine

Subject: Infectious diseases (Infectology)
Head of Division: Dr. Gergely Kriván PhD
Location: 2nd Department of Medicine, Division of Infectology at Szent László Hospital
1097 Budapest, Albert Flórián u 5-7.
Time period: 30 hours a week
Registration: NEPTUN system

Program: a detailed program plan will be announced about locations and tutors of daily practice in time

Group size: Our institution can only accept a limited number of students (14 persons) at a time. In order to keep the program interactive and to avoid overcrowding at patients' departments we cannot accept your request to register above this quota. If the scheduled practice weeks do not match your plans you can: 1. Switch registration with a fellow student. 2. Collect at least 5 more persons having the same problem and apply to the English Secretariat to schedule an additional week for Infectology rotation. Our Division will do its best to fulfill these requests; however it cannot be granted that rotations will be organized at any desired time.

Overview

Knowledge on infectious diseases has been among the most ancient parts of medical practice and science. Epidemics, isolation of patients with communicable diseases, vaccinations and anti-infective therapy had a significant impact not only on the progress in healthcare but also on history and socio-cultural development of mankind. Although infectology is often considered being of marginal importance within internal medicine, it should be noted that an increasing number of diseases and conditions seem to have an infectious background. In addition, around a third of chapters within major medical textbooks deal with infectious diseases.

Currently development of infectology has two important directions that are complementary to each other. The traditional one will target classical and emerging infections often of global scope, like influenza, gastrointestinal infections, hepatitis or malaria etc. A newer branch of infectology is focusing on infections related to modern medicine, like nosocomial outbreaks caused by multiresistant organisms or infections occurring in immunocompromised hosts. Prophylaxis and therapy of infections as well as knowledge on antibiotic therapy is of significant importance in both fields.

Program details

During the infectology rotation you will be welcome to

- take part in rounds at Departments of Infectious Disease
- participate in round table discussions on current topics in infectology
- · discuss real life cases especially in the immunocompromised host setting
- being updated on basic diagnostic and therapeutic approaches in stem cell transplant patients
- have an overview on developments in HIV/AIDS therapy.

Sessions are designed to be as interactive as possible, so you are encouraged to actively take part in discussions and feel free asking questions from tutors at all times.

Completion of rotation and signature: Registered students must attend all courses to receive their signature. We can only accept hospital discharge papers for verification of absences. The absence must be substituted at a later time period, assigned by the tutor. In the case of further absences, the practice cannot be accepted. Excuses like having been unable to locate the venue of practice are not acceptable. Students arriving later than 10 minutes past the scheduled start of the sessions will not be accepted to take part in the program.

SURGERY

- Acting as a HO or SHO under strict supervision, including administration and practical skills.
- Admitting of patients with full physical examination, including breast and PR examinations.
- Theoretical planning for examinations and treatments for the examined patients.
- Continuous observation and registration of the patient's condition with administration.
- Writing of discharge reports.
- Performing different injections (iv., im, sc), insertion of venflons, phlebotomies. To determine blood group, performing of transfusions under strict supervision. Completion of administration.
- Insertion of NG tubes.
- Catheterization (urethral and suprapubic).
- Removal of clips and stitches.
- Changing of dressings.
- Assistance at abdominal and thoracic wash-outs or punctures.
- Taking part in consultations with other specialists.
- Theoretical decisions about operations. Consenting.
- Taking part in operations, scrubbing in, stitching.
- Examination and treating of emergency patients.
- Taking part in anesthesiological preparation of patients.
- Observation of premedications.
- Assistance at several anesthesiological procedures, including spinal, peridural and GA.
- Assistance at intubations. If possible, independent intubation.
- Measurement of CVP.
- Assistance at jugular and subclavian venal punctures.

- Suction of the throat and trachea.
- Observation of ITU work.
 - HO house officer
 - SHO senior house officer
 - PR per rectum
 - NG nasogastric
 - GA general anesthetic
 - CVP central venous pressure
 - ITU intensive therapy unit
- Observation of postoperative treatment.
- Observation of resuscitation and reanimation.
- Observation of autopsies of the ward.
- Being present at every medical discussion of the ward.
- Observation of outpatient work.
- Assistance in outpatient work including assistance at day surgical operations.
- Changing of dressings of outpatients.
- Treatment of infected wounds.
- Assistance at i.v. anesthesia.
- Performing and assisting at local anesthesia.
- Observation and assistance at ultrasound, endoscopies and X-ray examinations.
- As interns, students take part in the daily rounds and report on the patients examined by them or treated in their section. Interns examine the patients under the supervision of the ward chief or ward surgeon. Interns are required to be personally involved in the examinations and the evaluation of the findings.

Involvement in the preparation of the documentation of the patients.

Involvement in the preoperative preparations as well as in the postoperative care and treatments. Take part in the operations as second assistants.

Take part in on-call duty without numerical limitations. During on-call (night) duty, interns should-under the supervision of the ward chief or authorized surgeon – be involved in solving all problems caused by either acute or chronic diseases.

Interns are required to take part in all consultations organized for them.

Interns will be eligible for the final examination if the above conditions have all been met and their academic achievements during their internship proved.

TRAUMATOLOGY

Department of Traumatology Subject: Traumatology Type of subject: Mandatory

The work hours of the practice are 30 hours/week Head of Department: **Prof. Dr. Hangody László**

Dear Students,

In order to begin your 6th year practice at Semmelweis University, Department of Traumatology – in Uzsoki Hospital or Péterfy Traumatology Center – the following certificate is required to show on the first day of your 2 weeks traumatology practice: Occupational suitability health examination results.

Purpose of subject:

Traumatology as a specialty deals with the treatment of injured patients, independent of the injured organ, patient's age or previous diseases. In developed countries, the 4-5th leading cause of death is injury, while in the actively working population, the rate of death is even higher. Morbidity in children and in the elderly is also high. Since the patient examination and therapeutic algorithm somewhat differ from the previously taught examination and treatment methods in the curriculum, our aim is to offer a general and practical approach to treating trauma patients for students. The prerequisite for 6th year Traumatology is the material and exam from 5th year in Traumatology, to be used in a more practical manner. Beside this, familiarization and active participation in the daily routine of a Traumatology department play a role in the students' curriculum.

Syllabus: 6th year students - 2 week practice

The student may attend this practice at one of the following institutions: 1. Semmelweis University Department of Traumatology, 2. in the Member States of the European Union (and in Switzerland and Norway), clinical practice is accepted and recognized if it is earned at a Traumatology or Orthopedic-Traumatology department at state-accredited university clinics or teaching hospitals – the legal ground for this is the mutual recognition of diplomas issued by the accredited institutions, or 3. abroad at a Traumatology or Orthopedic-traumatology department of an accredited teaching hospital accredited by the Hungarian Accreditation Committee – HAC (this can be checked on the following website: http://www.semmelweis-english-program.org/index.php?option=com_content&task=view&id=79&Itemid=101 under the link: Approved Health Institutes for 6th year Rotations).

- 1. Daily attendance of morning conference. After becoming acquainted with the introduced cases, students will have the opportunity to examine the hospitalized patients and familiarize themselves with patient's documentation.
- 2. Assisting or observing in the operative theater, depending on the operative program.
- Students shall participate in patient admission, examination, follow and help in the evaluation of the diagnostic examinations, and take part in the acute treatment of traumatized patients during on duty shifts.
- 4. Participating in grand rounds, patient presentation, and following up on referrals.
- 5. Consultation with attending tutor of actual clinical cases, planning the treatment and the course of patient follow up.
- 6. Taking part in patient follow up examinations. Examining the range of motion, function, evaluating x-rays and CT scans. Identification and treatment of complications

Detailed syllabus:

- 1. First Aid
- 2. Evaluation of the mental-stage/orientation with the Glasgow-score
- 3. Evaluating and management of external wounds
- 4. Termination of bleeding
- 5. Transportation of trauma patient
- 6. Transient fixating bandage of traumatic part of body
- 7. Preparation of the surgical area
- 8. Surgical scrub-in and clothing
- 9. Infiltrational anaesthesia
- 10. Incision and drainage
- 11. Management of infected, necrotic wound

- 12. Closure
- 13. Stitch removal
- 14. Applying pressure-bandage
- 15. Reuniting closed fractures
- 16. Fracture stabilization
- 17. Reduction of dislocation
- 18. Transient fixation of broken extremities
- 19. Insertion of Foley's catheter in men
- 20. Insertion of Foley's catheter in women
- 21. Venous-canulating
- 22. Pain management
- 23. Assisting surgical procedures

Attendance criteria and absences:

Faculty of Medicine

The complete attendance of the two week practice as well as the completion of the syllabus signed by the tutor is mandatory. The syllabus must be handed in at the Traumatology Department upon completion of the practice with the certificate (if practice is spent abroad) and student index. During the course of the two weeks, 6 hour work days are mandatory.

Verification of absences from practices of from the exam:

We can only accept hospital discharge papers for verification of absences, with a maximum of 3 days. The absence must be substituted at a later time period, assigned by the tutor. In the case of further absences, the practice cannot be accepted.

The topics and monitoring of practices:

Regular attendance is taken during the two week practice on an attendance sheet. The traumatology student syllabus contains the topics and requirements the student must fulfill during the practice.

Students who spend their Traumatology practice abroad must hand in a Letter of Acceptance form (For obligatory internship in Traumatology as part of the student's sixth year's curriculum) signed by the professor in charge/Head of Department at least one month prior to beginning their practice at that hospital/clinic. We cannot accept the practice of a student, if the "letter of acceptance" is handed in later than one month prior to starting the practice.

Students who spend their Traumatology practice at the Traumatology Department of Semmelweis University must do so at one of the allotted time periods on the Neptun program.

Criteria for the signature at the end of the semester:

Attendance of the two weeks of traumatology practice, as well as the completion of the syllabus (which can be downloaded from the Semmelweis University Traumatology Department's website) signed by the tutor. Traumatology must be attended and signed separately from the general surgery practice in the 6th year. Participation is only accepted, if the department has a trauma care unit, which is qualified according to Semmelweis University guidelines.

Grading: One topic is a traumatology topic, which is part of the surgery oral exam.

Type of exam: Oral exam. One traumatolgy topic within the surgery exam.

Exam requirements:

The knowledge of the given textbook, lecture and practice material including that of V. year. One topic is chosen from a topic list.

Exam registration: Neptun program

Modification of exam registration: Neptun program

Absence from the exam:

We can only accept hospital discharge papers for verification of the absence from the exam, proving the student was continuously hospitalized during that time period.

List of textbooks, notes, study-aids and references:

The Trauma Manual: TRAUMA AND ACUTE CARE SURGERY Third edition Editors: Andrew B. Peitzman, Michael Rhodes, C. William Schwab, Donald M. Yealy, Timothy C. Fabian, Publisher: Wolters Kluwer / Lippincott Williams & Wilkins

VASCULAR SURGERY

Department of Vascular Surgery

Type of the subject: mandatory Code: AOKSBE066_SA Credits: 0 Interval of practice: 1 week Time of practice: 30 hours a week.

SYLLABUS OF THE SUBJECT

I: Reception, assignment, and tutor appointment

The 6th grade students who registered themselves to the certain term, should appear on the first day of the practice (usually on Monday) at 8 am at the English course coordinator (Zsuzsanna Jaranyi M.D., associate professor). They can get information of the meeting point at the reception. From 8 am till 8:30 the students get their coats and their lockers. After this, they are assigned to their tutor. Our aim is the "one tutor-one student" principle, but this is not possible often, due to the numerous students at same time (4-5 students have 1 tutor). During the practice course it is the tutor's task to introduce the whole range of the vascular surgical procedures to the students: like the morning ward round – physical examination of the patients – diagnostical steps of vascular diseases – treatment strategy – knowledge of operative techniques – early control, medical therapy, recognition and treatment of adverse events, long term prognosis of patients who underwent vascular surgical operations and the activities of the outpatient clinic.

II: Activities in wards

The student participates in the ward rounds with the tutor's guidance, where he can get acquainted with the admitted patients' history, the type of the previously performed operations, or even with the planned operative opportunities. The tutor involves the student in the features of the arterial and venous patient examination: like recording the patient history, listing the risk factors of the vascular diseases, palpation, auscultation, and examination with mini Doppler, performing special tests (Trendelenburg-, Perthes probe, postural-, capillary refill test), including or excluding cardiac co morbidities (ECG, ECHO, history findings), and finding other co morbidities, which affect with the surgical treatment.

- III: Diagnostic possibilities of patients with vascular diseases Students should spend at least one day in the angiography, carotid duplex scan, and CT/MRI laboratories, where they could get acquainted with the most common invasive and non-invasive diagnostical opportunities, and with the endovascular therapy.
- IV: Activity in the Operating Theatre

The student participates in the patients' operations, following all the stations, and in some of these he/she could take a hand in: anesthesia, narcosis, intubation or local anesthesia, catheter usage, canulation, giving injection, disinfection, isolation, surgical techniques, wound drainage, closing, and dressing change, and following the operated patient to the ward or to the intensive care unit. It is recommended for the student to scrub in, and to assist to the surgeon. During the operation he/she should get a possibility to touch the ill and the reconstructed vessels and the tutor should explain the specialties of the actual type of the operation.

V: Outpatient clinic

The student should participate in his/her tutor's outpatient clinic, where he/she could learn the examinations of the vascular patients. The student should perform patient examination also (palpation, auscultation, Doppler, and evaluating the test results), and should follow the treatment decision strategy, and the aspects of the patient controlling

- VI: Practice oriented theoretical training The students get a grouped theoretical training, which involves the whole range of vascular surgery. These are one and a half – two hours long discussions which are all practice oriented.
- VII: On the last day of the practice course the students give back their coats and their locker keys, and they get the signature in their index, which certificates the successfully fulfilled practice.
PEDIATRICS

According to the curriculum, 6th year medical students should complete a 6-week Pediatric practical (including 1 week Infectology).

- During one half of the practical, students work in infants' wards, in the other part in children's wards. This way they can acquire and practice the following activities on both infants and children:
- Taking of pulse and blood pressure, correct weight and height measurement (also of infants) (use of percentile tables).
- Under the supervision of the ward physician, active participation in blood sampling, taking throat swab etc.
- Under the supervision of the ward physician, practice of various injection techniques (venous, im, sc and Mantoux test).
- Preparation and control of infusion and transfusion accessories and performing these activities under the supervision of the ward physician. Determination of blood group.
- To assist to special diagnostic or therapeutic interventions and learning eventually to perform them under the supervision of the ward physician (bonemarrow sampling, lumbar puncture).
- Based on the knowledge of the necessary physiological studium: blood counting and urine analysis (also the sediment).
- Taking of case records and temperature charts.
- Participation in the daily rounds for students, where simpler differential diagnostic questions are discussed with the instructions of a full or associate professor.
- Participation in tutorials held on the most important theoretical subjects, enabling students to get acquainted with the standpoint of the hospital in debated questions.
- In addition to the above, students are expected to be able to contact children patients of various ages (to win the patients for the examination), to do basic nursing duties (feeding, drinking, bathing, changing of infants' diapers, administering of medicaments).
- Working in the wards:
 - a) ward round (physical examination, discuss about illnesses, therapy, different diagnoses, etc.)
 - b) follow up on patients
 - c) paperwork (status of physical findings, decursus, discharge report, etc.)
 - d) diagnostic procedures (venapuncture, urine collection, etc.)
- Ward round participation

Students who get preliminary permission from the Head of the Department to do the internship abroad are supposed to complete 2 weeks (out of the 8) at the Department of Pediatrics of Semmelweis University.

Note: Only legibly, completely and accurately filled out, institutionally sealed, original acceptance letters are recognized by the I. Department of Pediatrics!

OBSTETRICS AND GYNECOLOGY

Essential Requirements in Obstetrics

- Prenatal care (anamnesis, lab tests, screening during pregnancy, obstetrical examinations, Leopold's manoeuvres)
- Cardiotocography (NST, OCT)
- Ultrasonography (evaluation)
- Abnormal pregnancy (diagnosis and therapy), intercurrent diseases (diabetes, heart diseases, renal diseases). Preeclamptic toxemia, hypertension, twins, hemorrhages, abortions
- Normal labor
- fetal and maternal monitoring, management of the stages of labor (examinations during labor)
- Abnormal labor
- breech delivery, transverse lie (diagnosis)
- Obstetric operations (assistance at labor and delivery)
- Obstetric operations (vacuum extraction, forceps, cesarean section, episiotomy)
- Postnatal care
 - Evaluation of the premature, dysmature and eutrophic newborns
- Fundamentals of neonatal management
- Essential Requirements in Gynecology
- Gynecologic anamnesis
- Gynecologic examinations (to be carried out)
 - vaginal examination
 - colposcopy cytology (basic knowledge, how to take a PAP smear)
 - examination of the breast
- Gynecologic operations (assistance)
 - bartholin abscess, cyst
 - D and C
 - abdominal hysterectomy
 - vaginal hysterectomy
 - colporrhaphy
- Postoperative management (basic knowledge)
- Outpatient clinics (to take part in the office work of outpatient clinics for gynecology, genetic counseling, adolescent gynecology, menopause, endocrinology, etc.)
- Bleeding disorders
- Cervical, corporal, ovarian, vulvar cancer (etiology, screening, diagnosis, therapy)
- Inflammation of the genital tract (PID)
- Urinary incontinence
- Contraception

NEUROLOGY

General information

Tutor: Dr. Róbert Debreczeni

Tel.: 210-0330, Fax: 210-1368

Office hours at the Department of Neurology:

Monday 13,00-14,00 Friday 10,00-12,00

Responsible Secretary: Andrea Kovács (Andi)

Rotation periods: set by the English Secretariat, but for individual changes one might apply at the Department of Neurology. To ease the scheduling of other 6th year practices the Department shall organize "early rotations" right after taking the 5th year semifinal exam.

Neurology rotation is 3 weeks long. Students receive their schedule and assignments on the first day of practice. During the training students must write one neurological case report. It is also obligatory to spend one day at our Outpatient Clinic and to take part in one nightduty (no sleep in). Students' activity in the wards, at the Outpatient Clinic and during duty, and also the case report is evaluated by the student's tutor on an assessment sheet. The assessment form and the case report must be presented at the final exam. During the training period two days of absence are allowed.

Final examination

One can register for the exam only through the Neptun-system.

The final examination consists of:

- 1. practical part: neurological examination skills, decision making, tested at the bedside;
- theoretical part: 3 theoretical questions.
 Examinations start at 10 a.m. Students must present their index book, assessment form, case report and in case of retake the permission from the Office of Dean.
 On event of failing the earliest possible retake is 10 days later.

Official textbooks:

- 1. Arányi Zs., Kamondi A., Kovács T., Szirmai I.: Investigation of neurological patients
- 2. Adams: Principles of Neurology. McGraw-Hill
- 3. Lindsay, Bone, Callender: Neurology and Neurosurgery Illustrated. Churchill Livingstone

Other suggested books:

- 1. Marsden, Fowler: Clinical Neurology. Raven Press
- 2. Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers
- 3. Gilroy: Basic Neurology. Pergamon Press
- 4. Weiner- Lewitt: Neurology of House Officer. Williams and Wilkins
- 5. Bannister: Brain an Bannister's Clinical Neurology. Oxford University Press
- 6. Mumenthaler: Neurology. Georg Thieme Verlag.

6th year Medical Student Clinical Neurology Learning Objectives Neurologic History and Examination

- 1. Perform a competent history, noting the following factors:
 - A. Establish the onset, progression and character of the disorder identifying all related symptoms.
 - B. Perform a standard neurologic review of symptoms with regard to personality, memory, headaches, pain, seizures, impairments of consciousness, vision, hearing, language function, swallowing, coordination, gait, weakness, sensory alterations, sphincter disturbance, and involuntary movements.
- 2. Perform a neurologic examination
 - A. Perform a screening mental status examination to include: level of consciousness assessment, and aphasia assessment.
 - B. Examine for meningismus, straight leg raising maneuver.
 - C. Cranial nerve examination
 - D. Motor examination including: tone, strength and bulk, pronator drift, abnormal movements.
 - E. Perform a reflex examination (muscle stretch reflexes, superficial reflexes, pathologic reflexes)
 - F. Coordination examination including finger-to-nose- test, heel-to-shin test, rapid alternating movements.
 - G. Gait examination: stance and Romberg test, gait, tandem gait, ability to rise from sitting, toe walking and heel walking.
 - H. Perform sensory examination including primary modalities(pain, temperature, position, vibration)and secondary/cortical modalities (stereognosis, graphesthesia, double simultaneous stimulation).
- I. Acquire the following skills:
 - A. Anatomic and physiologic basis of the neurologic examination.
 - B. Competent history, physical and neurologic examination.
 - C. Localize the lesion using the clinical database.
 - D. Develop a differential diagnosis of the clinical problem.
 - E. Assess the acuteness of neurological diseases, recognize neurological emergencies.
 - F. Formulate a plan of investigation and management.
- II. Describe the indications, techniques, results, contraindications and risks of the followings:
 - A. Lumbar puncture (investigation of CSF)
 - B. EEG, EMG, ENG, Transcrnial magnetic stimulation
 - C. CT, MRI, SPECT, PET
 - D. Carotid and transcranial ultrasound
- III. Disorders of motor function
 - A. Differentiate between upper and lower motor neuron lesion (UMN, LMN).
 - B. UMN facial weakness and LMN facial weakness.
 - C. Disorders of coordination. Recognize symptoms of cerebellar disorders. Define ataxia, dysmetria, wide-based gait, and discuss the localization.
 - D. Define and differentiate involuntary movement disorders:tremor, rigidity, spasticity, athethosis, chorea, dystonias, myoclonus, tics. Discuss the findings and treatment of: Parkinson's disease, essential tremor, tardive dyskinesia, Huntington's chorea, Wilson's disease.
- IV. Disorders of sensation
 - A. Differentiate central sensory disorders from peripheral sensory disorders.
- V. Disorders of vision
 - A. Localize the lesions causing vision disorders and visual field defects.
 - B. Differentiate papilledema from papillitis.
 - C. The innervation deficit of the ocular muscles.
 - D. Recognize gaze problems and nystagmus.
 - E. Assess rystalli abnormalities.

VI. Episodic disorders

- A. Seizure disorders: generalized and partial seizures, distinguish seizure from syncope.
- B. Describe Todd's postictal phenomenon.
- C. Evaluation of a patient for new-onset seizure.
- D. The anticonvulsants, their indications and side effects.
- E. Management of a patient in status epilepticus.
- F. Narcolepsy and obstructive sleep apnea.

VII. Cerebrovascular diseases

- A. Define the following: asymptomatic carotid bruit, TIA, amaurosis fugax, ischemic infarct, lacunar infarct, hemorrhagic infarct, parenchymal hemorrhage, SAH.
- B. The clinical features of various territorial infarcts.
- C. Treatment options to prevent infarction in atrial fibrillation and carotid stenosis.
- D. The clinical features for hypertensive parenchymal hemorrhage.
- E. The clinical picture and diagnosis of SAH. Early medical/surgical management of a patient with a SAH.

VIII. Multiple sclerosis (MS)

- A. The criteria for the clinical diagnosis of MS.
- B. The treatment of MS.

IX. Head trauma

- A. Define the temporal profile, symptoms and treatment of: commotion, concussion, anterograde and retrograde amnesia, subdural hematoma, epidural hematoma, contusion or hemorrhage, liquorrhea.
- X. Dizziness and disorders of hearing
 - A. Define vertigo, and contrast it with other type of dizziness.
 - B. Describe nystagmus, hanging head test (Hallpike maneuver), calorics.
 - C. dentify the clinical features of: benign paroxysmal positional vertigo, vestibular neuronitis, Meniere's disease, brainstem TIA with vertigo, acoustic neuroma.
- XI. Disorders of higher cognitive functions
 - A. Define and assess: dementia, delirium, amnesia, confabulation, hallucination.
 - B. Define normal-pressure hydrocephalus.
 - C. Define the anatomical basis for aphasia and dysarthria.
 - D. Differentiate the aphasias on the basis of ability to produce speech, comprehension, naming, repetition.

XII. Disorders of altered consciousness

- A. Define hypnoid and non-hypnoid unconsciousness.
- B. The anatomic basis of consciousness.
- C. Assess the comatose patient, evaluation and treatment.
- D. Localize the following: decorticate and decerebrate rigidity, conjugately deviated eyes, pathologic respiration, pinpoint pupils, anisocoria, intact versus absent oculocephalic response, intact versus disconjugate ice water calorics.

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- E. Diagnosis and management of increased intracranial pressure (ICP).
- F. Symptoms of uncal and other herniations.
- XIII. Headaches and facial pain
 - A. Clinical features of migraine, cluster headache, tension headache, trigeminal neuralgia," organic" headache.
 - B. Treatment for common headaches.
- XIV. Brain tumors
 - A. Clinical presentation and diagnosis of primary brain tumors.
 - B. Metastatic tumors to the brain in adults.

- XV. Infections
 - A. Bacterial meningitis, viral meningitis, encephalitis including herpes simplex, chronic meningitis, brain abscess. Neurosyphilis. Lyme disease.
 - B. HIV and the nervous system.
- XVI. Spinal cord disorders
 - A. Neurological symptoms caused by compression, transsection and hemisection of the spinal cord.
 - B. Autonomic deficits caused by spinal cord lesion.
 - C. Clinical presentation of vitamin B12 deficiency.
- XVII. Peripheral nervous system disorders
 - A. Clinical syndromes of neuropathy, neuromuscular junction disorders, myopathy.
 - B. Describe: radicular pain, radiculopathy, mononeuropathy, meralgia paresthetica, mononeurosis multiplex, polyneuropathy, paresthesia, fasciculation.
 - C. Clinical findings in root lesions at C5, L4, L5, S1.
 - D. Herniated nucleus pulposus.
 - E. The tunnel syndromes.
 - F. The acute inflammatory demyelinating polyneuropathy (Guillain-Barre synd.)
 - G. The motoneuron disease.
 - H. The myasthenia gravis.
 - I. Duchenne muscular dystrophy, myotonic dystrophy, polymyositis.

XVIII. Alcohol related disorders

- A. Wernicke-Korsakoff syndrome, dementia.
- B. Delirium tremens, alcohol withdrawal seizure.
- C. Cerebellar degeneration, peripheral polyneuropathy.

Neurology Examination Question List for 6th year Students

1st series Priority questions

- 1. Brainstem reflexes
- 2. The facial nerve
- 3. Differential diagnosis of vertigo and dizziness
- 4. Localisation of paresis syndromes
- 5. Symptomes of upper and lower motroneuron lesion
- 6. Types and localisation of aphasias
- 7. Classification of unconscious conditions
- 8. Examination of the unconscious patient
- 9. Unconsciousness due to metabolic origin
- 10. Neurological emergencies
- 11. Clinical manifestation of increased intracranial pressure. Herniations.
- 12. Traumatic intracranial bleedings
- 13. Trauma of the spine and spinal cord
- 14. Clinical syndromes of impaired circulation of the internal carotid artery
- 15. Clinical syndromes of impaired circulation of the vertebro-basilar system
- 16. Emergency in cerebrovascular disorders
- 17. Diagnostic procedures in cerebrovascular disorders.
- 18. Disturbance of cerebral venous circulation.
- 19. Intracerebral bleedings.
- 20. Diagnosis, treatment and prognosis of subarachnoid hemorrhage
- 21. Status epilepticus
- 22. Meningitis, encephalitis
- 23. Multiple sclerosis
- 24. Signs of brain tumors
- 25. Signs of tumors of the spine and spinal space
- 26. Brain edema
- 27. Diagnostic criteria of dementia
- 28. Diagnosis of Parkinson's disease
- 29. Wernicke-Korsakow syndrome
- 30. Guillain-Barre syndrome
- 31. Disturbance of micturition and defecation
- 32. Myasthenia gravis

2nd series

- 1. Neurological causes of impaired visual acquity. Visual field defects.
- 2. Ocular movement and gaze disorders
- 3. Disorders of the vestibular system.
- 4. Syndromes of lower cranial nerve dysfunctions.
- 5. Syndromes of pons and mesencephalon lesions
- 6. The muscle tone control
- 7. Neuroanatomical basis of sensory disturbances
- 8. Functional systems of cerebellum. Signs of cerebellar disorders.
- 9. Gait disorders
- 10. Symptoms of frontal lobe damage
- 11. Symptoms of temporal lobe damage
- 12. The limbic system
- 13. Symptoms of parietal lobe damage
- 14. Symptoms of occipital lobe damage
- 15. Classification of aphasia
- 16. Agnosia, apraxia, alexia, agraphia

- 17. The basal ganglia
- 18. Disorders of the thalamus
- 19. Localisation of memory disturbances
- 20. Imaging techniques (angiography, CT, MR, PET, SPECT)
- 21. Investigation of cerebral circulation
- 22. EEG in the diagnostic workup
- 23. EMG, nerve conduction studies, transcranial magnetic stimulation and evoked potentials (BAEP, VEP, SSEP)
- 24. The lumbar puncture and the examination of cerebrospinal fluid
- 25. The cerebral circulation, and its regulation
- 26. Classification of cerebrovascular disorders
- 27. TIA
- 28. Causes of cerebral ischaemia in young adults
- 29. Treatment and prevention of cerebral ischemia
- 30. Classification of epilepsy
- 31. Diagnostic workup of epilepsy
- 32. Differential diagnosis of syncope and other types of disturbed consciousness

Faculty of Medicine

33. Treatment of epilepsy

3rd series

- 1. Neurological disorders caused by viral infections
- 2. Neurological disorders caused by Herpes virus
- 3. Prion-diseases, slow virus infections
- 4. Neurological consequences of AIDS
- 5. Clinical types and treatment of multiple scelrosis
- 6. Hystopathological classification of brain tumors
- 7. Metastatic tumors of the brain
- 8. Paraneoplasias of the nervous system (PML, neuropathies, cerebellar deg., Lambert-Eaton sy.)
- 9. Disorders associated with parkinsonian syndrome
- 10. Treatment of Parkinson's disease
- 11. Hyperkinetic movement disorders
- 12. Hyperkinesias
- 13. Classification of encephalopathies
- 14. Primary degenerative dementias
- 15. Multiple system atrophy
- 16. Disturbed cerebrospinal fluid circulation (hydrocephalus)
- 17. Syndrome of brachial plexus damage
- 18. Syndrome of radial, ulnar and median nerve damage
- 19. Syndrome of lumbosacral plexus damage
- 20. Etiology of polyneuropathies
- 21. Neuropathies in diabetes mellitus
- 22. Inherited neuropathies (Charcot-Marie, Dejerine-Sottas)

32. Genetic disorders in neurology (Huntington chorea, fragile X,

- 23. Low back pain, and cervical disk disease
- 24. Malformation of the spine and spinal cord
- 25. Symptoms of the disorder of spinal cord
- 26. Motoneuron diseases
- 27. Muscular dystrophies
- 28. Muscle disorders
- 29. Primary headache syndromes

dystrophia myotonica

30. The neuralgias31. The physiological sleep and the sleep disorders

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PSYCHIATRY

Department of Psychiatry and Psychotherapy

Tutor: Dr. Erika Szily

Teaching Psychiatry for the sixth-year students at the Department of Psychiatry and Psychotherapy at Semmelweis University

The goals of the psychiatric practices (3 weeks)

The goal of our Clinic is to teach medical students about the most important signs and symptoms of the most common diseases as psychiatric disorders have a relatively high prevalence in the population. Considering the high prevalence and the last but not least economic consequences, psychiatric disorders can be a burden for every society. Every medical student must be familiar with the high prevalence of depressive and anxiety disorders. Hungary was once one of the leading countries among those with high suicide rates; therefore, we require them to get acquainted with important details of the main causes and therapeutic possibilities of suicide, as well. As many psychiatric disorders can mask somatic diseases, medical students have to learn about the differentiation of these conditions.

In the 5th year students must base their knowledge on lectures and materials of practice where they have an opportunity to talk to a psychiatric patient, so they can learn how to detect the most important signs and symptoms of diseases. During the 6th year, they need to explore patients and write a case report according the sample that is available on the website of our Clinic. Before the oral exam they have to discuss this case report with the responsible tutor who will give a mark for it. Students are not allowed to take their final exam without a marked case report. We have a certificate form on our website containing all the details students must bring from the hospital where they have completed their rotation.

The link is: http://semmelweis.hu/pszichiatria/oktatas/the-english-version-can-be-found-here/

Objectives/target abilities:

- The ability how to obtain a complete and reliable history
- The method of asking about specific psychiatric symptoms or how to evaluate the information provided by the patients including:
 - orientation and attention
 - affect
 - thought disorder
 - memory
 - psycho-motor abilities
 - perception
 - motivation, intellect and personality
- The ability of noticing states of potential psychiatric emergency
- The ability to recognize specific symptoms that can refer to any hidden psychiatric problem which is not told by the patients
- The ability of summarizing all the gained information in a detailed case report
- The ability of establishing a tentative diagnosis and to know what kind of tests (either laboratory or psychological or neuro-radiological, etc) are needed for the correct diagnosis
- Being aware of the most important effects and side/adverse effects of drugs used in psychiatry
- To learn that the practitioner must always consider the possible existence of psychiatric disorders even when there are a lot of somatic symptoms, since they can also appear as a result of psychiatric diseases

We have 5 wards with different profiles in our Clinic. Students must join these wards according to their schedule made by our training coordinator. Everybody has a tutor within the ward he or she is scheduled to. The tutor presents the specific profile of that particular ward, but they also have the opportunity to go and see other wards, too. They spend a day at the out-patient department of our Clinic, which is very useful because there are many patient examinations referred from other departments of Semmelweis University. Thus, they can gain insight into the most important psychiatric features of internal medicine, neurology, surgery etc. Students must join for one all-night-duty and they have to participate in the emergency treatment performed during this period. Under the supervision of an appointed physician students have to:

Participate in the work of one unit;

Evaluate patients independently;

Write a detailed case history of one patient which has to be presented at the exam;

Participate in consultations.

The internship in Psychiatry has to be completed at a Department of a University or in a Teaching Hospital which has a contract with a University. Students completing the internship abroad have to present a document of evaluation (i.e. Certificate downloadable from our website) indicating their performance during the internship and a grade from 5 (excellent) to 1 (failure).

Requirements

- 1. The 6th year includes a 3-week-long rotation in Psychiatry in a hospital or clinic which is accredited for teaching by Semmelweis University.
- 2. If you want to complete your rotation abroad, then before you start it, you must present at our department an officially stamped statement of acceptance issued by the teaching hospital abroad where you intend to spend your rotation.
 - BE AWARE: The Letter of Acceptance for the 4-week-long Psychiatry internship requested from practice places abroad must state: a) The training place abroad is a teaching hospital
 - b) A brief description of how Psychiatry is taught in that institution
 - c) The name of the responsible tutor (name, e-mail)
- 3. The Psychiatry practice must consist of 6 hours on 20 (4×5) workdays at psychiatric wards. Students participate in the everyday work of the ward(s), in patients' admission, in ward rounds and in therapeutic decisions. One all-night-duty is compulsory within the rotation period.
- 4. Writing a case report during the rotation period is a task for every student. A sample case report is available on the website of our department

http://semmelweis.hu/pszichiatria/oktatas/the-english-version-can-be-found-here/

5. Case reports should not include patients' personal data (name, birth date, national insurance number, etc). Only those practice places are acceptable where the release of the case report is not forbidden by law. Students completing the internship abroad have to present at the exam the CERTIFICATE in which the tutor has indicated their performance during the internship on the scale: excellent-satisfacto-ry-unsatisfactory and commented on their strengths and weaknesses.

Without these documents students are not allowed to take their final exam in Psychiatry.

Please note that the Final Examination in Psychiatry cannot be taken within the 4th week of the rotation, just after the completion of 4 full weeks.

Sign-up for the exams: through the NEPTUN SYSTEM.

7. It is important to bring to the final exam this signed Certificate of the practice the case report (or a detailed report of the case report by the tutor on a separate sheet of paper) the mark for the case report, the filled-in *Register of observed psychiatric conditions* that was signed continuously by the tutors during the 5th and 6th year. The form is available on our website: http://semmelweis.hu/pszichiatria/oktatas/the-english-version-can-be-found-here/

FAMILY MEDICINE IN DAILY PRACTICE within Internal Medicine

One week Family Medicine practice within sixth year's rotation in Internal Medicine

Tutor: Dr. Péter Torzsa

During practice, treatment of patients is carried out with continuous consultation.

The student should:

- master the basics of treatment of acute cases;
- gain insight into the everyday practice of ongoing treatment of patients and the care of the chronically sick;
- form an opinion of the importance of the doctor-patient and nurse-patient relationship;
- besides treating patients, encounter social and family problems that have an influence on health;
- having gained the necessary knowledge and experience, prepare under the GP tutor's supervision an independent case study, and carry out treatment independently;
- take part in home visits;
- keep a continuous documentary record of observations and experience in a practice diary.

If the student wishes to complete the internship outside Hungary, the following instructions are to be followed:

Objectives of the course

- 1. To introduce the medical care outside the hospital, giving an opportunity to study the characteristics of work in general practice.
- 2. To help to manage patient members of a family who have problems (not only diseases) with their physical, psychological and social aspects.
- 3. To provide an opportunity to improve students' clinical skills.

Structure of the course

1 week = 5 workdays: working together with a GP tutor in his office and accompanying him/her on house calls:

4 consulting hours/day

1-3 house calls/1 week

Topics to observe and concentrate on during the course:

- patient-physician communication (structure, methods)
- problem-based care
- problem-oriented solution
- decision-making responsibility
- common acute problems
- complex care of patients with chronic illnesses

Make short notes in a 3-4 pages diary about:

8–10 instructive and interesting cases/day (age, sex, problem, alteration in physical status, solution)

The following should be practiced independently:

history taking physical examination making medical record

Assessment and evaluation:

The performance of the students will be assessed on the diary and a written qualifying report by the GP tutor, so show these instructions to him/her, asking for an opinion about your medical knowledge pharmaceutical knowledge practical abilities (physical examination) attitude, interpersonal relations, communication skills

TRANSFUSION COURSE

Department of Transfusion Medicine

Course Director: Prof. Dr. Attila Tordai

- 1 Introduction, the history of transfusion medicine
- 2 Immunological introduction: basic mechanisms important in transfusion medicine
- 3 Immune response to incompatible transfusion: antigen (protein, carbohydrate) recognition, primary/secondary immune response
- 4 The molecular structure and phisiological role of red cell antigens
- 5 Plasticity of stem cells, regenerative medicine
- 6 Introduction of the HLA system, diagnostics in transplantation immungenetics
- 7 Platelet, granulocyte antigen systems
- 8 The blood group serology compatibility
- 9 Immunmodulation effects of transfusion
- 10 Blood donors, blood letting for donation, onor screening, risk assessment and reduction, international trends
- 11 Red cell, platelet, granulocyte and plasma blood products: manufacturing, storage, quality parameters
- 12 Generation and clinical use of albumin and immunglobulin blood products
- 13 Challenges and approaches of blood supply management, international examples
- 14 Steps and practices of transfusion execution, international outlook
- 15 Indications of red cell, platelet and granulocyte transfusion
- 16 Alternatives to red cell transfusion: stimulation of red cell formation
- 17 Apheresis and extracorporal photopheresis
- 18 Transfusion aspects of hematology patient care, application of special blood products
- 19 Options for blood saving, peri-operative blood collection
- 20 Solid organ transplantation and its transfusion aspects (complications, case reports)
- 21 Infectous diseases transmitted by transfusion, epidemiology, screening, prevention
- 22 Transfusion aspects of the coagulation system, generation and clinical application of coagulation factor products
- 23 Treatment and long term care in inherited coagulation disorders
- 24 Effects of massive transfusion, factor substitution in acquired bleeding disorders
- 25 Transfusion aspects of cardiac surgery (complications, case reports)
- 26 Immunological complications of transfusions: hemolytic and non hemolytic
- 27 Non immunological complications of transfusions: circulatory and iron overload
- 28 Hungarian and international legal aspects of trnasfusion medicine
- 29 Test examination

AMBULANCE PRACTICE (Prehospital Emergency Medicine)

National Ambulance Service

Lecturer: Dr. Gábor Gőbl

Syllabus

During the 2 weeks practice students will join the staff of an ALS (Advanced Life Support) Unit. They will experience the acute, in-field presentation of emergencies, occasionally urgencies, as well as the special viewpoints of interhospital transfer.

- Goal of the ambulance practice is to gain insight into
- Patient's assessment in the prehospital setting (primary and secondary survey)
- Recognition of critically ill condition and the emergent interventions required (airway management, CPR, IV. line, volume substitution, pain relief, etc).
- Recognition of several emergencies (ACS, stroke, hypertensive emergencies, bronchial asthma, poisoning, psychiatric disorders, etc).
- Patient's mobilization, immobilization, special viewpoints of extrication
- Monitoring patient en route to the hospital, transportation trauma.

The certification of the practice should contain the

- period of time spent at the ambulance station
- list of cases the student participated at
- signature of the local director of the Ambulance Service

Note: Absence in 25% of practice time is possible, however informing the coordinator in advance and discussion of the new term of the practice are required.

Mode of certifying absences: oral

Evaluation: "completed" or "not completed"

Important information: Solely in the Neptun registered students are welcome at the Central Ambulance Station (1055 Budapest, Markó u. 22) on the first day of the term at 9 in the morning. All the information concerning the location of the practice, schedule of work, information about safety at work, etc. will be announced at this time. Without getting these information nobody will be allowed to start the practice, and there will be no opportunity for replacement.

We ask the students not to turn directly to us with their wish to change schedule.

CARDIORESPIRATORIC AND NEUROPHYSIOLOGICAL MEASURING METHODS

AOSKIK151_1A

Elective course for medical students in the 3-6th years

Course director: Dr. Habil. László Dézsi,

Private Professor of Physiology, Semmelweis University

The purpose of the course: To review the theory and practice of modern measuring methods in experimental and clinical medicine, and providing practical knowledge to medical students on cardiorespiratoric and neurophysiological measurements. The course is based on but further extends the material delivered during the course of Medical physiology. Throughout the lectures we put an emphasis on potential methodological errors of measurements and examinations, as well as how to avoid them.

Detailed Program:

- 1. Introduction. Biomedical engineering. Design and safety requirements of biomedical equipments
- 2. Computerized data acquisition and analysis. Telemetry systems
- 3. General metrology. Basics of measurement and control theory
- 4. Home monitoring of cardiovascular health status. Determination of blood glucose and tissue glucose concentrations
- 5. Sampling of continuous signals. Digitizing analogue signals
- 6. Direct and indirect methods to determine cardiac output and peripheral blood flow
- 7. Experimental study of pulmonary function. Measurements of blood gases and the acid-base balance.
- Significance of objective studies in the practice of audiology. Neurophysiological measurements (action potentials, brain stem evoked potentials)
- 9. Investigation of adaptive processes in the cardiovascular system. Investigative methods of experimental angiology
- 10. Measuring blood pressure in the lab and clinics (invasive and noninvasive methods)
- 11. Complement-related immunological and cardiopulmonary responses
- 12. Studying brain function by functional imaging systems
- 13. Experimental methods to study nociception
- 14. Investigating the electrical activity of the heart. Design of ECG amplifiers

Acknowledgement of the course: Prerequisite of the course is the completion of the first 2 years (Theoretical module). Regular attendance (maximum 3 absences) is required. Signature in the Index and 2 credit points will be awarded after successful exam. Source: material of the lectures, supplementary literature will be provided by the lectures.

Applications: via Neptun system. Contact person: Dr. László Dézsi (e-mail: dezsi.laszlo@richter.hu; phone: 06-1-431-4823; phone/fax: 06-72-536-019). The application of min. 5 students is required.

PHYSICAL EDUCATION XI-XII.

Practice: 1 hour per week

GENERAL INFORMATION

Deadline of paying the tuition fee in the 6th year: the first part is to be paid between August 31 - September 4, 2020, the second part between January 25– January 29, 2021.

The professor responsible for the student's instruction during the clinical rotation outside Hungary is requested to give a detailed certificate of the student's performance. It is requested to be done in the Student Handbook! This certificate in the Student Handbook must be signed by the professor, the Head of the Department as well as by the director of the hospital or the Dean of the University the hospital is affiliated to. *Semmelweis University reserves the right to accept a certificate or refuse it in justified cases.* Students have to present these certificates to the concerned departments. After the departments have accepted them, students have to retain the originals and hand them in at the English Secretariat.

Tuition fee reduction:

In case the student completes all the rotations regardless whether the 1 week Transfusion course is completed at Semmelweis University or abroad, he/she has to pay 80% of the tuition fee valid in the academic year. The relevant acceptance letters should be handed in latest until December 15, 2020. Otherwise the student is not entitled for the reduction!

Please write a letter of request addressed to the Academic Program Director when applying for the 20% reduction!

Please note:

that you have to sign up for the General Board Examination held in June latest until April 30, 2021! For the August exam latest until July 15, 2021and for the November exam latest until October 15, 2021!

FACULTY OF DENTISTRY

Study Programs since the 2010/11 academic year



Faculty of Dentistry

Study program for students started studies in the 2010/11 academic year

BASIC MODULE

1st semester

	subjects	credit code	examination
compulsory	Anatomy, Histology, Embryology I.	C8L3P5	semifinal
compulsory	Physical Bases of Dental Materials	C2L2P0	semifinal
compulsory	Medical Chemistry	C6L3P3,5	semifinal
compulsory	Medical Biology (Cell Biology)	C3L2P1	final
compulsory	Hungarian Medical Terminology I.	C4L0P4	practice mark
obligatory elective	Medical Terminology	C2L0P2	practice mark
compulsory	Physical Education I.	C0L0P1	signature
	Total Credit	25	

BASIC MODULE

	2nd s	emester		
	subjects	credit code	examination	prerequisites
compulsory	Anatomy, Histology, Embryology II.	C7L3P4	semifinal	Anatomy, Histology, Embryology I.
compulsory	Biophysics	C5L2,5P3	final#	Physical Bases of Dental Materials
compulsory	Biochemistry, Molecular and Cellbiology I.	C7L3P4	semifinal	Medical Chemistry
compulsory	Hungarian Medical Terminology II.	C2L0P4	practice mark	Hungarian Medical Terminology I.
compulsory	General Dental Materials	C1L1P0	semifinal	Physical Bases of Dental Materials
obligatory elective	First aid	C1L0P1	practice mark	
obligatory elective	Medical Informatics	C3L1P2	semifinal	
compulsory	Physical Education II	C0L0P1	signature	
obligatory elective	Dental Psychology	C2L2P0	semifinal	
obligatory elective	Medical Sociology	C2L1P1	semifinal	
compulsory	Dental Laboratory Practice (summer, 2 weeks)	C0L0P30	signature	
compulsory	Nursing Practice (summer, 2 weeks)	C0L0P30	signature	
	Total Credit	30		

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

		3rd semester		
	subjects	credit code	examination	prerequisites
compulsory	Anatomy, Histology, Embryology III.	C7L3P4	semifinal	Anatomy, Histology, Embryology II.
compulsory	Biochemistry, Molecular and Cellbiology II.	C6L3P3	semifinal	Biochemistry, Molecular and Cellbiology I.
				Anatomy, Histology, Embryology II.
compulsory	Medical and Dental Physiology I.	C11L6P5	semifinal	Biochemistry I.
				Biophysics
compulsory	Odontotechnology I.	C3L1P2	practice mark	General Dental Materials
compulsory	Hungarian Medical Terminology III.	C2L0P4	practice mark	Hungarian Medical Terminology II.
compulsory	Physical Education III.	C0L0P2	signature	
	Total Credit	29		

BASIC MODULE

BASIC MODULE

		4th semester		
	subjects	credit code	examination	prerequisites
compulsory	Anatomy(Maxillofacial Anatomy) IV.	C5L3P2	final#	Anatomy, Histology, Embryology III.
compulsory	Biochemistry, Molecular and Cellbiology III.	C6L3P3	final#	Biochemistry, Molecular and Cellbiology II.
compulsory	Medical and Dental Physiology II.	C10L6P5	final#	Medical and Dental Physiology I.
compulsory	Odontotechnology II.	C5L0P5	practice mark	Odontotechnology I.
compulsory	Conservative Dentistry and Endodontics, Pre-clinical I.	C4L1P3	practice mark	Odontotechnology I.
compulsory	Hungarian Medical Terminology IV.	C2L0P4	practice mark	Hungarian Medical Terminology III.
compulsory	Physical Education IV.	C0L0P2	signature	
	Total Credit	32		

#The grade influences the qualification of the diploma. 15 credits should be gained from the elective subjects during th 5-year studies.

C= Credit point

L= Lecture (hours/week)

PRE-CLINICAL MODULE

	5th s	emester		
subjects code	subjects	credit code	examination	prerequisites
compulsory	Conservative Dentistry and Endodontics, Pre-clinical II.	C4L1P3	semifinal	BASIC MODULE
compulsory	General and Oral Microbiology	C4L2P2	final#	BASIC MODULE
compulsory	General and Oral Pathophysiology	C4L2P2	final#	BASIC MODULE
compulsory	Basic Immunology	C3L1P2	semifinal	Biochemistry, Molecular and Cellbiology III.
compulsory	Hungarian Dental Terminology I.	C2L0P4	practice mark	BASIC MODULE
compulsory	Oral and Maxillofacial Surgery, Pre-clinical course	C2L0P2	practice mark	BASIC MODULE
compulsory	Oral Pathology I.	C2L2P0	semifinal	BASIC MODULE
compulsory	Pathology I.	C5L3P2	semifinal	BASIC MODULE
compulsory	Preventive Dentistry II.	C3L1P2	practice mark	BASIC MODULE
compulsory	Prosthodontics (Pre-clinical course)	C4L1P3	final#	BASIC MODULE
	Total Credit	33		

PRE-CLINICAL MODULE

	6th s	semester		
subjects code	subjects	credit code	examination	prerequisites
compulsory	Conservative Dentistry and Endodontics I.	C4L1P3	practice mark	Conservative Dentistry and Endodontics, Pre-clinical Course II.
compulsory	Internal Medicine I.	C4L2P2	practice mark	General and Oral Pathophysiology
compulsory	Oral and Maxillofacial Surgery I.	C4L1P3	practice mark	Oral and Maxillofacial Surgery, Pre-clinical course
compulsory	Oral Biology	C5L3P2	final#	General and Oral Pathophysiology
compulsory	Oral Pathology II.	C3L2P1	final#	Oral Pathology I.
compulsory	Pathology II.	C3L1P2	final#	Pathology I.
compulsory	Preventive Dentistry III.	C1L1P0	final#	Preventive Dentistry II.
compulsory	Prosthodontics I.	C4L1P3	practice mark	Prosthodontics, Pre-clinical Course
compulsory	Radiation protection	C2L1.5P1	semifinal	BASIC MODULE
compulsory	Hungarian Dental Terminology II.	C2L0P4	final	Hungarian Dental Terminology I.
compulsory	Dento-Alveolar practice (summer, minimum 1 week)	C0L0P30	signature	
	Total Credit	32		

The grade influences the qualification of the diploma

C = Credit point L = Lecture (hours/week)

	7t	h semester		
subjects code	subjects	credit code	examination	prerequisites
compulsory	General and Dental Radiology	C4L2P2	final#	Radiation protection
compulsory	Conservative Dentistry and Endodontics II.	C4L1P3	practice mark	Conservative Dentistry and Endodontics I.
compulsory	Internal Medicine II.	C3L2P1	semifinal	Internal Medicine I.
compulsory	Oral and Maxillofacial Surgery II.	C4L1P3	practice mark	Oral and Maxillofacial Surgery I.
compulsory	Periodontology I.	C2L2P0	semifinal	Oral biology
compulsory	Pharmacology, Toxicology I.	C2L1P1	semifinal	Pathology I.
compulsory	Prosthodontics II.	C7L1P6	semifinal	Prosthodontics I.
compulsory	Oral Diagnostics I.	C2L1P1	practice mark	PathologyII.
compulsory	Orthodontics Pre-Clinical	C1L0P1	practice mark	Oral Biology
obligatory elective	Neurorology	C1L1P0	semifinal	Internal Medicine I.
obligatory elective	Psychiatry	C1L1P0	semifinal	Internal Medicine I.
obligatory elective	Dental Ethics	C2L2P0	semifinal	
compulsory	Gnathology	C3L1P2	final#	Prosthodontics I.
obligatory elective	Public Health	C3L1,5P2	final#	General and Oral Microbiology
	Total Credit	39		

CLINICAL MODULE

	8t	n semester		
subjects code	subjects	credit code	examination	prerequisites
compulsory	Conservative Dentistry and Endodontics III.	C4L1P3	practice mark	Conservative Dentistry and Endodontics II.
compulsory	Internal Medicine III.	C1L1P0	final#	Internal Medicine II.
compulsory	Oral and Maxillofacial Surgery III.	C4L1P3	practice mark	Oral and Maxillofacial Surgery II.
compulsory	Oral Diagnostics II.	C1L0P1	semifinal	Oral Diagnostics I.
compulsory	Periodontology II.	C4L1P3	practice mark	Periodontology I.
compulsory	Pharmacology, Toxicology II.	C3L1P2	final#	Pharmacology, Toxicology I.
compulsory	Prosthodontics III.	C4L1P3	practice mark	Prosthodontics II.
obligatory elective	Surgery	C3L2P1	final#	Internal Medicine I.
compulsory	Implantology I.	C1L1P0	semifinal	Oral and Maxillofacial Surgery II.
compulsory	General Dentistry practice (summer, 4weeks)	COLOP30	signature	
	Total Credit	25		

#The grade influences the qualification of the diploma.

C = Credit point

L= Lecture (hours/week)

	9t	h semester		
subjects code	subjects	credit code	examination	prerequisites
compulsory	Clinical Dentistry I.*	C4L0P6	practice mark	Prosthodontics III.
compulsory	Clinical Dentistry I.*	C4L0P6	practice mark	Conservative Dentistry and Endodontics III.
compulsory	Conservative Dentistry and Endodontics IV.	C3L0P3	practice mark	Conservative Dentistry and Endodontics III.
obligatory elective	Forensic Dentistry	C1L1P0	semifinal	Pharmacology, Toxicology II.
obligatory elective	Ophthalmology	C1L1P0.5	final#	Pathology II.
compulsory	Oral and Maxillofacial Surgery IV.	C6L1P5	practice mark	Oral and Maxillofacial Surgery III.
compulsory	Implantology II.	C2L1P1	final#	Oral and Maxillofacial Surgery III.
compulsory	Orthodontics I	C6L1P5	practice mark	Conservative Dentistry and Endodontics III.
obligatory elective	Otorhinolaryngology	C1L1P0.5	final#	Pathology II.
obligatory elective	Pediatrics	C1L1P0.5	semifinal	Internal Medicine III.
compulsory	Pedodontics I	C6L1P5	practice mark	Conservative Dentistry and Endodontics III.
compulsory	Periodontology III.	C3L1P2	practice mark	Periodontology II.
obligatory elective	Prehospital Emergency Medicine	C1L1P0	semifinal	Internal Medicine III.
compulsory	Prosthodontics IV.	C3L0P3	practice mark	Prosthodontics III.
	Total Credit	42		

*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry # The grade influences the qualification of the diploma C = Credit point L = Lecture (hours/week)

		10th semeste	er	
subjects code	subjects	credit code	prerequisites code	prerequisites
compulsory	Clinical Dentistry II.*	C4L0P6	practice mark	Clinical Dentistry I.
compulsory	Clinical Dentistry II.**	C4L0P6	practice mark	Clinical Dentistry I.
compulsory	Conservative Dentistry and Endodontics V	C3L0P3	final#	Conservative Dentistry and Endodontics IV.
obligatory elective	Dermatology	C1L1P0.5	final#	Pharmacology, Toxicology II.
obligatory elective	Obstetrics and Family Planning	C1L1P0	semifinal	Internal Medicine III.
obligatory elective	Diploma Work	C20		9th semester's subjects
compulsory	Oral and Maxillofacial Surgery V.	C4L1P3	final#	Oral and Maxillofacial Surgery IV.
compulsory	Oral Medicine	C1L1P0	final#	Periodontology III.
compulsory	Orthodontics II	C5L1P4	final#	Orthodontics I.
compulsory	Pedodontics II	C5L1P4	final#	Pedodontics I.
compulsory	Periodontology IV.	C3L1.5P2	final#	Periodontology III.
compulsory	Prosthodontics V.	C3L0P3	final#	Prosthodontics IV.
	Total Credit	54		

* at the Dept. of Prosthodontics

** at the Dept. of Conservative Dentistry

#The grade influences the qualification of the diploma.

15 credits should be gained from the elective subjects during th 5-year studies.

C= Credit point L= Lecture (hours/week)

Study Program for students started studies in the 2011/12 academic year

BASIC MODULE

1st semester			
subjects code	subjects	credit code	examination
compulsory	Anatomy, Histology, Embryology I.	C8L3P5	semifinal
compulsory	Physical Bases of Dental Materials	C2L2P0	semifinal
compulsory	Medical Chemistry	C6L3P3,5	semifinal
compulsory	Medical Biology (Cell Biology)	C3L2P1	final
compulsory	Hungarian Medical Terminology I.	C4L0P4	practice mark
obligatory elective	Medical Terminology I.	C2L0P2	practice mark
compulsory	Physical Education I.	C0L0P1	signature
	Total Credit	25	

BASIC MODULE

2nd semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Anatomy, Histology, Embryology II.	C7L3P4	semifinal	Anatomy, Histology, Embryology I.	
compulsory	Biophysics	C5L2,5P3	final#	Physical Bases of Dental Materials	
compulsory	Biochemistry, Molecular and Cellbiology I.	C7L3P4	semifinal	Medical Chemistry	
compulsory	Hungarian Medical Terminology II.	C2L0P4	practice mark	Hungarian Medical Terminology I.	
compulsory	General Dental Materials	C1L1P0	semifinal	Physical Bases of Dental Materials	
obligatory elective	First aid	C1L0P1	practice mark		
obligatory elective	Medical Informatics	C3L1P2	semifinal		
compulsory	Physical Education II	C0L0P1	signature		
obligatory elective	Dental Psychology	C2L2P0	semifinal		
obligatory elective	Medical Sociology	C2L1P1	semifinal		
compulsory	Dental Laboratory Practice (summer, 2 weeks)	C0L0P30	signature		
compulsory	Nursing Practice (summer, 2 weeks)	C0L0P30	signature		
	Total Credit	30			

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

BASIC MODULE

3rd semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Anatomy, Histology, Embryology III.	C8L3P5	semifinal	Anatomy, Histology, Embryology II.	
compulsory	Biochemistry, Molecular and Cellbiology II.	C6L3P3	semifinal	Biochemistry, Molecular and Cellbiology I.	
compulsory	Medical and Dental Physiology I.	C11L6P5	semifinal	Anatomy, Histology, Embryology II.	
				Biochemistry I.	
				Biophysics	
compulsory	Odontotechnology and Prosthodontics Preclinical Course I.	C3L1P2	practice mark	General Dental Materials	
compulsory	Hungarian Medical Terminology III.	C2L0P4	practice mark	Hungarian Medical Terminology II.	
compulsory	Physical Education III.	C0L0P2	signature		
	Total Credit	30			

BASIC MODULE

4th semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Anatomy (Maxillofacial Anatomy) IV.	C5L3P2	final#	Anatomy, Histology, Embryology III.	
compulsory	Biochemistry, Molecular and Cellbiology III.	C6L3P3	final#	Biochemistry, Molecular and Cellbiology II.	
compulsory	Medical and Dental Physiology II.	C10L6P5	final#	Medical and Dental Physiology I.	
compulsory	Odontotechnology and Prosthodontics Preclinical Course II.	C3L0P3	practice mark	Odontotechnology and Prosthodontics Preclinical I.	
compulsory	Conservative Dentistry and Endodontics, Pre-clinical I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical I.	
compulsory	Hungarian Medical Terminology IV.	C2L0P4	practice mark	Hungarian Medical Terminology III.	
compulsory	General Dental Preclinical Practice	C4L1P3	semifinal	Anatomy, Histology, Embryology II.	
compulsory	Physical Education IV.	C0L0P2	signature		
	Total Credit	34			

#The grade influences the qualification of the diploma.

15 credits should be gained from the elective subjects during th 5-year studies.

C= Credit point L= Lecture (hours/week)

PRE-CLINICAL MODULE

5th semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Conservative Dentistry and Endodontics, Pre-clinical II.	C4L1P3	semifinal	BASIC MODULE	
compulsory	General and Oral Microbiology	C4L2P2	final#	BASIC MODULE	
compulsory	General and Oral Pathophysiology	C4L2P2	final#	BASIC MODULE	
compulsory	Basic Immunology	C3L1P2	semifinal	Biochemistry, Molecular and Cellbiology III.	
compulsory	Hungarian Dental Terminology I.	C2L0P4	practice mark	BASIC MODULE	
compulsory	Oral and Maxillofacial Surgery, Pre-clinical course	C2L0P2	practice mark	BASIC MODULE	
compulsory	Pathology	C6L3P2	final#	BASIC MODULE	
compulsory	Preventive Dentistry I.	C3LP2	practice mark	BASIC MODULE	
compulsory	Odontotechnology and Prosthodontics Preclinical Course III.	C3L0P3	final#	BASIC MODULE	
	Total Credit	31			

PRE-CLINICAL MODULE

6th semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Conservative Dentistry and Endodontics I.	C4L1P3	practice mark	Conservative Dentistry and Endodontics, Pre-clinical Course II	
compulsory	Internal Medicine I.	C4L2P2	practice mark	General and Oral Pathophysiology	
compulsory	Oral and Maxillofacial Surgery I.	C4L1P3	practice mark	Oral and Maxillofacial Surgery, Pre-clinical course	
compulsory	Oral Biology	C5L3P2	final#	General and Oral Pathophysiology, General and Oral Microbiology	
compulsory	Genetics and Genomics	C3L2P1	final	Biochemistry, Molecular and Cellbiology III.	
compulsory	Oral Pathology	C4L2P2	final#	Pathology	
compulsory	Preventive Dentistry II.	C1L1P0	final#	Preventive Dentistry I.	
compulsory	Prosthodontics I.	C4L1P3	practice mark	Prosthodontics, Pre-clinical Course or Odontotechnology and Prosthodontics and Preclinical III.	
compulsory	Radiation protection	C2L1.5P1	semifinal	BASIC MODULE	
compulsory	Hungarian Dental Terminology II.	C2L0P4	final	Hungarian Dental Terminology I.	
compulsory	Dento-Alveolar practice (summer, minimum 1 week)	C0L0P30	signature	1-6 semesters compulsory subjects	
	Total Credit	33			

The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

7th semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	General and Dental Radiology	C4L2P2	final#	Radiation protection	
compulsory	Conservative Dentistry and Endodontics II.	C4L1P3	practice mark	Conservative Dentistry and Endodontics I.	
compulsory	Internal Medicine II.	C3L2P1	semifinal	Internal Medicine I.	
compulsory	Oral and Maxillofacial Surgery II.	C4L1P3	practice mark	Oral and Maxillofacial Surgery I.	
compulsory	Periodontology I.	C2L2P0	semifinal	Oral biology	
compulsory	Pharmacology, Toxicology I.	C2L1P1	semifinal	Pathology	
compulsory	Prosthodontics II.	C7L1P6	semifinal	Prosthodontics I.	
compulsory	Oral Diagnostics I.	C2L1P1	pract. mak	Pathology	
compulsory	Orthodontics Pre-Clinical	C1L0P1	practice mark	Oral Biology	
obligatory elective	Neurorology	C1L1P0	semifinal	Internal Medicine I.	
obligatory elective	Psychiatry	C1L1P0	semifinal	Internal Medicine I.	
obligatory elective	Dental Ethics	C2L2P0	semifinal	Pathology	
compulsory	Gnathology	C3L1P2	final#	Prosthodontics I.	
obligatory elective	Public Health	C3L1,5P2	final#	General and Oral Microbiology	
	Total Credit	39			

CLINICAL MODULE

8th semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Conservative Dentistry and Endodontics III.	C4L1P3	practice mark	Conservative Dentistry and Endodontics II.	
compulsory	Internal Medicine III.	C1L1P0	final#	Internal Medicine II.	
compulsory	Oral and Maxillofacial Surgery III.	C4L1P3	practice mark	Oral and Maxillofacial Surgery II.	
compulsory	Oral Diagnostics II.	C1L0P1	semifinal	Oral Diagnostics I.	
compulsory	Periodontology II.	C4L1P3	practice mark	Periodontology I.	
compulsory	Pharmacology, Toxicology II.	C3L1P2	final#	Pharmacology, Toxicology I.	
compulsory	Prosthodontics III.	C4L1P3	practice mark	Prosthodontics II.	
obligatory elective	Surgery	C3L2P1	final#	Internal Medicine I.	
compulsory	Implantology I.	C1L1P0	semifinal	Oral and Maxillofacial Surgery II.	
compulsory	General Dentistry practice (summer, 4 weeks)	C0L0P30	signature	1-8 semesters compulsory subjetcs	
	Total Credit	25			

#The grade influences the qualification of the diploma. 15 credits should be gained from the elective subjects during th 5-year studies.

L= Lecture (hours/week)

C= Credit point

9th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Clinical Dentistry I.*	C4L0P6	practice mark	Conservative Dentistry and Endodontics III.		
compulsory	Conservative Dentistry and Endodontics IV	C3L0P3	practice mark	Conservative Dentistry and Endodontics III.		
obligatory elective	Forensic Dentistry	C1L1P0	semifinal	Pharmacology and Toxicology II.		
obligatory elective	Ophthalmology	C1L1P0.5	final#	Internal Medicine I.		
compulsory	Oral and Maxillofacial Surgery IV.	C6L1P5	practice mark	Oral and Maxillofacial Surgery III.		
compulsory	Implantology II.	C2L1G1	final#	Oral and Maxillofacial Surgery III.		
compulsory	Orthodontics I	C6L1P5	practice mark	Conservative Dentistry and Endodontics III.		
obligatory elective	Otorhinolaryngology	C1L1P0.5	final#	Oral and Maxillofacial Surgery I.		
obligatory elective	Pediatrics	C1L1P0.5	semifinal	Internal Medicine I.		
compulsory	Pedodontics I	C6L1P5	practice mark	Conservative Dentistry and Endodontics III.		
compulsory	Periodontology III.	C3L1P2	practice mark	Periodontology II.		
obligatory elective	Prehospital Emergency Medicine	C1L1P0	semifinal	Internal Medicine III.		
compulsory	Prosthodontics IV.	C3L0P3	practice mark	Prosthodontics III.		
	Total Credit	38				

*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry

"The grade influences the qualification of the diploma. 15 credits should be gained from the elective subjects during th 5-year studies.

C= Credit point

L= Lecture (hours/week)

10th semester					
subjects code	subjects	credit code	prerequisites code	prerequisites	
compulsory	Clinical Dentistry II.*	C4L0P6	practice mark	Clinical Dentistry I.	
compulsory	Conservative Dentistry and Endodontics V	C3L0P3	final#	Conservative Dentistry and Endodontics IV	
obligatory elctive	Dermatology	C1L1P0.5	final#	Internal Medicine I.	
obligatory elctive	Obstetrics and Family Planning	C1L1P0	semifinal	Internal Medicine III.	
obligatory elctive	Diploma Work	C20		9th semester's subjects	
compulsory	Oral and Maxillofacial Surgery V.	C4L1P3	final#	Oral and Maxillofacial Surgery IV.	
compulsory	Oral Medicine	C1L1P0	final#	Periodontology III	
compulsory	Orthodontics II	C5L1P4	final#	Orthodontics I	
compulsory	Pedodontics II	C5L1P4	final#	Pedodontics I	
compulsory	Periodontology IV.	C3L1.5P2	final#	Periodontology III.	
compulsory	Prosthodontics V.	C3L0P3	final#	Prosthodontics IV.	
	Total Credit	50			

*at the Dept. of Prosthodontics

*at the Dept. of Conservative Dentistry

#The grade influences the qualification of the diploma.

15 credits should be gained from the elective subjects during th 5-year studies.

C= Credit point

L= Lecture (hours/week)

Study Program for students started studies in the 2012/13 academic year

BASIC MODULE

1st semester						
subjects code	subjects	credit code	examination			
compulsory	Anatomy, Histology, Embryology I.	C8L3P5	semifinal			
compulsory	Physical Bases of Dental Materials	C2L2P0	semifinal			
compulsory	Medical Chemistry	C6L3P3,5	final#			
compulsory	Medical Biology (Cellbiology)	C3L2P1	final#			
compulsory	Biophysics I.	C3L1.5P2	semifinal			
compulsory	Hungarian Medical Terminology I.	C4L0P4	practice mark			
obligatory elective	Medical Terminology I.	C2L0P2	practice mark			
compulsory	Physical Education I.	C0L0P1	signature			
	Total Credit	28				

BASIC MODULE

2nd semester				
subjects code	subjects	credit code	examination	prerequisites
compulsory	Anatomy, Histology, Embryology II.	C7L3P4	semifinal	Anatomy, Histology, Embryology I.
compulsory	Biophysics II.	C4L2P2	final#	Biophysics I.
compulsory	Biochemistry, Molecular and Cellbiology I.	C7L3P4	semifinal	Medical Chemistry
compulsory	Hungarian Medical Terminology II.	C2L0P4	practice mark	Hungarian Medical Terminology I.
compulsory	General Dental Materials	C1L1P0	semifinal	Physical Bases of Dental Materials
obligatory elective	First aid	C1L0P1	practice mark	
obligatory elective	Medical Informatics	C3L1P2	semifinal	
compulsory	Physical Education II	C0L0P1	signature	
obligatory elective	Dental Psychology	C2L2P0	semifinal	
obligatory elective	Medical Sociology	C2L1P1	semifinal	
compulsory	Dental Laboratory Practice (summer, 2 weeks)	C0L0P30	signature	
compulsory	Nursing Practice (summer, 2 weeks)	C0L0P30	signature	
	Total Credit	29		

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

3rd semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Anatomy, Histology, Embryology III.	C8L3P5	semifinal	Anatomy, Histology, Embryology II.	
compulsory	Biochemistry, Molecular and Cellbiology II.	C6L3P3	semifinal	Biochemistry, Molecular and Cellbiology I.	
compulsory	Medical and Dental Physiology I.	C11L6P5	semifinal	Anatomy, Histology, Embryology II.	
				Biochemistry I.	
				Biophysics	
compulsory	Odontotechnology and Prosthodontics Preclinical Course I.	C3L1P2	practice mark	General Dental Materials	
compulsory	Hungarian Medical Terminology III.	C2L0P4	practice mark	Hungarian Medical Terminology II.	
compulsory	Physical Education III.	C0L0P2	signature		
	Total Credit	30			

BASIC MODULE

BASIC MODULE

4th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Anatomy (Maxillofacial Anatomy) IV.	C5L3P2	final#	Anatomy, Histology, Embryology III.		
compulsory	Biochemistry, Molecular and Cellbiology III.	C6L3P3	final#	Biochemistry, Molecular and Cellbiology II.		
compulsory	Medical and Dental Physiology II.	C10L6P5	final#	Medical and Dental Physiology I.		
compulsory	Odontotechnology and Prosthodontics Preclinical Course II.	C3L0P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I.		
compulsory	Conservative Dentistry and Endodontics, Pre-clinical I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I.		
compulsory	Hungarian Medical Terminology IV.	C2L0P4	practice mark	Hungarian Medical Terminology III.		
compulsory	General Dental Preclinical Practice	C4L1P3	semifinal	Anatomy, Histology, Embryology II.		
compulsory	Physical Education IV.	C0L0P2	signature			
	Total Credit	34				

#The grade influences the qualification of the diploma. 15 credits should be gained from the elective subjects during th 5-year studies.

C= Credit point

L= Lecture (hours/week)

PRE-CLINICAL MODULE

5th semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Conservative Dentistry and Endodontics, Pre-clinical II.	C4L1P3	semifinal	BASIC MODULE	
compulsory	General and Oral Microbiology	C4L2P2	final#	BASIC MODULE	
compulsory	General and Oral Pathophysiology	C4L2P2	final#	BASIC MODULE	
compulsory	Basic Immunology	C3L2P1	semifinal	Biochemistry, Molecular and Cellbiology III.	
compulsory	Hungarian Dental Terminology I.	C2L0P4	practice mark	BASIC MODULE	
compulsory	Oral and Maxillofacial Surgery, Pre-clinical course	C2L0P2	practice mark	BASIC MODULE	
compulsory	Pathology	C5L3P2	final#	BASIC MODULE	
compulsory	Preventive Dentistry I.	C3L1P2	practice mark	BASIC MODULE	
compulsory	Odontotechnology and Prosthodontics Preclinical Course III.	C3L0P3	final#	BASIC MODULE	
	Total Credit	30			

PRE-CLINICAL MODULE

6th semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Conservative Dentistry and Endodontics I.	C4L1P3	practice mark	Conservative Dentistry and Endodontics, Pre-clinical Course II	
compulsory	Internal Medicine I.	C4L2P2	practice mark	General and Oral Pathophysiology	
compulsory	Oral and Maxillofacial Surgery I.	C4L1P3	practice mark	Oral and Maxillofacial Surgery, Pre-clinical course	
compulsory	Oral Biology	C5L3P2	final#	General and Oral Pathophysiology	
company				General and Oral Microbiology	
compulsory	Genetics and Genomics	C3L2P1	final#	Biochemistry, Molecular and Cellbiology III.	
compulsory	Oral Pathology	C4L2P2	final#	Pathology	
compulsory	Preventive Dentistry II.	C1L1P0	final#	Preventive Dentistry I.	
compulsory	Prosthodontics I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics, Pre-clinical Course III.	
compulsory	Radiation protection	C2L1.5P1	semifinal	BASIC MODULE	
compulsory	Hungarian Dental Terminology II.	C2L0P4	final	Hungarian Dental Terminology I.	
compulsory	Dento-Alveolar practice (summer, minimum 1 week)	C0L0P30	signature	1-6 semesters compulsory subjects	
	Total Credit	33			

The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

7th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	General and Dental Radiology	C4L2P2	final#	Radiation protection		
compulsory	Conservative Dentistry and Endodontics II.	C4L1P3	practice mark	Conservative Dentistry and Endodontics I.		
compulsory	Internal Medicine II.	C3L2P1	semifinal	Internal Medicine I.		
compulsory	Oral and Maxillofacial Surgery II.	C4L1P3	practice mark	Oral and Maxillofacial Surgery I.		
compulsory	Periodontology I.	C2L2P0	semifinal	Oral biology		
compulsory	Pharmacology, Toxicology I.	C2L1P1	semifinal	Pathology		
compulsory	Prosthodontics II.	C7L1P6	semifinal	Prosthodontics I.		
compulsory	Oral Diagnostics I.	C2L1P1	practice mark	Pathology		
compulsory	Orthodontics Pre-Clinical	C1L0P1	practice mark	Oral Biology		
obligatory elective	Neurorology	C1L1P0	semifinal	Internal Medicine I.		
obligatory elective	Psychiatry	C1L1P0	semifinal	Internal Medicine I.		
obligatory elective	Dental Ethics	C2L2P0	semifinal	Pathology		
compulsory	Gnathology	C3L1P2	final#	Prosthodontics I.		
obligatory elective	Public Health	C3L1,5P2	final#	General and Oral Microbiology		
obligatory elective	Otorhinolaryngology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.		
obligatory elective	Ophthalmology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.		
compulsory	Community Dentistry I.	C0L0P1	signature	Oral Pathology		
	Total Credit	41				

CLINICAL MODULE

8th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Conservative Dentistry and Endodontics III.	C4L1P3	practice mark	Conservative Dentistry and Endodontics II.		
compulsory	Internal Medicine III.	C1L1P0	final#	Internal Medicine II.		
compulsory	Oral and Maxillofacial Surgery III.	C4L1P3	semifinal	Oral and Maxillofacial Surgery II.		
compulsory	Oral Diagnostics II.	C1L0P1	semifinal	Oral Diagnostics I.		
compulsory	Periodontology II.	C4L1P3	semifinal	Periodontology I.		
compulsory	Pharmacology, Toxicology II.	C3L1P2	final#	Pharmacology, Toxicology I.		
compulsory	Prosthodontics III.	C4L1P3	practice mark	Prosthodontics II.		
obligatory elective	Surgery	C3L2P1	final#	Internal Medicine I.		
compulsory	Implantology I.	C1L1P0	semifinal	Oral and Maxillofacial Surgery II.		
compulsory	Community Dentistry II.	C0L1P1,5	signature	Community Dentistry I.		
compulsory	General Dentistry practice (summer,4weeks)	C0L0P30	signature			
	Total Credit	25				

The grade influences the qualification of the diploma. 15 credits should be gained from the elective subjects during th 5-year studies.

L = Lecture (hours/week)

C = Credit point

9th semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Clinical Dentistry I.*	C3L0P6	practice mark	Conservative Dentistry and Endodontics III.	
compulsory	Conservative Dentistry and Endodontics IV	C3L0P3	practice mark	Conservative Dentistry and Endodontics III.	
obligatory elective	Forensic Dentistry	C1L1P0	semifinal	Pharmacology, Toxicology II.	
obligatory elective	Ophthalmology	C1L1P0.5	final#	Internal Medicine I.	
compulsory	Oral and Maxillofacial Surgery IV.	C6L1P5	practice mark	Oral and Maxillofacial Surgery III.	
compulsory	Implantology II.	C2L1P1	final#	Oral and Maxillofacial Surgery III.	
compulsory	Orthodontics I	C6L1P5	practice mark	Conservative Dentistry and Endodontics III.	
obligatory elective	Otorhinolaryngology	C1L1P0.5	final#	Oral and Maxillofacial Surgery I.	
obligatory elective	Pediatrics	C1L1P0.5	semifinal	Internal Medicine I.	
compulsory	Pedodontics I	C6L1P5	practice mark	Conservative Dentistry and Endodontics III.	
compulsory	Periodontology III.	C3L1P2	practice mark	Periodontology II.	
obligatory elective	Prehospital Emergency Medicine	C1L1P0	semifinal	Internal Medicine III.	
compulsory	Prosthodontics IV.	C3L0P3	practice mark	Prosthodontics III.	
compulsory	Oral Medicine	C1L1P0	Semifinal	Pharmacology and Toxicology II.	
	Total Credit	38			

*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry

#The grade influences the qualification of the diploma.

15 credits should be gained from the elective subjects during th 5-year studies.

C = Credit point

- L = Lecture (hours/week)
- P = Practice (hours/week)

10th semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Clinical Dentistry II.*	C3L0P6	practice mark	Clinical Dentistry I.	
compulsory	Conservative Dentistry and Endodontics V	C3L0P3	final#	Conservative Dentitry IV.	
obligatory elctive	Dermatology	C1L1P0.5	final#	Internal Medicine I.	
obligatory elctive	Obstetrics and Family Planning	C1L1P0	Semifinal		
obligatory elctive	Diploma Work	C20			
compulsory	Oral and Maxillofacial Surgery V.	C4L1P3	final#	Oral and Maxillofacial Surgery III.	
compulsory	Orthodontics II	C5L1P4	final#	Orthodontics I.	
compulsory	Pedodontics II	C5L1P4	final#	Pedodontics I.	
compulsory	Periodontology IV.	C3L1.5P2	final#	Periodontology III.	
compulsory	Prosthodontics V.	C3L0P3	final#	Prosthodontics V.	
	Total Credit	48			

*at the Dept. of Prosthodontics #The grade influences the qualification of the diploma.

To credits should be gained from the elective subjects during th 5-year studies. C = Credit point

L = Lecture (hours/week)

Study Program for students started studies in the 2013/14 academic year

BASIC MODULE

1st semester					
subjects code	subjects	credit code	examination		
compulsory	Anatomy, Histology, Embryology I.	C8L3P5	semifinal		
compulsory	Physical Bases of Dental Materials	C2L2P0	semifinal		
compulsory	Medical Chemistry	C6L3P3	final#		
compulsory	Medical Biology (Cell Biology)	C3L2P1	final#		
compulsory	Biophysics I.	C3L1.5P2	semifinal		
compulsory	Hungarian Medical Terminology I.	C4L0P4	practice mark		
obligatory elective	Medical Latin I.	C2L0P2	practice mark		
compulsory	Physical Education I.	C0L0P1	signature		
	Total Credit	28			

BASIC MODULE

2nd semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Anatomy, Histology, Embryology II.	C8L3P4	semifinal	Anatomy, Histology, Embryology I.		
compulsory	Biophysics II.	C5L2P2	final#	Biophysics I., Physical Bases of Dental Materials		
compulsory	Biochemistry, Molecular and Cellbiology I.	C7L3P3	semifinal	Medical Chemistry, Medical Biology (Cellbiology)		
compulsory	Hungarian Medical Terminology II.	C2L0P4	practice mark	Hungarian Medical Terminology I.		
compulsory	General Dental Materials	C1L1P0	semifinal	Physical Bases of Dental Materials, Biophysics I.		
obligatory elective	First aid	C1L0P1	practice mark			
obligatory elective	Medical Informatics	C3L1P2	semifinal			
compulsory	Physical Education II	C0L0P1	signature			
obligatory elective	Dental Psychology	C2L2P0	semifinal			
obligatory elective	Medical Sociology	C2L1P1	semifinal			
compulsory	Dental Laboratory Practice (summer, 2 weeks)	C0L0P30	signature			
compulsory	Nursing Practice (summer, 2 weeks)	C0L0P30	signature			
	Total Credit	31				

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

BASIC MODULE

3rd semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Anatomy, Histology, Embryology III.	C7L3P4	semifinal	Anatomy, Histology, Embryology II., Biochemistry, Molecular and Cellbiology I.	
compulsory	Biochemistry, Molecular and Cellbiology II.	C5L3P2	semifinal	Biochemistry, Molecular and Cellbiology I.	
	Medical and Dental Physiology I.	C11L6P5	semifinal	Anatomy, Histology, Embryology II.,	
compulsory				Biochemistry, Molecular and Cellbiology I.	
				Biophysics II.	
compulsory	Odontotechnology and Prostodontics Preclinical Course I.	C3L1P2	practice mark	General Dental Materials, Anatomy, Histology, Embryology II.	
compulsory	Hungarian Medical Terminology III.	C2L0P4	practice mark	Hungarian Medical Terminology II.	
compulsory	Physical Education III.	C0L0P1	signature		
	Total Credit	28			

BASIC MODULE

4th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Anatomy (Maxillofacial Anatomy) IV.	C6L3P2	final#	Anatomy, Histology, Embryology III.,		
compulsory	Biochemistry, Molecular and Cellbiology III.	C5L3P2	final#	Biochemistry, Molecular and Cellbiology II.		
compulsory	Medical and Dental Physiology II.	C10L6P5	final#	Medical and Dental Physiology I.		
compulsory	Odontotechnology and Prosthodontics Preclinical Course II.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I.		
compulsory	Conservative Dentistry and Endodontics, Pre-clinical I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I.		
compulsory	Hungarian Medical Terminology IV.	C2L0P4	practice mark	Hungarian Medical Terminology III.		
compulsory	General Dental Preclinical Practice	C4L1P3	semifinal	General Dental Materials, Anatomy, Histology, Embryology II.		
compulsory	Physical Education IV.	C0L0P1	signature			
	Total Credit	35				

#The grade influences the qualification of the diploma.

15 credits should be gained from the elective subjects during th 5-year studies.

C = Credit point L = Lecture (hours/week)

PRE-CLINICAL MODULE

	5th semester					
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Conservative Dentistry and Endodontics,	C411D2		Anatomy (Maxillofacial Anatomy) IV.		
compulsory	Pre-clinical II.	C4LIP3	semiinai	Conservative Dentistry and Endodontics, Pre-clinical I. General Dental Preclinical Practice		
compulsory	General and Oral Microbiology	C4L2P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
				Medical and Dental Physiology II.		
compulsory	General and Oral Pathophysiology	C4L2P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
				Medical and Dental Physiology II.		
compulsory	Basic Immunology	C3L2P1	semifinal	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
				Medical and Dental Physiology II.		
compulsory	Hungarian Dental Terminology I.	C2L0P4	practice mark	Hungarian Medical Terminology IV.		
compulsory	Oral and Maxillofacial Surgery, Pre-clinical course	C2L0P2	practice mark	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
				Medical and Dental Physiology II.		
compulsory	Pathology	C5L3P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
				Medical and Dental Physiology II.		
compulsory	Preventive Dentistry I.	C3L1P2	practice mark	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
				Medical and Dental Physiology II.		
compulsory	Odontotechnology and Prosthodontics Preclinical Course III.	C3L0P3	final#	Odontotechnology and Prosthodontics Preclinical Course II. General Dental Preclinical Practice		
	Total Credit	30				

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)
6th semester						
subjects code	subjects	credit code	examination	prerequisites		
	Concernation Destinted and Industries I	C411D2		Conservative Dentistry and Endodontics, Pre-clinical Course II.,		
compulsory	Conservative Dentistry and Endodontics I.	C4LIF3	practice mark	Odontotechnology and Prosthodontics Preclinical Course III		
compulsory	Internal Medicine I.	C3L2P2	practice mark	General and Oral Pathophysiology, Pathology		
compulsory	Oral and Maxillofacial Surgery I.	C4L1P3	practice mark	Oral and Maxillofacial Surgery, Pre-clinical course		
				General and Oral Pathophysiology		
compulsory	npulsory Oral Biology C5L3P2 final#	final#	General and Oral Microbiology , Anatomy (Maxillofacial Anatomy) IV.			
compulsory	Genetics and Genomics	C2L2P1	final#	Biochemistry, Molecular and Cellbiology III., Medical and Dental Physiology II.		
compulsory	Oral Pathology	C4L2P2	final#	Pathology, General and Oral Microbiology, General and Oral Pathophysiology		
compulsory	Preventive Dentistry II.	C1L1P0	final#	Preventive Dentistry I.		
compulsory	Prosthodontics I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course III. , Conservative Dentistry and Endodontics, Pre-clinical II.		
compulsory	Radiation protection	C2L1.5P1	semifinal	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
/		C2E1.51 1	Serimu	Medical and Dental Physiology II.		
compulsory	Hungarian Dental Terminology II.	C2L0P4	final	Hungarian Dental Terminology I.		
compulsory	Oral Diagnostics I.	C2L1P1	semifinal	Pathology		
compulsory	Dento-Alveolar practice (summer, minimum 1 week)	C0L0P30	signature			
	Total Credit	33				

Explanation

15 credits should be gained from the elective subjects during the 5-year studies - see the elective list after the 3rd year study program

#The grade influences the qualification of the diploma.

15 credits should be gained from the elective subjects during th 5-year studies.

C = Credit point

L = Lecture (hours/week)

7th semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	General and Dental Radiology	C4L2P2	final#	Radiation protection ,Pathology, General and Oral Microbiology			
compulsory	Conservative Dentistry and Endodontics II.	C4L1P3	practice mark	Conservative Dentistry and Endodontics I., Prosthodontics I.			
compulsory	Internal Medicine II.	C3L2P1	semifinal	Internal Medicine I., Genetics and Genomics			
compulsory	Oral and Maxillofacial Surgery II.	C4L1P3	practice mark	Oral and Maxillofacial Surgery I.			
compulsory	Periodontology I.	C2L2P0	semifinal	Oral Biology, Pathology, Oral Pathology			
compulsory	Pharmacology, Toxicology I.	C2I 1P1	semifinal	Pathology, Biochemistry, Molecular and Cellbiology III.			
compaisory		C2EII I		Medical and Dental Physiology II.			
compulsory	Prosthodontics II.	C7L1P6	semifinal	Prosthodontics I., Conservative Dentistry and Endodontics I.			
compulsory	Orthodontics Pre-Clinical	C1L0P1	practice mark	Oral Biology, Pathology, Oral Pathology			
obligatory elective	Neurorology	C1L1P0	semifinal	Internal Medicine I.			
obligatory elective	Psychiatry	C1L1P0	semifinal	Internal Medicine I.			
obligatory elective	Dental Ethics	C2L2P0	semifinal	Pathology			
compulsory	Gnathology	C3L1P2	final#	Prosthodontics I.			
obligatory elective	Public Health	C3L1,5P2	final#	General and Oral Microbiology			
compulsory	Community Dentistry I.	C0L0P1	signature	Oral Pathology			
obligatory elective	Otorhinolaryngology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.			
obligatory elective	Ophthalmology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.			
obligatory elective	Pediatrics	C1L1P0.5	semifinal	Internal Medicine I. , Pathology			
	Total Credit	40					

The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

8th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Conservative Dentistry and Endodontics III.	C4L1P3	practice mark	Conservative Dentistry and Endodontics II., Prosthodontics II.		
compulsory	Internal Medicine III.	C1L1P0	final#	Internal Medicine II.		
compulsory	Oral and Maxillofacial Surgery III.	C4L1P3	semifinal	Oral and Maxillofacial Surgery II.		
compulsory	Periodontology II.	C4L1P3	semifinal	Periodontology I.		
compulsory	Pharmacology, Toxicology II.	C3L1P2	final#	Pharmacology, Toxicology I.		
compulsory	Prosthodontics III.	C4L1P3	practice mark	Prosthodontics II., Conservative Dentistry and Endodontics II.		
obligatory elective	Surgery	C3L2P1	final#	Internal Medicine I., Pathology		
compulsory	Implantology I.	C1L1G0	semifinal	Oral and Maxillofacial Surgery II.		
compulsory	Community Dentistry II.	C0L1P1,5	signature	Community Dentistry I.		
compulsory	General Dentistry practice (summer,4weeks)	C0L0P30	signature	1-8 semesters compulsory subjets		
	Total Credit	24				

#The grade influences the qualification of the diploma.

15 credits should be gained from the elective subjects during th 5-year studies.

C = Credit point L = Lecture (hours/week)

9th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Clinical Dentistry I.*	C2L0P6	practice mark	Conservative Dentistry and Endodontics III.		
compulsory	Conservative Dentistry and Endodontics IV	C3L0P3	practice mark	Conservative Dentistry and Endodontics III., Prosthodontics III.		
obligatory elective	Forensic Dentistry	C1L1P0	semifinal	Pharmacology, Toxicology II.		
compulsory	Oral and Maxillofacial Surgery IV.	C5L1P5	practice mark	Oral and Maxillofacial Surgery III.		
compulsory	Implantology II.	C2L1P1	final#	Oral and Maxillofacial Surgery III.		
compulsory	Orthodontics I.	C5L1P4	practice mark	Conservative Dentistry and Endodontics III.		
compulsory	Pedodontics I.	C5L1P4	practice mark	Conservative Dentistry and Endodontics III.		
compulsory	Periodontology III.	C3L1P2	practice mark	Periodontology II.		
obligatory elective	Prehospital Emergency Medicine	C1L1P0	semifinal	Internal Medicine III., First Aid		
compulsory	Prosthodontics IV.	C3L0P3	practice mark	Prosthodontics III., Conservative Dentistry and Endodontics III.		
compulsory	Oral Diagnostics II.	C1L0P1	semifinal	Oral Diagnostics I.		
compulsory	Oral Medicine	C1L1P0	semifinal	Oral Diagnostics I.		
	Total Credit	32				

*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry # The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

10th semester						
subjects code	subjects	credit code	prerequisites code	prerequisites		
compulsory	Clinical Dentistry II.*	C3L0P6	practice mark	Clinical Dentistry I.		
compulsory	Conservative Dentistry and Endodontics V	C3L0P3	final#	Conservative Dentistry and Endodontics IV., Prosthodontics IV.		
obligatory elctive	Dermatology	C1L1P0.5	final#	Pharmacology, Toxicology II.		
obligatory elctive	Obstetrics and Family Planning	C1L1P0	semifinal	Internal Medicine III., First Aid		
obligatory elctive	Diploma Work	C20				
compulsory	Oral and Maxillofacial Surgery V.	C4L1P3	final#	Oral and Maxillofacial Surgery IV.		
compulsory	Orthodontics II	C6L1P5	final#	Orthodontics I.		
compulsory	Pedodontics II	C6L1P5	final#	Pedodontics I.		
compulsory	Periodontology IV.	C3L1.5P2	final#	Periodontology III.		
compulsory	Prosthodontics V.	C3L0P3	final#	Prosthodontics IV., Conservative Dentistry and Endodontics IV.		
	Total Credit	50				

* at the Dept. of Prosthodontics

The grade influences the qualification of the diploma. 15 credits should be gained from the elective subjects during th 5-year studies.

C = Credit point

L = Lecture (hours/week)

Study Program for students started studies in the 2014/2015 academic year

BASIC MODULE

1st semester							
subjects code	subjects	credit code	Examination				
compulsory	Anatomy, Histology, Embryology I.	C8L3P5	semifinal				
compulsory	Physical Bases of Dental Materials	C2L2P0	semifinal				
compulsory	Medical Chemistry	C6L3P3	final#				
compulsory	Medical Biology (Cell Biology)	C3L2P1	final#				
compulsory	Biophysics I.	C3L1.5P2	semifinal				
compulsory	Hungarian Language	C2L0P4	practice mark				
obligatory elective	Medical Latin I.	C2L0P2	practice mark				
compulsory	Physical Education I.	C0L0P1	signature				
	Total Credit	26					

BASIC MODULE

2nd semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Anatomy, Histology, Embryology II.	C8L3P4	semifinal	Anatomy, Histology, Embryology I.	
compulsory	Biophysics II.	C5L2P2	final#	Biophysics I., Physical Bases of Dental Materials	
compulsory	Biochemistry, Molecular and Cellbiology I.	C7L3P3	semifinal	Medical Chemistry, Medical Biology (Cellbiology)	
compulsory	Hungarian Medical Terminology	C2L0P4	practice mark	Hungarian Language	
compulsory	General Dental Materials	C1L1P0	semifinal	Physical Bases of Dental Materials, Biophysics I.	
obligatory elective	First aid	C1L0P1	practice mark		
obligatory elective	Medical Informatics	C3L1P2	semifinal		
compulsory	Physical Education II	C0L0P1	signature		
obligatory elective	Medical Latin II.	C2L0P2	practice mark	Medical Latin I.	
obligatory elective	Dental Psychology	C2L2P0	semifinal		
obligatory elective	Medical Sociology	C2L1P1	semifinal		
compulsory	Dental Laboratory Practice (summer, 2 weeks)	C0L0P30	signature		
compulsory	Nursing Practice (summer, 2 weeks)	C0L0P30	signature		
	Total Credit	33			

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

BASIC MODULE

3rd semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Anatomy, Histology, Embryology III.	C7L3P4	semifinal	Anatomy, Histology, Embryology II., Biochemistry, Molecular and Cellbiology I.		
compulsory	Biochemistry, Molecular and Cellbiology II.	C5L3P2	semifinal	Biochemistry, Molecular and Cellbiology I.		
compulsory	Medical and Dental Physiology I.	C9L6P3.5	semifinal	Anatomy, Histology, Embryology II.,		
				Biochemistry, Molecular and Cellbiology I.		
				Biophysics II.		
compulsory	Odontotechnology and Prosthodontics Preclinical Course I.	C3L1P2	practice mark	General Dental Materials, Anatomy, Histology, Embryology II.		
compulsory	Hungarian Dental Terminology I.	C2L0P4	practice mark	Hungarian Medical Terminology		
compulsory	Physical Education III.	C0L0P1	signature			
	Total Credit	26				

BASIC MODULE

4th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Anatomy (Maxillofacial Anatomy) IV.	C6L3P2	final#	Anatomy, Histology, Embryology III.,		
compulsory	Biochemistry, Molecular and Cellbiology III.	C5L3P2	final#	Biochemistry, Molecular and Cellbiology II.		
compulsory	Medical and Dental Physiology II.	C9L6P3.5	final#	Medical and Dental Physiology I.		
compulsory	Odontotechnology and Prosthodontics Preclinical Course II.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I.		
compulsory	Conservative Dentistry and Endodontics, Pre-clinical I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I.		
compulsory	Hungarian Dental Terminology II.	C4L0P4	practice mark	Hungarian Dental Terminology I.		
compulsory	General Dental Preclinical Practice	C4L1P3	semifinal	General Dental Materials, Anatomy, Histology, Embryology II.		
compulsory	Physical Education IV.	C0L0P1	signature			
	Total Credit	36				

#The grade influences the qualification of the diploma.

To credit should be gained from the elective subjects during th 5-year studies. C = Credit point

L = Lecture (hours/week)

5th semester						
subjects code	subjects	credit code	examination	prerequisites		
	Conservative Dentistry and			Anatomy (Maxillofacial Anatomy) IV.		
compulsory	Endodontics, Pre-clinical II.	C4L1P3	final#	Conservative Dentistry and Endodontics, Pre-clinical I. General Dental Preclinical Practice		
compulsory	General and Oral Microbiology	C4L2P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
,	8/			Medical and Dental Physiology II.		
compulsory	General and Oral Pathophysiology	C4L2P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
, ,	1 / 0/			Medical and Dental Physiology II.		
compulsory	compulsory Basic Immunology C3L2P1 s	semifinal	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.			
, ,				Medical and Dental Physiology II.		
compulsory	Hungarian Dental Terminology III.	C2L0P4	practice mark	Hungarian Medical Terminology IV.		
compulsory	Oral and Maxillofacial Surgery, Pre- clinical course	C2L0P2	practice mark	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
				Medical and Dental Physiology II.		
compulsory	Pathology	C5L3P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
				Medical and Dental Physiology II.		
compulsory	Preventive Dentistry I.	C3L1P2	practice mark	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
				Medical and Dental Physiology II.		
compulsory	Odontotechnology and Prosthodontics Preclinical Course III.	C3L0P3	final#	Odontotechnology and Prosthodontics Preclinical Course II. General Dental Preclinical Practice		
compulsory	The Medical Basis of Disaster Management I.	C0L2 hours/ semester	signature			
	Total Credit	30				

The grade influences the qualification of the diploma C = Credit point L = Lecture (hours/week)

6th semester						
subjects code	subjects	credit code	examination	prerequisites		
	Conservative Dentistry and	C411D2		Conservative Dentistry and Endodontics, Pre-clinical Course II.,		
compulsory	Endodontics I.	C4LIF5	practice mark	Odontotechnology and Prosthodontics Preclinical Course III		
compulsory	Internal Medicine I.	C3L2P2	practice mark	General and Oral Pathophysiology, Pathology		
compulsory	Oral and Maxillofacial Surgery I.	C4L1P3	practice mark	Oral and Maxillofacial Surgery, Pre-clinical course		
				General and Oral Pathophysiology		
compulsory	Oral Biology	C5L3P2	final#	General and Oral Microbiology, Anatomy (Maxillofacial Anatomy) IV.		
compulsory	Genetics and Genomics	C2L2P1	final#	Biochemistry, Molecular and Cellbiology III., Medical and Dental Physiology II.		
compulsory	Oral Pathology	C4L2P2	final#	Pathology, General and Oral Microbiology, General and Oral Pathophysiology		
compulsory	Preventive Dentistry II.	C1L1P0	final#	Preventive Dentistry I.		
compulsory	Prosthodontics I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course III., Conservative Dentistry and Endodontics, Pre-clinical II.		
compulsory	Radiation protection	C2I1.5P1	semifinal	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
			Serrina	Medical and Dental Physiology II.		
compulsory	Hungarian Dental Terminology II.	C2L0P4	final	Hungarian Dental Terminology I.		
compulsory	Oral Diagnostics I.	C2L1P1	semifinal	Pathology		
compulsory	The Medical Basis of Disaster Management II.	C0L2 hours/semester	signature			
compulsory	Dento-Alveolar practice (summer, minimum 1 week)	COLOP30	signature			
	Total Credit	33				

#The grade influences the qualification of the diploma. 15 credits should be gained from the elective subjects during th 5-year studies. C = Credit point

L = Lecture (hours/week)

7th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	General and Dental Radiology	C4L2P2	final#	Radiation protection, Pathology, General and Oral Microbiology		
compulsory	Conservative Dentistry and Endodontics II.	C4L1P3	practice mark	Conservative Dentistry and Endodontics I., Prosthodontics I.		
compulsory	Internal Medicine II.	C3L2P1	semifinal	Internal Medicine I., Genetics and Genomics		
compulsory	Oral and Maxillofacial Surgery II.	C4L1P3	practice mark	Oral and Maxillofacial Surgery I.		
compulsory	Periodontology I.	C2L2P0	semifinal	Oral Biology, Pathology, Oral Pathology		
compulsory	Pharmacology Tovicology I	C21 1D1	semifinal	Pathology, Biochemistry, Molecular and Cellbiology III.		
compulsory	Pharmacology, Toxicology I.	C2LIF I		Medical and Dental Physiology II.		
compulsory	Prosthodontics II.	C7L1P6	semifinal	Prosthodontics I., Conservative Dentistry and Endodontics I.		
compulsory	Orthodontics Pre-Clinical	C1L0P1	practice mark	Oral Biology, Pathology, Oral Pathology		
obligatory elective	Neurorology	C1L1P0	semifinal	Internal Medicine I.		
obligatory elective	Psychiatry	C1L1P0	semifinal	Internal Medicine I.		
obligatory elective	Dental Ethics	C2L2P0	semifinal	Pathology		
compulsory	Gnathology	C3L1P2	final#	Prosthodontics I.		
obligatory elective	Public Health	C3L1,5P2	final#	General and Oral Microbiology		
compulsory	Community Dentistry I.	C0L0P1	signature	Oral Pathology		
obligatory elective	Otorhinolaryngology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.		
obligatory elective	Ophthalmology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.		
obligatory elective	Pediatrics	C1L1P0.5	semifinal	Internal Medicine I. , Pathology		
	Total Credit	40				

The grade influences the qualification of the diploma C = Credit point L = Lecture (hours/week)

8th semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	Conservative Dentistry and Endodontics III.	C4L1P3	practice mark	Conservative Dentistry and Endodontics II., Prosthodontics II.			
compulsory	Internal Medicine III.	C1L1P0	final#	Internal Medicine II.			
compulsory	Oral and Maxillofacial Surgery III.	C4L1P3	semifinal	Oral and Maxillofacial Surgery II.			
compulsory	Periodontology II.	C4L1P3	semifinal	Periodontology I.			
compulsory	Pharmacology, Toxicology II.	C3L1P2	final#	Pharmacology, Toxicology I.			
compulsory	Prosthodontics III.	C4L1P3	practice mark	Prosthodontics II., Conservative Dentistry and Endodontics II.			
obligatory elective	Surgery	C3L2P1	final#	Internal Medicine I., Pathology			
compulsory	Implantology I.	C1L1P0	semifinal	Oral and Maxillofacial Surgery II.			
compulsory	Community Dentistry II.	C0L1P1,5	signature	Community Dentistry I.			
compulsory	General Dentistry practice (summer, 4 weeks)	C0L0P30	signature	1-8 semesters compulsory subjets			
	Total Credit	24					

#The grade influences the qualification of the diploma. 15 credits should be gained from the elective subjects during th 5-year studies. C = Credit point

L = Lecture (hours/week)

9th semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	Clinical Dentistry I.*	C2L0P6	practice mark	Conservative Dentistry and Endodontics III.			
compulsory	Conservative Dentistry and Endodontics IV	C3L0P3	practice mark	Conservative Dentistry and Endodontics III., Prosthodontics III.			
obligatory elective	Forensic Dentistry	C1L1P0	semifinal	Pharmacology, Toxicology II.			
compulsory	Oral and Maxillofacial Surgery IV.	C5L1P5	practice mark	Oral and Maxillofacial Surgery III.			
compulsory	Implantology II.	C2L1P1	final#	Oral and Maxillofacial Surgery III.			
compulsory	Orthodontics I.	C5L1P4	practice mark	Conservative Dentistry and Endodontics III.			
compulsory	Pedodontics I.	C5L1P4	practice mark	Conservative Dentistry and Endodontics III.			
compulsory	Periodontology III.	C3L1P2	practice mark	Periodontology II.			
obligatory elective	Prehospital Emergency Medicine	C1L1P0	semifinal	Internal Medicine III., First Aid			
compulsory	Prosthodontics IV.	C3L0P3	practice mark	Prosthodontics III., Conservative Dentistry and Endodontics III.			
compulsory	Oral Diagnostics II.	C1L0P1	semifinal	Oral Diagnostics I.			
compulsory	Oral Medicine	C1L1P0	semifinal	Oral Diagnostics I.			
	Total Credit	32					

*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry # The grade influences the qualification of the diploma

C = Credit point L = Lecture (hours/week)

10th semester							
subjects code	subjects	credit code	prerequisites code	prerequisites			
compulsory	Clinical Dentistry II. *	C3L0P6	practice mark	Clinical Dentistry I.			
compulsory	Conservative Dentistry and Endodontics V	C3L0P3	final#	Conservative Dentistry and Endodontics IV., Prosthodontics IV.			
obligatory elective	Dermatology	C1L1P0.5	final#	Pharmacology, Toxicology II.			
obligatory elective	Obstetrics and Family Planning	C1L1P0	semifinal	Internal Medicine III., First Aid			
obligatory elective	Diploma Work	C20					
compulsory	Oral and Maxillofacial Surgery V.	C4L1P3	final#	Oral and Maxillofacial Surgery IV.			
compulsory	Orthodontics II	C6L1P5	final#	Orthodontics I.			
compulsory	Pedodontics II	C6L1P5	final#	Pedodontics I.			
compulsory	Periodontology IV.	C3L1.5P2	final#	Periodontology III.			
compulsory	Prosthodontics V.	C3L0P3	final#	Prosthodontics IV., Conservative Dentistry and Endodontics IV.			
	Total Credit	50					

* at the Dept. of Prosthodontics

#The grade influences the qualification of the diploma.

15 credits should be gained from the elective subjects during th 5-year studies.

C = Credit point L = Lecture (hours/week)

Study Program for students started studies in the 2015/2016 academic year

BASIC MODULE

1st semester						
subjects code	subjects	credit code	Examination			
compulsory	Anatomy, Histology, Embryology I.	C8L3P5	semifinal			
compulsory	Physical Bases of Dental Materials	C2L2P0	semifinal			
compulsory	Medical Chemistry	C6L3P3	final#			
compulsory	Medical Biology (Cell Biology)	C3L2P1	final#			
compulsory	Biophysics I.	C3L1.5P2	semifinal			
compulsory	Hungarian Language	C2L0P4	practice mark			
obligatory elective	Medical Latin I.	C2L0P2	practice mark			
compulsory	Physical Education I.	C0L0P1	signature			
	Total Credit	26				

BASIC MODULE

2nd semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	Anatomy, Histology, Embryology II.	C8L3P4	semifinal	Anatomy, Histology, Embryology I., Medical Biology (Cellbiology), Medical Latin I.			
compulsory	Biophysics II.	C5L2P2	final#	Biophysics I., Physical Bases of Dental Materials			
compulsory	Biochemistry, Molecular and Cellbiology I.	C7L3P3	semifinal	Medical Chemistry, Medical Biology (Cellbiology)			
compulsory	Hungarian Medical Terminology	C2L0P4	practice mark	Hungarian Language			
compulsory	General Dental Materials	C1L1P0	semifinal	Physical Bases of Dental Materials			
obligatory elective	First aid	C1L0P1	practice mark				
obligatory elective	Medical Informatics	C3L1P2	semifinal				
compulsory	Physical Education II	C0L0P1	signature				
obligatory elective	Medical Latin II.	C2L0P2	practice mark	Medical Latin I.			
obligatory elective	Dental Psychology	C2L2P0	semifinal				
obligatory elective	Medical Sociology	C2L1P1	semifinal				
compulsory	Dental Laboratory Practice (summer, 2 weeks)	C0L0P30	signature				
compulsory	Nursing Practice (summer, 2 weeks)	C0L0P30	signature				
	Total Credit	33					

Explanation

15 credits should be gained from the elective subjects during the 5-year studies - see the elective list after the 3rd year study program

#The grade influences the qualification of the diploma.

15 credits should be gained from the elective subjects during th 5-year studies.

C = Credit point

L = Lecture (hours/week)

BASIC MODULE

3rd semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	Anatomy, Histology, Embryology III.	C7L3P4	semifinal	Anatomy, Histology, Embryology II., Biochemistry, Molecular and Cellbiology I., Medical Latin II.			
compulsory	Biochemistry, Molecular and Cellbiology II.	C5L3P2	semifinal	Biochemistry, Molecular and Cellbiology I., Biophysics II.			
compulsory	Medical and Dental Physiology I.	C9L6P3.5	semifinal	Anatomy, Histology, Embryology II., Biochemistry, Molecular and Cellbiology I. Biophysics II.			
compulsory	Odontotechnology and Prosthodontics Preclinical Course I.	C3L1P2	practice mark	General Dental Materials, Anatomy, Histology, Embryology II., Medical Latin II.			
compulsory	Hungarian Dental Terminology I.	C2L0P4	practice mark	Hungarian Medical Terminology			
compulsory	Physical Education III.	C0L0P1	signature				
	Total Credit	26					

BASIC MODULE

4th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Anatomy (Maxillofacial Anatomy) IV.	C6L3P2	final#	Anatomy, Histology, Embryology III., Biochemistry, Molecular and Cellbiology II.		
compulsory	Biochemistry, Molecular and Cellbiology III.	C5L3P2	final#	Biochemistry, Molecular and Cellbiology II., Medical and Dental Physiology I.		
compulsory	Medical and Dental Physiology II.	C9L6P3.5	final#	Medical and Dental Physiology I., Biochemistry, Molecular and Cellbiology II.		
compulsory	Odontotechnology and Prosthodontics Preclinical Course II.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I.		
compulsory	Conservative Dentistry and Endodontics, Pre-clinical I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I.		
compulsory	Hungarian Dental Terminology II.	C4L0P4	practice mark	Hungarian Dental Terminology I.		
compulsory	General Dental Preclinical Practice	C4L1P3	semifinal	General Dental Materials, Anatomy, Histology, Embryology II.		
compulsory	Physical Education IV.	C0L0P1	signature			
	Total Credit	36				

Explanation

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

#The grade influences the qualification of the diploma. 15 credits should be gained from the elective subjects during th 5-year studies.

C = Credit point,

L = Lecture (hours/week),

5th semester						
subjects code	subjects	credit code	examination	prerequisites		
	Conservative Dentistry and Endodontics			Anatomy (Maxillofacial Anatomy) IV.		
compulsory	Pre-clinical II.	C4L1P3	final#	Conservative Dentistry and Endodontics, Pre-clinical I. General Dental Preclinical Practice		
compulsory	General and Oral Microbiology	C4I 2P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
company		012212		Medical and Dental Physiology II.		
compulsory	General and Oral Pathophysiology	C4L2P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
/				Medical and Dental Physiology II.		
compulsory	Basic Immunology	C3L2P1	semifinal	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
,				Medical and Dental Physiology II.		
compulsory	Hungarian Dental Terminology III.	C2L0P4	practice mark	Hungarian Medical Terminology II.		
compulsory	Oral and Maxillofacial Surgery,	C2L0P2	practice mark	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
/	Pre-clinical course			Medical and Dental Physiology II.		
compulsory	Pathology	C5L3P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
/		052512	initian.	Medical and Dental Physiology II.		
compulsory	Preventive Dentistry I.	C3L1P2	practice mark	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
/			F	Medical and Dental Physiology II.		
compulsory	Odontotechnology and Prosthodontics Preclinical Course III.	C3L0P3	final#	Odontotechnology and Prosthodontics Preclinical Course II. General Dental Preclinical Practice		
compulsory	The Medical Basis of Disaster Management I.	C0L2 hours/sem	signature	Anatomy IV.		
	Total Credit	30				

Explanation

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

6th semester						
subjects code	subjects	credit code	examination	prerequisites		
				Conservative Dentistry and Endodontics, Pre-clinical Course II.,		
compulsory	Conservative Dentistry and Endodontics I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course III.		
compulsory	Internal Medicine I.	C3L2P2	practice mark	General and Oral Pathophysiology, Pathology		
compulsory	Oral and Maxillofacial Surgery I.	C4L1P3	practice mark	Oral and Maxillofacial Surgery, Pre-clinical course, Pathology		
				General and Oral Pathophysiology		
compulsory	Oral Biology	C5L3P2	final#	General and Oral Microbiology , Anatomy (Maxillofacial Anatomy) IV.		
compulsory	Genetics and Genomics	C2L2P1	final#	Biochemistry, Molecular and Cellbiology III., Medical and Dental Physiology II.		
compulsory	Oral Pathology	C4L2P2	final#	Pathology, General and Oral Microbiology, General and Oral Pathophysiology		
compulsory	Preventive Dentistry II.	C1L1P0	final#	Preventive Dentistry I., Conservative Dentistry and Endodontics, Pre-clinical Course II., Odontotechnology and Prosthodontics Preclinical Course III		
compulsory	Prosthodontics I.	C4L1P3	practice mark	Preventive Dentistry I., Odontotechnology and Prosthodontics Preclinical Course III. , Conservative Dentistry and Endodontics, Pre-clinical II.		
compulsory	Radiation protection	C2L1.5P1	semifinal	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
. ,				Medical and Dental Physiology II.		
compulsory	Hungarian Dental Terminology IV.	C2L0P4	final	Hungarian Dental Terminology III.		
compulsory	Oral Diagnostics I.	C2L1P1	semifinal	Pathology, General and Oral Pathophysiology		
compulsory	The Medical Basis of Disaster Management II.	C0L2 hours/sem	signature	The Medical Basis of Disaster Manegement I.		
compulsory	Dento-Alveolar practice (summer, minimum 1 week)	COLOP30	signature			
	Total Credit	33				

The grade influences the qualification of the diploma C = Credit point L = Lecture (hours/week)

7th semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	General and Dental Radiology	C4L2P2	final#	Radiation protection Pathology, General and Oral Microbiology			
compulsory	Conservative Dentistry and Endodontics II.	C4L1P3	practice mark	Conservative Dentistry and Endodontics I., Prosthodontics I.			
compulsory	Internal Medicine II.	C3L2P1	semifinal	Internal Medicine I., Genetics and Genomics			
compulsory	Oral and Maxillofacial Surgery II.	C4L1P3	practice mark	Oral and Maxillofacial Surgery I., Oral Pathology Radiation protection			
compulsory	Periodontology I.	C2L2P0	semifinal	Oral Biology, Pathology, Oral Pathology			
compulsory	Pharmacology, Toxicology I	C2L1P1 semifinal	somifinal	Pathology, Biochemistry, Molecular and Cellbiology III.			
compulsory	Thaimacology, Toxicology I.		Seminia	Medical and Dental Physiology II.			
compulsory	Prosthodontics II.	C7L1P6	semifinal	Prosthodontics I., Conservative Dentistry and Endodontics I.			
compulsory	Orthodontics Pre-Clinical	C1L0P1	practice mark	Oral Biology, Pathology, Oral Pathology			
obligatory elective	Neurorology	C1L1P0	semifinal	Internal Medicine I.			
obligatory elective	Psychiatry	C1L1P0	semifinal	Internal Medicine I.			
obligatory elective	Dental Ethics	C2L2P0	semifinal	Pathology			
compulsory	Gnathology	C3L1P2	final#	Prosthodontics I. Conservative Dentistry and Endodontics I.			
obligatory elective	Public Health	C3L1,5P2	final#	General and Oral Microbiology			
compulsory	Community Dentistry I.	C0L0P1	signature	Oral Pathology			
obligatory elective	Pediatrics	C1L1P0.5	semifinal	Internal Medicine I., Pathology			
	Total Credit	38					

The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

8th semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	Conservative Dentistry and Endodontics III.	C4L1P3	practice mark	Conservative Dentistry and Endodontics II., Prosthodontics II.			
compulsory	Internal Medicine III.	C1L1P0	final#	Internal Medicine II.			
compulsory	Oral and Maxillofacial Surgery III.	C4L1P3	semifinal	Oral and Maxillofacial Surgery II. Pharmacology, Toxicology I.			
compulsory	Periodontology II.	C4L1P3	semifinal	Periodontology I., Internal Medicine II.			
compulsory	Pharmacology, Toxicology II.	C3L1P2	final#	Pharmacology, Toxicology I.			
compulsory	Prosthodontics III.	C4L1P3	practice mark	Prosthodontics II., Conservative Dentistry and Endodontics II.			
obligatory elective	Surgery	C3L2P1	final#	Internal Medicine I., Pathology			
compulsory	Implantology I.	C1L1P0	semifinal	Oral and Maxillofacial Surgery II. Periodontology I.			
compulsory	Community Dentistry II.	C0L1P1,5	signature	Community Dentistry I.			
obligatory elective	Ophthalmology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.			
obligatory elective	Otorhinolaryngology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.			
compulsory	General Dentistry practice (summer, 4 weeks)	C0L0P30	signature				
	Total Credit	26					

Explanation

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

9th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Clinical Dentistry I.*	C2L0P6	practice mark	Conservative Dentistry and Endodontics III. Prosthodontics III.		
compulsory	Conservative Dentistry and Endodontics IV	C3L0P3	practice mark	Conservative Dentistry and Endodontics III., Prosthodontics III.		
obligatory elective	Forensic Dentistry	C1L1P0	semifinal	Pharmacology, Toxicology II.		
compulsory	Oral and Maxillofacial Surgery IV.	C5L1P5	practice mark	Oral and Maxillofacial Surgery III.		
compulsory	Implantology II.	C2L1P1	final#	Oral and Maxillofacial Surgery III.		
compulsory	Orthodontics I.	C5L1P4	practice mark	Conservative Dentistry and Endodontics III.		
compulsory	Pedodontics I.	C5L1P4	practice mark	Conservative Dentistry and Endodontics III.		
compulsory	Periodontology III.	C3L1P2	practice mark	Periodontology II.		
obligatory elective	Prehospital Emergency Medicine	C1L1P0	semifinal	Internal Medicine III., First Aid		
compulsory	Prosthodontics IV.	C3L0P3	practice mark	Prosthodontics III., Conservative Dentistry and Endodontics III.		
compulsory	Oral Diagnostics II.	C1L0P1	semifinal	Oral Diagnostics I.		
compulsory	Oral Medicine	C1L1P0	semifinal	Oral Diagnostics I.		
	Total Credit	32				

*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry #The grade influences the qualification of the diploma. 15 credits should be gained from the elective subjects during th 5-year studies.

C = Credit point

L = Lecture (hours/week)

10th semester							
subjects code	subjects	credit code	prerequisites code	prerequisites			
compulsory	Clinical Dentistry II. *	C3L0P6	practice mark	Clinical Dentistry I., Prosthodontics IV., Conservative Dentistry and Endodontics IV.			
compulsory	Conservative Dentistry and Endodontics V	C3L0P3	final#	Conservative Dentistry and Endodontics IV., Prosthodontics IV.			
obligatory elctive	Dermatology	C1L1P0.5	final#	Pharmacology, Toxicology II.			
obligatory elctive	Obstetrics and Family Planning	C1L1P0	semifinal	Internal Medicine III. , First Aid			
obligatory elctive	Diploma Work	C20					
compulsory	Oral and Maxillofacial Surgery V.	C4L1P3	final#	Oral and Maxillofacial Surgery IV.			
compulsory	Orthodontics II	C6L1P5	final#	Orthodontics I.			
compulsory	Pedodontics II	C6L1P5	final#	Pedodontics I.			
compulsory	Periodontology IV.	C3L1.5P2	final#	Periodontology III.			
compulsory	Prosthodontics V.	C3L0P3	final#	Prosthodontics IV., Conservative Dentistry and Endodontics IV.			
	Total Credit	50					

Explanation

15 credits should be gained from the elective subjects during the 5-year studies - see the elective list after the 3rd year study program

The grade influences the qualification of the diploma

C = Credit point L = Lecture (hours/week)

Study Program for students started studies in the 2016/2017 academic year

BASIC MODULE

1st semester						
subjects code	subjects	credit code	Examination			
compulsory	Anatomy, Histology, Embryology I.	C8L3P5	semifinal			
compulsory	Physical Bases of Dental Materials	C2L2P0	semifinal			
compulsory	Medical Chemistry	C6L3P3	final#			
compulsory	Medical Biology (Cell Biology)	C3L2P1	final#			
compulsory	Biophysics I.	C3L1.5P2	semifinal			
compulsory	Hungarian Language	C2L0P4	practice mark			
obligatory elective	Medical Latin I.	C2L0P2	practice mark			
compulsory	Physical Education I.	C0L0P1	signature			
	Total Credit	26				

BASIC MODULE

2nd semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Anatomy, Histology, Embryology II.	C8L3P4	semifinal	Anatomy, Histology, Embryology I., Medical Biology (Cellbiology), Medical Latin I.		
compulsory	Biophysics II.	C5L2P2	final#	Biophysics I., Physical Bases of Dental Materials		
compulsory	Biochemistry, Molecular and Cellbiology I.	C7L3P3	semifinal	Medical Chemistry, Medical Biology (Cellbiology)		
compulsory	Hungarian Medical Terminology	C2L0P4	practice mark	Hungarian Language		
compulsory	General Dental Materials	C1L1P0	semifinal	Physical Bases of Dental Materials		
obligatory elective	First aid	C1L0P1	practice mark			
obligatory elective	Medical Informatics	C3L1P2	semifinal			
compulsory	Physical Education II	C0L0P1	signature			
obligatory elective	Medical Latin II.	C2L0P2	practice mark	Medical Latin I.		
obligatory elective	Dental Psychology	C2L2P0	semifinal			
obligatory elective	Medical Sociology	C2L1P1	semifinal			
compulsory	Dental Laboratory Practice (summer, 2 weeks)	C0L0P30	signature	Prerequisite of registering to the 3rd semester		
compulsory	Nursing Practice (summer, 2 weeks)	C0L0P30	signature	Prerequisite of registering to the 3rd semester		
	Total Credit	33				

Explanation

15 credits should be gained from the elective subjects during the 5-year studies - see the elective list after the 3rd year study program

#The grade influences the qualification of the diploma.

15 credits should be gained from the elective subjects during th 5-year studies.

C = Credit point

L = Lecture (hours/week)

3rd semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	Anatomy, Histology, Embryology III.	C7L3P4	semifinal	Anatomy, Histology, Embryology II., Biochemistry, Molecular and Cellbiology I., Medical Latin II.			
compulsory	Biochemistry, Molecular and Cellbiology II.	C5L3P2	semifinal	Biochemistry, Molecular and Cellbiology I., Biophysics II.			
compulsory	Medical and Dental Physiology I.	C9L6P3.5	semifinal	Anatomy, Histology, Embryology II., Biochemistry, Molecular and Cellbiology I.Biophysics II.			
compulsory	Odontotechnology and Prosthodontics Preclinical Course I.	C3L1P2	practice mark	General Dental Materials, Anatomy, Histology, Embryology II., Medical Latin II.			
compulsory	Hungarian Dental Terminology I.	C2L0P4	practice mark	Hungarian Medical Terminology			
compulsory	Physical Education III.	C0L0P1	signature				
	Total Credit	26					

BASIC MODULE

BASIC MODULE

4th semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	Anatomy (Maxillofacial Anatomy) IV.	C6L3P2	final#	Anatomy, Histology, Embryology III., Biochemistry, Molecular and Cellbiology II.			
compulsory	Biochemistry, Molecular and Cellbiology III.	C5L3P2	final#	Biochemistry, Molecular and Cellbiology II., Medical and Dental Physiology I.			
compulsory	Medical and Dental Physiology II.	C9L6P3.5	final#	Medical and Dental Physiology I., Biochemistry, Molecular and Cellbiology II.			
compulsory	Odontotechnology and Prosthodontics Preclinical Course II.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I.			
compulsory	Conservative Dentistry and Endodontics, Pre-clinical I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I.			
compulsory	Hungarian Dental Terminology II.	C4L0P4	practice mark	Hungarian Dental Terminology I.			
compulsory	General Dental Preclinical Practice	C4L1P3	semifinal	General Dental Materials, Anatomy, Histology, Embryology II.			
compulsory	Physical Education IV.	C0L0P1	signature				
	Total Credit	36					

Explanation

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

#The grade influences the qualification of the diploma.

15 credits should be gained from the elective subjects during the 5-year studies.

C = Credit point, L = Lecture (hours/week), P = Practice (hours/week)

5th semester						
subjects code	subjects	credit code	examination	prerequisites		
	Conconvative Dentistry and Endedentics			Anatomy (Maxillofacial Anatomy) IV.		
compulsory	Pre-clinical II.	C4L1P3	final#	Conservative Dentistry and Endodontics, Pre-clinical I. General Dental Preclinical Practice		
compulsory	General and Oral Microbiology	C4L2P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
,				Medical and Dental Physiology II.		
compulsory	General and Oral Pathophysiology	C4L2P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
,				Medical and Dental Physiology II.		
compulsory	Basic Immunology	C3L2P1	semifinal	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
,				Medical and Dental Physiology II.		
compulsory	Hungarian Dental Terminology III.	C2L0P4	practice mark	Hungarian Medical Terminology II.		
compulsory	Oral and Maxillofacial Surgery, Pre- clinical course	C2L0P2	practice mark	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
. ,				Medical and Dental Physiology II.		
compulsory	Pathology	C5L3P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
1 /				Medical and Dental Physiology II.		
compulsory	Preventive Dentistry I.	C3L1P2	practice mark	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
, ,	,		'	Medical and Dental Physiology II.		
compulsory	Odontotechnology and Prosthodontics Preclinical Course III.	C3L0P3	final#	Odontotechnology and Prosthodontics Preclinical Course II. General Dental Preclinical Practice		
compulsory	Medical Aspects of Disaster Preparedness and Response I.	C0L2 hours/sem	signature			
	Total Credit	30				

Explanation

15 credits should be gained from the elective subjects during the 5-year

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

6th semester								
subjects code	subjects	credit code	examination	prerequisites				
compulsory	Conservative Dentistry and Endodontics L	C4I 1P3	practice mark	Conservative Dentistry and Endodontics, Pre-clinical Course II.,				
comparisony	conservative Dentistry and Endodonties I.	CHEITS	practice mark	Odontotechnology and Prosthodontics Preclinical Course III.				
compulsory	Internal Medicine I.	C3L2P2	practice mark	General and Oral Pathophysiology, Pathology				
compulsory	Oral and Maxillofacial Surgery I.	C4L1P3	practice mark	Oral and Maxillofacial Surgery, Pre-clinical course, Pathology				
				General and Oral Pathophysiology				
compulsory	Oral Biology	C5L3P2	final#	General and Oral Microbiology , Anatomy (Maxillofacial Anatomy) IV.				
compulsory	Genetics and Genomics	C2L2P1	final#	Biochemistry, Molecular and Cellbiology III., Medical and Dental Physiology II.				
compulsory	Oral Pathology	C4L2P2	final#	Pathology, General and Oral Microbiology, General and Oral Pathophysiology				
compulsory	Preventive Dentistry II.	C1L1P0	final#	Preventive Dentistry I., Conservative Dentistry and Endodontics, Pre-clinical Course II., Odontotechnology and Prosthodontics Preclinical Course III.				
compulsory	Prosthodontics I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course III. , Conservative Dentistry and Endodontics, Pre-clinical II.				
compulsory	Radiation protection	C2L1.5P1	semifinal	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.				
				Medical and Dental Physiology II.				
compulsory	Hungarian Dental Terminology IV.	C2L0P4	final	Hungarian Dental Terminology III.				
compulsory	Oral Diagnostics I.	C2L1P1	semifinal	Pathology, General and Oral Pathophysiology				
compulsory	Medical Aspects of Disaster Preparedness and Response II.	C0L2 hours/sem	signature					
compulsory	Dento-Alveolar practice (summer, minimum 1 week)	C0L0P30	signature	prerequisite of registering to the 7th semester				
	Total Credit	33						

The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

7th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	General and Dental Radiology	C4L2P2	final#	Radiation protection Pathology, General and Oral Microbiology		
compulsory	Conservative Dentistry and Endodontics II.	C4L1P3	practice mark	Conservative Dentistry and Endodontics I., Prosthodontics I.		
compulsory	Internal Medicine II.	C3L2P1	semifinal	Internal Medicine I., Genetics and Genomics		
compulsory	Oral and Maxillofacial Surgery II.	C4L1P3	practice mark	Oral and Maxillofacial Surgery I., Oral Pathology Radiation protection		
compulsory	Periodontology I.	C2L2P0	semifinal	Oral Biology, Pathology, Oral Pathology		
compulsory	Pharmacology Toxicology I	C2I 1P1	semifinal	Pathology, Biochemistry, Molecular and Cellbiology III.		
computery	Tharmacology, Toxicology I.	C2EII I	Seminar	Medical and Dental Physiology II.		
compulsory	Prosthodontics II.	C7L1P6	semifinal	Prosthodontics I., Conservative Dentistry and Endodontics I.		
compulsory	Orthodontics Pre-Clinical	C1L0P1	practice mark	Oral Biology, Pathology, Oral Pathology		
obligatory elective	Neurorology	C1L1P0	semifinal	Internal Medicine I.		
obligatory elective	Psychiatry	C1L1P0	semifinal	Internal Medicine I.		
obligatory elective	Dental Ethics	C2L2P0	semifinal	Pathology		
compulsory	Gnathology	C3L1P2	final#	Prosthodontics I. Conservative Dentistry and Endodontics I.		
obligatory elective	Public Health	C3L1,5P2	final#	General and Oral Microbiology		
compulsory	Community Dentistry I.	C0L0P1	signature	Oral Pathology		
obligatory elective	Pediatrics	C1L1P0.5	semifinal	Internal Medicine I. , Pathology		
	Total Credit	38				

The grade influences the qualification of the diploma C = Credit point L = Lecture (hours/week) P = Practice (hours/week)

8th semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	Conservative Dentistry and Endodontics III.	C4L1P3	practice mark	Conservative Dentistry and Endodontics II., Prosthodontics II.			
compulsory	Internal Medicine III.	C1L1P0	final#	Internal Medicine II.			
compulsory	Oral and Maxillofacial Surgery III.	C4L1P3	semifinal	Oral and Maxillofacial Surgery II. Pharmacology, Toxicology I.			
compulsory	Periodontology II.	C4L1P3	semifinal	Periodontology I., Internal Medicine II.			
compulsory	Pharmacology, Toxicology II.	C3L1P2	final#	Pharmacology, Toxicology I.			
compulsory	Prosthodontics III.	C4L1P3	practice mark	Prosthodontics II., Conservative Dentistry and Endodontics II.			
obligatory elective	Surgery	C3L2P1	final#	Internal Medicine I., Pathology			
compulsory	Implantology I.	C1L1P0	semifinal	Oral and Maxillofacial Surgery II. Periodontology I.			
compulsory	Community Dentistry II.	C0L1P1,5	signature	Community Dentistry I.			
obligatory elective	Ophthalmology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.			
obligatory elective	Otorhinolaryngology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.			
compulsory	General Dentistry practice (summer, 4 weeks)	C0L0P30	signature	prerequisite of registering to the 9th semester			
	Total Credit	26					

Explanation

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

9th semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	Clinical Dentistry I.*	C2L0P6	practice mark	Conservative Dentistry and Endodontics III. Prosthodontics III.			
compulsory	Conservative Dentistry and Endodontics IV	C3L0P3	practice mark	Conservative Dentistry and Endodontics III., Prosthodontics III.			
obligatory elective	Forensic Dentistry	C1L1P0	semifinal	Pharmacology, Toxicology II.			
compulsory	Oral and Maxillofacial Surgery IV.	C5L1P5	practice mark	Oral and Maxillofacial Surgery III.			
compulsory	Implantology II.	C2L1P1	final#	Oral and Maxillofacial Surgery III.			
compulsory	Orthodontics I.	C5L1P5	practice mark	Conservative Dentistry and Endodontics III.			
compulsory	Pedodontics I.	C5L1P5	practice mark	Conservative Dentistry and Endodontics III.			
compulsory	Periodontology III.	C3L1P2	practice mark	Periodontology II.			
obligatory elective	Prehospital Emergency Medicine	C1L1P0	semifinal	Internal Medicine III., First Aid			
compulsory	Prosthodontics IV.	C3L0P3	practice mark	Prosthodontics III., Conservative Dentistry and Endodontics III.			
compulsory	Oral Diagnostics II.	C1L0P1	semifinal	Oral Diagnostics I.			
compulsory	Oral Medicine	C1L1P0	semifinal	Pharmacology and Toxicology II.			
	Total Credit	32					

*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry

#The grade influences the qualification of the diploma.

15 credits should be gained from the elective subjects during th 5-year studies.

C = Credit point

L = Lecture (hours/week)

10th semester							
subjects code	subjects	credit code	prerequisites code	prerequisites			
compulsory	Clinical Dentistry II. *	C3L0P6	practice mark	Clinical Dentistry I.			
compulsory	Conservative Dentistry and Endodontics V	C3L0P3	final#	Conservative Dentistry and Endodontics IV., Prosthodontics IV.			
obligatory elctive	Dermatology	C1L1P0.5	final#	Pharmacology, Toxicology II.			
obligatory elctive	Obstetrics and Family Planning	C1L1P0	semifinal	Internal Medicine III., First Aid			
obligatory elctive	Diploma Work	C20					
compulsory	Oral and Maxillofacial Surgery V.	C4L1P3	final#	Oral and Maxillofacial Surgery IV.			
compulsory	Orthodontics II	C6L1P4	final#	Orthodontics I.			
compulsory	Pedodontics II	C6L1P4	final#	Pedodontics I.			
compulsory	Periodontology IV.	C3L1.5P2	final#	Periodontology III.			
compulsory	Prosthodontics V.	C3L0P3	final#	Prosthodontics IV., Conservative Dentistry and Endodontics IV.			
	Total Credit	50					

Explanation 15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program # The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

Study Program for students started studies in the 2017/2018 academic year

BASIC MODULE

1st semester					
subjects code	subjects	credit code	Examination		
compulsory	Anatomy, Histology, Embryology I.	C8L3P5	semifinal		
compulsory	Physical Bases of Dental Materials	C2L2P0	semifinal		
compulsory	Medical Chemistry	C6L3P3	final#		
compulsory	Medical Biology (Cell Biology)	C3L2P1	final#		
compulsory	Biophysics I.	C3L1.5P2	semifinal		
compulsory	Hungarian Language	C2L0P4	practice mark		
obligatory elective	Medical Latin I.	C2L0P2	practice mark		
compulsory	Physical Education I.	C0L0P1	signature		
	Total Credit	26			

BASIC MODULE

2nd semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	Anatomy, Histology, Embryology II.	C8L3P4	semifinal	Anatomy, Histology, Embryology I., Medical Biology (Cell Biology), Medical Latin I.			
compulsory	Biophysics II.	C5L2P2	final#	Biophysics I., Physical Bases of Dental Materials			
compulsory	Dental Biochemistry I.	C3L2P1,5	practice mark	Medical Chemistry, Medical Biology (Cell Biology)			
compulsory	Molecular Cellbiology I.	C4L2,5P2	semifinal	Medical Chemistry, Medical Biology (Cell Biology)			
compulsory	Hungarian Medical Terminology	C2L0P4	practice mark	Hungarian Language			
compulsory	General Dental Materials	C1L1P0	semifinal	Physical Bases of Dental Materials			
obligatory elective	First Aid	C1L0P1	practice mark				
obligatory elective	Medical Informatics	C3L1P2	semifinal				
compulsory	Physical Education II.	C0L0P1	signature				
obligatory elective	Medical Latin II.	C2L0P2	practice mark	Medical Latin I.			
obligatory elective	Dental Psychology	C2L2P0	semifinal				
obligatory elective	Medical Sociology	C2L1P1	semifinal				
obligatory elective	History of Medicine	C2L2P0	practice mark				
compulsory	Dental Laboratory Practice (summer, 2 weeks)	C0L0P30	signature	Prerequisite of registering to the 3rd semester			
compulsory	Nursing Practice (summer, 2 weeks)	C0L0P30	signature	Prerequisite of registering to the 3rd semester			
	Total Credit	35					

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

BASIC MODULE

3rd semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Anatomy, Histology, Embryology III.	C7L3P4	semifinal	Anatomy, Histology, Embryology II., Molecular Cellbiology I., Medical Latin II.		
compulsory	Dental Biochemistry II.	C4L3P1,5	semifinal	Dental Biochemistry I., Molecular Cellbiology I.		
compulsory	Molecular Cellbiology II.	C3L3P0	final#	Dental Biochemistry I., Molecular Cellbiology I.		
compulsory	Medical and Dental Physiology I.	C9L6P3.5	semifinal	Anatomy, Histology, Embryology II., Molecular Cellbiology I., Biophysics II.		
compulsory	Odontotechnology and Prosthodontics Preclinical Course I.	C3L1P2	practice mark	General Dental Materials, Anatomy, Histology, Embryology II., Medical Latin II.		
compulsory	Hungarian Dental Terminology I.	C2L0P4	practice mark	Hungarian Medical Terminology		
compulsory	Physical Education III.	C0L0P1	signature			
	Total Credit	28				

BASIC MODULE

4th semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	Anatomy (Maxillofacial Anatomy) IV.	C6L3P2	final#	Anatomy, Histology, Embryology III., Dental Biochemistry II.			
compulsory	Dental Biochemistry III.	C3L2P1,5	final#	Dental Biochemistry II., Molecular Cellbiology II.			
compulsory	Medical and Dental Physiology II.	C9L6P3.5	final#	Medical and Dental Physiology I., Molecular Cellbiology II.			
compulsory	Odontotechnology and Prosthodontics Preclinical Course II.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I.			
compulsory	Conservative Dentistry and Endodontics, Pre- clinical I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I.			
compulsory	Hungarian Dental Terminology II.	C4L0P4	practice mark	Hungarian Dental Terminology I.			
compulsory	General Dental Preclinical Practice	C4L1P3	semifinal	General Dental Materials, Anatomy, Histology, Embryology II.			
compulsory	Physical Education IV.	C0L0P1	signature				
	Total Credit	34					

Explanation

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

#The grade influences the qualification of the diploma. 15 credits should be gained from the elective subjects during the 5-year studies.

C = Credit point, L = Lecture (hours/week), P = Practice (hours/week)

5th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Conservative Dentistry and Endodontics, Pre-clinical II.			Anatomy (Maxillofacial Anatomy) IV.		
		C4L1P3	final#	Conservative Dentistry and Endodontics, Pre-clinical I. General Dental Preclinical Practice		
compulsory	General and Oral Microbiology	C4L2P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
1 /	67			Medical and Dental Physiology II.		
compulsory	General and Oral Pathophysiology	C4L2P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
1 /	1 / 0/			Medical and Dental Physiology II.		
compulsory	Basic Immunology	C3L2P1	semifinal	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
, ,				Medical and Dental Physiology II.		
compulsory	Hungarian Dental Terminology III.	C2L0P4	practice mark	Hungarian Medical Terminology II.		
compulsory	Oral and Maxillofacial Surgery, Pre-clinical course	C2L0P2	practice mark	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
				Medical and Dental Physiology II.		
compulsory	Pathology	C5L3P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
. ,				Medical and Dental Physiology II.		
compulsory	Preventive Dentistry I.	C3L1P2	practice mark	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
. ,				Medical and Dental Physiology II.		
compulsory	Odontotechnology and Prosthodontics Preclinical Course III.	C3L0P3	final#	Odontotechnology and Prosthodontics Preclinical Course II., General Dental Preclinical Practice		
compulsory	Medical Aspects of Disaster Preparedness and Response I.	C0L2 hours/sem	signature			
	Total Credit	30				

Explanation

15 credits should be gained from the elective subjects during the 5-year

The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

PRE-CLINICAL	MODUL	E
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6th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Concernative Dentistry and Endedentics L	C/I 1P3	practice mark	Conservative Dentistry and Endodontics, Pre-clinical Course II.,		
company	conservative Dentistry and Endodonites I.	CIENTS	practice mark	Odontotechnology and Prosthodontics Preclinical Course III.		
compulsory	Internal Medicine I.	C3L2P2	practice mark	General and Oral Pathophysiology, Pathology		
compulsory	Oral and Maxillofacial Surgery I.	C4L1P3	practice mark	Oral and Maxillofacial Surgery, Pre-clinical course, Pathology		
				General and Oral Pathophysiology		
compulsory	Oral Biology	C5L3P2	final#	General and Oral Microbiology , Anatomy (Maxillofacial Anatomy) IV.		
compulsory	Genetics and Genomics	C2L2P1	final#	Biochemistry, Molecular and Cellbiology III., Medical and Dental Physiology II.		
compulsory	Oral Pathology	C4L2P2	final#	Pathology, General and Oral Microbiology, General and Oral Pathophysiology		
compulsory	Preventive Dentistry II.	C1L1P0	final#	Preventive Dentistry I., Conservative Dentistry and Endodontics, Pre-clinical Course II., Odontotechnology and Prosthodontics Preclinical Course III.		
compulsory	Prosthodontics I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course III. , Conservative Dentistry and Endodontics, Pre-clinical II.		
compulsory	Radiation protection	C2L1.5P1	semifinal	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
				Medical and Dental Physiology II.		
compulsory	Hungarian Dental Terminology IV.	C2L0P4	final	Hungarian Dental Terminology III.		
compulsory	Oral Diagnostics I.	C2L1P1	semifinal	Pathology, General and Oral Pathophysiology		
compulsory	Medical Aspects of Disaster Preparedness and Response II.	C0L2 hours/sem	signature			
compulsory	Dento-Alveolar practice (summer, minimum 1 week)	C0L0P30	signature	prerequisite of registering to the 7th semester		
	Total Credit	33				

The grade influences the qualification of the diploma
C = Credit point
L = Lecture (hours/week)
P = Practice (hours/week)

7th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	General and Dental Radiology	C4L2P2	final#	Radiation protection Pathology, General and Oral Microbiology		
compulsory	Conservative Dentistry and Endodontics II.	C4L1P3	practice mark	Conservative Dentistry and Endodontics I., Prosthodontics I.		
compulsory	Internal Medicine II.	C3L2P1	semifinal	Internal Medicine I., Genetics and Genomics		
compulsory	Oral and Maxillofacial Surgery II.	C4L1P3	practice mark	Oral and Maxillofacial Surgery I., Oral Pathology Radiation protection		
compulsory	Periodontology I.	C2L2P0	semifinal	Oral Biology, Pathology, Oral Pathology		
compulsory	Pharmacology, Toxicology I.	C2I 1P1	semifinal	Pathology, Biochemistry, Molecular and Cellbiology III.		
compansory		CZLIFT		Medical and Dental Physiology II.		
compulsory	Prosthodontics II.	C7L1P6	semifinal	Prosthodontics I., Conservative Dentistry and Endodontics I.		
compulsory	Orthodontics Pre-Clinical	C1L0P1	practice mark	Oral Biology, Pathology, Oral Pathology		
obligatory elective	Neurorology	C1L1P0	semifinal	Internal Medicine I.		
obligatory elective	Psychiatry	C1L1P0	semifinal	Internal Medicine I.		
obligatory elective	Dental Ethics	C2L2P0	semifinal	Pathology		
compulsory	Gnathology	C3L1P2	final#	Prosthodontics I. Conservative Dentistry and Endodontics I.		
obligatory elective	Public Health	C3L1,5P2	final#	General and Oral Microbiology		
compulsory	Community Dentistry I.	C0L0P1	signature	Oral Pathology		
obligatory elective	Pediatrics	C1L1P0.5	semifinal	Internal Medicine I., Pathology		
	Total Credit	38				

 $\ensuremath{\texttt{\#}}$ The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

8th semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Conservative Dentistry and Endodontics III.	C4L1P3	practice mark	Conservative Dentistry and Endodontics II., Prosthodontics II.	
compulsory	Internal Medicine III.	C1L1P0	final#	Internal Medicine II.	
compulsory	Oral and Maxillofacial Surgery III.	C4L1P3	semifinal	Oral and Maxillofacial Surgery II. Pharmacology, Toxicology I.	
compulsory	Periodontology II.	C4L1P3	semifinal	Periodontology I., Internal Medicine II.	
compulsory	Pharmacology, Toxicology II.	C3L1P2	final#	Pharmacology, Toxicology I.	
compulsory	Prosthodontics III.	C4L1P3	practice mark	Prosthodontics II., Conservative Dentistry and Endodontics II.	
obligatory elective	Surgery	C3L2P1	final#	Internal Medicine I., Pathology	
compulsory	Implantology I.	C1L1P0	semifinal	Oral and Maxillofacial Surgery II. Periodontology I.	
compulsory	Community Dentistry II.	C0L1P1,5	signature	Community Dentistry I.	
obligatory elective	Ophthalmology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.	
obligatory elective	Otorhinolaryngology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.	
compulsory	General Dentistry practice (summer, 4 weeks)	C0L0P30	signature	prerequisite of registering to the 9th semester	
	Total Credit	26			

Explanation

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week) P = Practice (hours/week) Faculty of Dentistry

9th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Clinical Dentistry I.*	C2L0P6	practice mark	Conservative Dentistry and Endodontics III. Prosthodontics III.		
compulsory	Conservative Dentistry and Endodontics IV	C3L0P3	practice mark	Conservative Dentistry and Endodontics III., Prosthodontics III.		
obligatory elective	Forensic Dentistry	C1L1P0	semifinal	Pharmacology, Toxicology II.		
compulsory	Oral and Maxillofacial Surgery IV.	C5L1P5	practice mark	Oral and Maxillofacial Surgery III.		
compulsory	Implantology II.	C2L1P1	final#	Oral and Maxillofacial Surgery III.		
compulsory	Orthodontics I.	C5L1P5	practice mark	Conservative Dentistry and Endodontics III.		
compulsory	Pedodontics I.	C5L1P5	practice mark	Conservative Dentistry and Endodontics III.		
compulsory	Periodontology III.	C3L1P2	practice mark	Periodontology II.		
obligatory elective	Prehospital Emergency Medicine	C1L1P0	semifinal	Internal Medicine III., First Aid		
compulsory	Prosthodontics IV.	C3L0P3	practice mark	Prosthodontics III., Conservative Dentistry and Endodontics III.		
compulsory	Oral Diagnostics II.	C1L0P1	semifinal	Oral Diagnostics I.		
compulsory	Oral Medicine	C1L1P0	semifinal	Pharmacology and Toxicology II.		
	Total Credit	32				

*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry

#The grade influences the qualification of the diploma.

15 credits should be gained from the elective subjects during th 5-year studies.

C = Credit point

L = Lecture (hours/week)
10th semester							
subjects code	subjects	credit code	prerequisites code	prerequisites			
compulsory	Clinical Dentistry II. *	C3L0P6	practice mark	Clinical Dentistry I.			
compulsory	Conservative Dentistry and Endodontics V	C3L0P3	final#	Conservative Dentistry and Endodontics IV., Prosthodontics IV.			
obligatory elctive	Dermatology	C1L1P0.5	final#	Pharmacology, Toxicology II.			
obligatory elctive	Obstetrics and Family Planning	C1L1P0	semifinal	Internal Medicine III., First Aid			
obligatory elctive	Diploma Work	C20					
compulsory	Oral and Maxillofacial Surgery V.	C4L1P3	final#	Oral and Maxillofacial Surgery IV.			
compulsory	Orthodontics II	C6L1P4	final#	Orthodontics I.			
compulsory	Pedodontics II	C6L1P4	final#	Pedodontics I.			
compulsory	Periodontology IV.	C3L1.5P2	final#	Periodontology III.			
compulsory	Prosthodontics V.	C3L0P3	final#	Prosthodontics IV., Conservative Dentistry and Endodontics IV.			
	Total Credit	50					

Explanation

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

The grade influences the qualification of the diploma

C = Credit point L = Lecture (hours/week)

Study program for students started studies in the 2018/2019 academic year

BASIC MODULE

1st semester					
subjects code	subjects	credit code	Examination		
compulsory	Anatomy, Histology, Embryology I.	C8L3P5	semifinal		
compulsory	Physical Bases of Dental Materials	C2L2P0	semifinal		
compulsory	Medical Chemistry	C6L3P3	final#		
compulsory	Medical Biology (Cell Biology)	C3L2P1	final#		
compulsory	Biophysics I.	C3L1.5P2	semifinal		
compulsory	Hungarian Language	C2L0P4	practice mark		
obligatory elective	Medical Latin I.	C2L0P2	practice mark		
compulsory	Physical Education I.	C0L0P1	signature		
	Total Credit	26			

BASIC MODULE

2nd semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Anatomy, Histology, Embryology II.	C8L3P4	semifinal	Anatomy, Histology, Embryology I., Medical Biology (Cellbiology), Medical Latin I.		
compulsory	Biophysics II.	C5L2P2	final#	Biophysics I., Physical Bases of Dental Materials		
compulsory	Dental Biochemistry I.	C3L2P1,5	practice mark	Medical Chemistry, Medical Biology (Cell Biology)		
compulsory	Molecular Cell Biology I.	C4L2,5P2	semifinal	Medical Chemistry, Medical Biology (Cell Biology)		
compulsory	Hungarian Medical Terminology	C2L0P4	practice mark	Hungarian Language		
compulsory	General Dental Materials	C1L1P0	semifinal	Physical Bases of Dental Materials		
obligatory elective	First Aid	C1L0P1	practice mark			
obligatory elective	Medical Informatics	C3L1P2	semifinal			
compulsory	Physical Education II	C0L0P1	signature			
obligatory elective	Medical Latin II.	C2L0P2	practice mark	Medical Latin I.		
obligatory elective	Dental Psychology	C2L2P0	semifinal			
obligatory elective	Medical Sociology	C2L1P1	semifinal			
obligatory elective	History of Medicine	C2L2P0	semifinal			
compulsory	Dental Laboratory Practice (summer, 2 weeks)	C0L0P30	signature	Prerequisite of registering to the 3rd semester		
compulsory	Dental Assistance Practice (summer, 2 weeks)	C0L0P30	signature	Prerequisite of registering to the 3rd semester		
	Total Credit	35				

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

BASIC	MODULE
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3rd semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	Anatomy, Histology, Embryology III.	C7L3P4	semifinal	Anatomy, Histology, Embryology II., Molecular Cellbiology I., Medical Latin II.			
compulsory	Dental Biochemistry II.	C4L3P1,5	semifinal	Dental Biochemistry I., Molecular Cell Biology I.			
compulsory	Molecular Cell Biology II.	C3L3P0	final#	Dental Biochemistry I., Molecular Cellbiology I.			
compulsory	Medical and Dental Physiology I.	C9L6P3.5	semifinal	Anatomy, Histology, Embryology II., Molecular Cellbiology I., Biophysics II.			
compulsory	Odontotechnology and Prosthodontics Preclinical Course I.	C3L1P2	practice mark	General Dental Materials, Anatomy, Histology, Embryology II., Medical Latin II.			
compulsory	Hungarian Dental Terminology I.	C2L0P4	practice mark	Hungarian Medical Terminology			
compulsory	Physical Education III.	C0L0P1	signature				
	Total Credit	28					

The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week) P = Practice (hours/week)

BASIC MODULE

4th semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	Anatomy (Maxillofacial Anatomy) IV.	C6L3P2	final#	Anatomy, Histology, Embryology III., Dental Biochemistry II.			
compulsory	Dental Biochemistry III.	C3L2P1,5	final#	Dental Biochemistry II., Molecular Cellbiology II.			
compulsory	Medical and Dental Physiology II.	C9L6P3.5	final#	Medical and Dental Physiology I.,, Molecular Cellbiology II.			
compulsory	Odontotechnology and Prosthodontics Preclinical Course II.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I.			
compulsory	Conservative Dentistry and Endodontics, Pre-clinical I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I.			
compulsory	Hungarian Dental Terminology II.	C4L0P4	practice mark	Hungarian Dental Terminology I.			
compulsory	General Dental Preclinical Practice	C4L1P3	semifinal	General Dental Materials, Anatomy, Histology, Embryology II.			
compulsory	Physical Education IV.	C0L0P1	signature				
	Total Credit	34					

 $\ensuremath{\texttt{\#}}$ The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

PRE-CLINICAL MODULE

	5th semester						
subjects code	subjects	credit code	examination	prerequisites			
	Conservative Dentistry and Endedentics			Anatomy (Maxillofacial Anatomy) IV.			
compulsory	Pre-clinical II.	C4L1P3	final#	Conservative Dentistry and Endodontics, Pre-clinical I. General Dental Preclinical Practice			
	Conservation of Overlattices his last	C 41 2D2	6	Anatomy (Maxillofacial Anatomy) IV., Dental Biochemistry III.			
compulsory	General and Oral Microbiology	C4L2P2	IInai#	Medical and Dental Physiology II.			
		C 41 2D2	C 10	Anatomy (Maxillofacial Anatomy) IV., Dental Biochemistry III.			
compulsory	General and Oral Pathophysiology	C4L2P2	Tinal#	Medical and Dental Physiology II.			
	Basic Immunology	C3L2P1	semifinal	Anatomy (Maxillofacial Anatomy) IV., Dental Biochemistry III.			
compulsory				Medical and Dental Physiology II.			
compulsory	Hungarian Dental Terminology III.	C2L0P4	practice mark	Hungarian Medical Terminology II.			
compulsory	Oral and Maxillofacial Surgery,	COLORO	practico mark	Anatomy (Maxillofacial Anatomy) IV., Dental Biochemistry III.			
compulsory	Pre-clinical course	C2LUF 2	practice mark	Medical and Dental Physiology II.			
compulsory	Pathology	CELODO	final#	Anatomy (Maxillofacial Anatomy) IV., Dental Biochemistry III.			
compulsory	ramology	COLOFZ	IIIIdI#	Medical and Dental Physiology II.			
compulsory	Proventive Dentistry I	C211D2	practico mark	Anatomy (Maxillofacial Anatomy) IV., Dental Biochemistry III.			
compulsory	rievenuve Denusu y 1.	CJLIF Z	practice mark	Medical and Dental Physiology II.			
compulsory	Odontotechnology and Prosthodontics Preclinical Course III.	C3L0P3	final#	Odontotechnology and Prosthodontics Preclinical Course II. General Dental Preclinical Practice			
compulsory	The Medical Basis of Disaster Management I.	C0L2 hours/sem	signature	Anatomy (Maxillofacial Anatomy) IV.			
	Total Credit	30					

 $\ensuremath{\texttt{\#}}$ The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

PRE-CLINICAL MODULE

6th semester						
subjects code	subjects	credit code	examination	prerequisites		
compulsory	Conservative Dentistry and	C 41 1D2	practico mark	Conservative Dentistry and Endodontics, Pre-clinical Course II.		
compulsory	Endodontics I.	C4LIF5	practice mark	Odontotechnology and Prosthodontics Preclinical Course III.		
compulsory	Internal Medicine I.	C3L2P2	practice mark	General and Oral Pathophysiology, Pathology		
compulsory	Oral and Maxillofacial Surgery I.	C4L1P3	practice mark	Oral and Maxillofacial Surgery, Pre-clinical course, Pathology		
compulsory	Oral Riology	C51 2D2	final#	General and Oral Pathophysiology		
compulsory	Oral biology	COLOFZ	IIIIdi#	General and Oral Microbiology Anatomy (Maxillofacial Anatomy) IV.		
compulsory	Genetics and Genomics	C2L2P1	final#	Dental Biochemistry III., Medical and Dental Physiology II.		
compulsory	Oral Pathology	C4L2P2	final#	Pathology, General and Oral Microbiology, General and Oral Pathophysiology		
compulsory	Preventive Dentistry II.	C1L1P0	final#	Preventive Dentistry I., Conservative Dentistry and Endodontics, Pre-clinical Course II., Odontotechnology and Prosthodontics Preclinical Course III.		
compulsory	Prosthodontics I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course III., Conservative Dentistry and Endodontics, Pre-clinical II.		
compulsory	Radiation protection	C2L1.5P1	semifinal	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.		
				Medical and Dental Physiology II.		
compulsory	Hungarian Dental Terminology IV.	C2L0P4	final	Hungarian Dental Terminology III.		
compulsory	Oral Diagnostics I.	C2L1P1	semifinal	Pathology, General and Oral Pathophysiology		
compulsory	The Medical Basis of Disaster Management II.	C0L2 hours/sem	signature	The Medical Basis of Disaster Management I.		
compulsory	Dento-Alveolar practice (summer, minimum 1 week)	C0L0P30	signature	prerequisite of registering to the 7th semester		
	Total Credit	33				

The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

	7th semester							
subjects code	subjects	credit code	examination	prerequisites				
compulsory	General and Dental Radiology	C4L2P2	final#	Radiation protection Pathology, General and Oral Microbiology				
compulsory	Conservative Dentistry and Endodontics II.	C4L1P3	practice mark	Conservative Dentistry and Endodontics I., Prosthodontics I.				
compulsory	Internal Medicine II.	C3L2P1	semifinal	Internal Medicine I., Genetics and Genomics				
compulsory	Oral and Maxillofacial Surgery II.	C4L1P3	practice mark	Oral and Maxillofacial Surgery I., Oral Pathology Radiation protection				
compulsory	Periodontology I.	C2L2P0	semifinal	Oral Biology, Pathology, Oral Pathology				
compulsory	Pharmacology, Toxicology I.	C3L1,5P1,5	semifinal	Pathology, Dental Biochemistry III.				
compulsory				Medical and Dental Physiology II.				
compulsory	Prosthodontics II.	C7L1P6	semifinal	Prosthodontics I., Conservative Dentistry and Endodontics I.				
compulsory	Orthodontics Pre-Clinical	C1L0P1	practice mark	Oral Biology, Pathology, Oral Pathology				
obligatory elective	Neurorology	C1L1P0	semifinal	Internal Medicine I.				
obligatory elective	Psychiatry	C1L1P0	semifinal	Internal Medicine I.				
obligatory elective	Dental Ethics	C2L2P0	semifinal	Pathology				
compulsory	Gnathology	C3L1P2	final#	Prosthodontics I. Conservative Dentistry and Endodontics I.				
obligatory elective	Public Health	C3L1,5P2	final#	General and Oral Microbiology				
compulsory	Community Dentistry I.	C0L0P1	signature	Oral Pathology				
obligatory elective	Pediatrics	C1L1P0.5	semifinal	Internal Medicine I., Pathology				
compulsory	The Medical Basis of Disaster Management III.	C0L2 hours/sem	signature	The Medical Basis of Disaster Management II.				
	Total Credit	38						

The grade influences the qualification of the diploma C = Credit point L = Lecture (hours/week)

	8th semester						
subjects code	subjects	credit code	examination	prerequisites			
compulsory	Conservative Dentistry and Endodontics III.	C4L1P3	practice mark	Conservative Dentistry and Endodontics II., Prosthodontics II.			
compulsory	Internal Medicine III.	C1L1P0	final#	Internal Medicine II.			
compulsory	Oral and Maxillofacial Surgery III.	C4L1P3	semifinal	Oral and Maxillofacial Surgery II. Pharmacology, Toxicology I.			
compulsory	Periodontology II.	C4L1P3	semifinal	Periodontology I., Internal Medicine II.			
compulsory	Pharmacology, Toxicology II.	C3L1,5P1,5	final#	Pharmacology, Toxicology I.			
compulsory	Prosthodontics III.	C4L1P3	practice mark	Prosthodontics II., Conservative Dentistry and Endodontics II.			
obligatory elective	Surgery	C3L2P1	final#	Internal Medicine I., Pathology			
compulsory	Implantology I.	C1L1P0	semifinal	Oral and Maxillofacial Surgery II., Periodontology I.			
compulsory	Community Dentistry II.	C0L1P1,5	signature	Community Dentistry I., Diploma criteria subject			
obligatory elective	Ophthalmology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.			
obligatory elective	Otorhinolaryngology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.			
compulsory	General Dentistry practice (summer, 4 weeks)	C0L0P30	signature	prerequisite of registering to the 9th semester			
elective	Basic Restorative Digital Dentistry	C1L1P0	semifinal				
compulsory	The Medical Basis of Disaster Management IV.	C0L2 hours/sem	signature	The Medical Basis of Disaster Management III.			
	Total Credit	26					

The grade influences the qualification of the diploma C = Credit point L = Lecture (hours/week)

9th semester							
subjects code	subjects	credit code	examination	prerequisites			
compulsory	Clinical Dentistry I.*	C2L0P6	practice mark	Conservative Dentistry and Endodontics III., Prosthodontics III.			
compulsory	Conservative Dentistry and Endodontics IV	C3L0P3	practice mark	Conservative Dentistry and Endodontics III., Prosthodontics III.			
obligatory elective	Forensic Dentistry	C1L1P0	semifinal	Pharmacology, Toxicology II.			
compulsory	Oral and Maxillofacial Surgery IV.	C5L1P5	practice mark	Oral and Maxillofacial Surgery III.			
compulsory	Implantology II.	C2L1P1	final#	Oral and Maxillofacial Surgery III.			
compulsory	Orthodontics I.	C5L1P4	practice mark	Conservative Dentistry and Endodontics III.			
compulsory	Pedodontics I.	C5L1P4	practice mark	Conservative Dentistry and Endodontics III.			
compulsory	Periodontology III.	C3L1P2	practice mark	Periodontology II.			
obligatory elective	Prehospital Emergency Medicine	C1L1P0	semifinal	Internal Medicine III., First Aid			
compulsory	Prosthodontics IV.	C3L0P3	practice mark	Prosthodontics III., Conservative Dentistry and Endodontics III.			
compulsory	Oral Diagnostics II.	C1L0P1	semifinal	Oral Diagnostics I.			
compulsory	Oral Medicine	C1L1P0	semifinal	Pharmacology and Toxicology II.			
	Total Credit	32					

The grade influences the qualification of the diploma C = Credit point L = Lecture (hours/week)

10th semester						
subjects code	subjects	credit code	prerequisites code	prerequisites		
compulsory	Clinical Dentistry II.	C3L0P6	practice mark	Clinical Dentistry I.		
compulsory	Conservative Dentistry and Endodontics V.	C3L0P3	final#	Conservative Dentistry and Endodontics IV., Prosthodontics IV.		
obligatory elctive	Dermatology	C1L1P0.5	final#	Pharmacology, Toxicology II.		
obligatory elctive	Obstetrics and Family Planning	C1L1P0	semifinal	Internal Medicine III. , First Aid		
compulsory	Oral and Maxillofacial Surgery V.	C4L1P3	final#	Oral and Maxillofacial Surgery IV.		
compulsory	Orthodontics II.	C6L1P5	final#	Orthodontics I.		
compulsory	Pedodontics II.	C6L1P5	final#	Pedodontics I.		
compulsory	Periodontology IV.	C3L1.5P2	final#	Periodontology III.		
compulsory	Prosthodontics V.	C3L0P3	final#	Prosthodontics IV., Conservative Dentistry and Endodontics IV.		
	Total Credit	30				
	Diploma work	C20				

The grade influences the qualification of the diploma C = Credit point L = Lecture (hours/week)

Study Program in the 2020/2021 academic year – New curriculum (subject to change) Please, follow the updated version on the home page

BASIC MODULE

	1st semester									
subjects code	subject	credit code	credit	lecture	practice	prerequisite(s)	examination			
Compulsory	Macroscopic anatomy I.	C6L1P5	6	1	5		Semifinal			
Compulsory	Biophysics I.	C3L1.5P2.5	3	1.5	2.5		Semifinal			
Compulsory										
Compulsory	Physical Bases of Dental Materials	C2L2P0	2	2	0		Semifinal			
Compulsory	Cell Science	C3L1P2	3	1	2		Semifinal			
Compulsory	Medical Chemistry	C4L2P2	4	2	2		Semifinal			
Compulsory	Physical Education I.	C0L0P1	0	0	1		Signature			
Obligatory elective	Medical Terminology	C0L0P2	0	0	2		Practice mark			
Obligatory elective	Introduction to the Hungarian language	C0L0P4	0	0	4		Practice mark			
			18							

BASIC MODULE

	2nd semester										
subjects code	subject	credit code	credit	lecture	practice	prerequisite(s)	examination				
Compulsory	Macroscopic anatomy II.	C8E2G6	8	2	6	Macroscopic anatomy I.	Final#				
Compulsory	Microscopic anatomy and embryology I.	C4E2G2	4	2	2	Cell Science	Semifinal				
Compulsory	Biophysics II.	C3E1.5G2.5	3	1.5	2.5	Biophysics I., Physical Bases of Dental Materials	Final#				
Compulsory	General Dental Materials	C1E1G0	1	1	0	Macroscopic anatomy I., Physical Bases of Dental Materials	Semifinal				
Compulsory	Dental Biochemistry I.	C4E2G2	4	2	2		Semifinal				
Compulsory	Physical Education II.	C0E0G1	0	0	1		Signature				
Obligatory elective	Dental Psychology	C1L2P0	1	2	0		Semifinal				
Obligatory elective	Dental Medical Terminology	C0E0G2	1	0	2	Medical Terminology	Practice mark				
Obligatory elective	Medical Sociology	C1L1P1	1	1	1		Semifinal				
	Hungarian for Dental Medical Purposes I.	C0L0P4	0	0	4	Introduction to the Hungarian language	Practice mark				
	History of Medicine	C1L2P0	1	2	0		Semifinal				
	Medical Informatics	C2L0P2	2	0	2		Practice mark				
	First Aid	C1L0P1	1	0	1		Practice mark				
	Dental Laboratory Practice						Signature				
	Summer Practice of Dental Assistance						Signature				
			27								

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

		3rd sen	nester								
subjects code	subject	credit code	credit	lecture	practice	prerequisite(s)	examination				
Compulsory	Microscopic anatomy and embryology II.	C4L2P2	4	2	2	Microscopic anatomy I., Macroscopic anatomy II.	Final#				
Compulsory	Dental Biochemistry II	C3L2P1	3	2	1	Dental Biochemistry I.	Final#				
Compulsory	Basic Immunology	C2L2P1	2	2	1	Cell Science , Dental Biochemistry I.	Semifinal				
Compulsory	Molecular Cell Biology I.	C3L1P2	3	1	2	Medical chemistry, Dental biochemistry I.	Semifinal				
Compulsory	Odontotechnology and Prosthodontics Pre-clinical I.	C3L1P2	3	1	2	General Dental Materials, Macroscopic anatomy II.	Practice mark				
Compulsory	Medical and Dental Physiology I.	C8L5P3.5	8	5	3.5	Microscopic anatomy I., Macroscopic anatomy II., Biophysics II.	Semifinal				
Compulsory	Physical Education III.	C0L0P1	0	0	1		Signature				
	General Dental Preclinical Practice	C4E1P3	4	1	3	General Dental Materials, Macroscopic anatomy I.	Semifinal *				
	Hungarian for Dental Medical Purposes II.	C0L0P4	0	0	4	Hungarian for Dental Medical Purposes I.	Practice mark				
			27								

BASIC MODULE

BASIC MODULE

4th semester										
subjects code	subject	credit code	credit	lecture	practice	prerequisite(s)	examination			
	General and Oral Microbiology	C3L2P2	3	2	2	Microscopic anatomy II., Molecular Cell Biology I., Medical and Dental Physiology I.	Semifinal *			
Compulsory	Genetics and Genomics	C2L1.5P1	2	1.5	1	Microscopic anatomy II., Basic Immunology, Molecular Cell Biology I.	Semifinal			
Compulsory	Conservative Dentistry and Endodontics, Pre-clinical I.	C4L1P3	4	1	3	General Dental Preclinical Practice Microscopic anatomy II., Odontotechnology and Prosthodontics Pre-clinical I.	Practice mark			
Compulsory	Molecular Cell Biology II.	C4L2P2	4	2	2	Dental Biochemistry II., Molecular Cell Biology I.	Final#			
Compulsory	Odontotechnology and Prosthodontics Pre-clinical II.	C4L1P3	4	1	3	Macroscopic anatomy II., Odontotechnology and Prosthodontics Pre-clinical I.	Practice mark			
Compulsory	Medical and Dental Physiology II.	C8L5P3.5	8	5	3.5	Microscopic anatomy II., Molecular Cell Biology I., Medical and Dental Physiology I.	Final#			
Compulsory	Physical Education IV.	C0L0P1	0	0	1		Signature			
	Hungarian for Dental Medical Purposes III.	COLOP4	0	0	4	Hungarian for Dental Medical Purposes II.	Practice mark			
			25							

Semifinal * = Counted in the average, similarly

The grade influences the qualification of the diploma C = Credit point L = Lecture (hours/week)

5th semester										
subjects code	subject	credit code	credit	lecture	practice	prerequisite(s)	examination			
Compulsory	General and Oral Pathophysiology	C3L2P2	3	2	2	General and Oral Microbiology, Molecular Cell Biology II., Medical and Dental Physiology II.	Semifinal *			
Compulsory	The Medical Basis of Disaster Management I	C0L2P0	0	2	0		Signature			
Compulsory	Conservative Dentistry and Endodontics,Pre-clinical II.	C4L1P3	4	1	3	Conservative Dentistry and Endodontics, Pre-clinical I., Odontotechnology and Prosthodontics Pre-clinical II.	Final#			
Compulsory	Public Health	C2L1.5P2	2	1.5	2	General and Oral Microbiology, Molecular Cell Biology II, Medical and Dental Physiology II.	Semifinal			
Compulsory	Odontotechnology and Prosthodontics Pre-clinical III.	C3L0P3	3	0	3	Odontotechnology and Prosthodontics Pre-clinical II. Conservative Dentistry and Endodontics, Pre-clinical I. Molecular Cell Biology II.	Final#			
Compulsory	Pathology	C4L3P2	4	3	2	Genetics and Genomics, Molecular Cell Biology II, Medical and Dental Physiology II.	Semifinal *			
Compulsory	Preventive Dentistry	C3L2P2	3	2	2	Conservative Dentistry and Endodontics, Pre-clinical Course II., Odontotechnology and Prosthodontics Preclinical Course III.	Semifinal *			
Compulsory	Oral and Maxillofacial Surgery, Pre-clinical course	C2L0P2	2	0	2	General and Oral Microbiology, Molecular Cell Biology II, Medical and Dental Physiology II.	Practice mark			
Compulsory	Physical Education V.	C0L0P1	0	0	1		Signature			
	Hungarian for Dental Medical Purposes IV.	C0L0P4	1	0	4	Hungarian for Dental Medical Purposes III.	Practice mark			
			22							

Semifinal * = Counted in the average, similarly # The grade influences the qualification of the diploma C = Credit point L = Lecture (hours/week)

	6th semester									
subjects code	subject	credit code	credit	lecture	practice	prerequisite(s)	examination			
Compulsory	Prosthodontics I.	C4L1P3	4	1	3	Conservative Dentistry and Endodontics, Pre-clinical II., Odontotechnology and Prosthodontics Pre-clinical III., Preventive Dentistry	Practice mark			
Compulsory	Conservative Dentistry and Endodontics I.	C3L1P3	3	1	3	Conservative Dentistry and Endodontics, Pre-clinical II., Odontotechnology and Prosthodontics Pre-clinical III., Preventive Dentistry	Practice mark			
Compulsory	The Medical Basis of Disaster Management II	C0L2P0	0	2	0	The Medical Basis of Disaster Management I.	Signature			
Compulsory	Oral Biology	C4L2P2	4	2	2	General and Oral Pathophysiology, Pathology, Public Health	Semifinal *			
Compulsory	Oral Pathology	C3L2P2	3	2	2	General and Oral Pathophysiology, Pathology, Public Health	Semifinal *			
Compulsory	Oral and Maxillofacial Surgery I.	C3L1P3	3	1	3	General and Oral Pathophysiology, Pathology. Oral and Maxillofacial Surgery, Pre-clinical course	Practice mark			
Compulsory	Physical Education VI.	C0L0P1	0	0	1		Signature			
	Dento-Alveolar practice						Signature			
	Oral Medicine I.	C1L0P1	1	0	1	Conservative Dentistry and Endodontics, Pre-clinical I., Odontotechnology and Prosthodontics Pre-clinical II.	Practice mark			
	Oral Diagnostics	C3L1P2	3	1	2	Conservative Dentistry and Endodontics, Pre-clinical I., Odontotechnology and Prosthodontics Pre-clinical II.	Semifinal *			
	Radiation protection	C2L1.5P1	2	1.5	1	Biophysics II.	Semifinal			
	Hungarian for Dental Medical Purposes V.	C1L0P4	1	0	4	Hungarian for Dental Medical Purposes IV.	Final#			
			24							

Semifinal * = Counted in the average, similarly

The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

7th semester										
subjects code	subject	credit code	credit	lecture	practice	prerequisite(s)	examination			
Compulsory	Internal Medicine I.	C3L1P2	3	1	2	General and Oral Pathophysiology, Pathology, Public Health	Practice mark			
Compulsory	Prosthodontics II.	C6L1P6	6	1	6	Conservative Dentistry and Endodontics I., Prosthodontics I., Radiation protection	Semifinal			
Compulsory	Pharmacology I.	C4L2P2	4	2	2	Medical and Dental Physiology II., Dental Biochemistry II, Pathology	Semifinal			
Compulsory	Conservative Dentistry and Endodontics II.	C4L1P3	4	1	3	Conservative Dentistry and Endodontics I., Prosthodontics I.,	Practice mark			
Compulsory	The Medical Basis of Disaster Management III	C0L2P0	0	2	0	The Medical Basis of Disaster Management II.	Signature			
Compulsory	Periodontology I.	C2L1.5P0.5	2	1.5	0.5	Oral Biology, Oral Pathology, Oral and Maxillofacial Surgery I.	Semifinal			
Compulsory	Emergency Dentistry I.	C0L0P1	0	0	1	Oral Pathology	Signature			
Compulsory	Oral and Maxillofacial Surgery II.	C4L1P3	4	1	3	Oral and Maxillofacial Surgery I., Oral Pathology, Radiation protection	Practice mark			
Compulsory	Physical Education VII.	C0L0P1	0	0	1		Signature			
Obligatory elective	Pediatrics	C1L1P0.5	1	1	0.5	Pathology, Oral Pathology	Semifinal			
	General and Dental Radiology I.	C3L1P2	3	1	2	Radiation protection	Practice mark			
	Gnathology	C3L1P2	3	1	2	Conservative Dentistry and Endodontics I., Prosthodontics I. Oral Diagnostics	Semifinal *			
	Neurorology	C1L1P0	1	1	0	Pathology, Oral Pathology	Semifinal			
	Psychiatry	C1L1P0	1	1	0	Pathology, Oral Pathology	Semifinal			
	Dental Ethics	C1L0P2	1	0	2	Pathology, Oral Pathology	Semifinal			
			33							

Semifinal * = Counted in the average, similarly

8th semester											
subjects code	subject	credit code	credit	lecture	practice	prerequisite(s)	examination				
Compulsory	Internal Medicine II.	C2L1P1	2	1	1	Internal Medicine I., Pharmacology I.	Final#				
Compulsory	Prosthodontics III.	C4L1P4	4	1	4	Conservative Dentistry and Endodontics II., Prosthodontics II., General and Dental Radiology I.	Practice mark				
Compulsory	Orthodontics Pre-clinical	C1L0P1	1	0	1	General and Dental Radiology I.	Practice mark				
Compulsory	Pharmacology II.	C4L2P2	4	2	2	Internal Medicine I., Pharmacology I.	Final#				
Compulsory	Implantology I.	C1L1P0	2	1	1	General and Dental Radiology I., Oral and Maxillofacial Surgery II., Periodontology I.	Semifinal				
Compulsory	Conservative Dentistry and Endodontics III.	C4L1P4	4	1	4	Conservative Dentistry and Endodontics II., Prosthodontics II., General and Dental Radiology I.	Practice mark				
Compulsory	The Medical Basis of Disaster Management IV.	C0L2P0	0	2	0	The Medical Basis of Disaster Management III.	Signature				
Compulsory	Periodontology II.	C4L1P3	4	1	3	General and Dental Radiology I., Oral and Maxillofacial Surgery II., Periodontology I.	Semifinal				
Compulsory	Emergency Dentistry II.	COL1P1.5	0	1	1.5	General and Dental Radiology I., Emergency Dentistry I.	Signature				
Compulsory	Oral and Maxillofacial Surgery III.	C4L1P3	4	1	3	General and Dental Radiology I., Oral and Maxillofacial Surgery II., Periodontology I.	Semifinal				
Compulsory	Physical Education VIII.	C0L0P1	0	0	1		Signature				
Obligatory elective	Ophthalmology	C1L1P0.5	1	1	0.5	Internal Medicine I., Pharmacology I.	Semifinal				
	General Dentistry practice						Signature				
Compulsory	General and Dental Radiology II.	C1L0P1	1	0	1	General and Dental Radiology I.	Final#				
	Otorhinolaryngology	C1L1P0.5	1	1	0.5	Pathology, Oral Pathology	Semifinal *				
	Surgery	C2L2P1	2	2	1	Pathology	Semifinal *				
			30								

Semifinal * = Counted in the average, similarly # The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

P = Practice (hours/week)

445

	9th semester										
subjects code	subject	credit code	credit	lecture	practice	prerequisite(s)	examination				
Compulsory	Prosthodontics IV.	C3L0P4	3	0	4	Conservative Dentistry and Endodontics III., Prosthodontics III.	Practice mark				
Compulsory	Orthodontics I.	C5L1P4	5	1	4	Orthodontics Pre-clinical, Conservative Dentistry and Endodontics III., Prosthodontics III.	Practice mark				
Compulsory	Pedodontics I.	C5L1P4	5	1	4	Orthodontics Pre-clinical, Conservative Dentistry and Endodontics III., Prosthodontics III.	Practice mark				
Compulsory	Implantology II.	C2L1P1	1	1	0	Implantology I., Periodontology II., Oral and Maxillofacial Surgery III.	Final#				
Compulsory	Clinical Dentistry I.	C2L0P5	2	0	5	Conservative Dentistry and Endodontics III., Prosthodontics III.	Practice mark				
Compulsory	Conservative Dentistry and Endodontics IV.	C3L0P4	3	0	4	Conservative Dentistry and Endodontics III., Prosthodontics III.	Semifinal				
Compulsory	Oral Medicine II.	C1L1P0	1	1	0	Oral Medicine I., Oral Diagnostics Oral and Maxillofacial Surgery III.	Final#				
Compulsory	Periodontology III.	C3L1P2	3	1	2	Implantology I., Periodontology II., Oral and Maxillofacial Surgery III.	Practice mark				
Compulsory	Oral and Maxillofacial Surgery IV.	C5L1P5	5	1	5	Implantology I., Periodontology II., Oral and Maxillofacial Surgery III.	Practice mark				
Compulsory	Physical Education IX.	C0L0P1	0	0	1		Signature				
Obligatory elective											
Obligatory elective	Forensic Dentistry	C1L1P0	1	1	0	Internal Medicine II., Pharmacology II. Pathology	Semifinal				
Obligatory elective	Prehospital Emergency Medicine	C1L1P0	1	1	0	Internal Medicine II., Pharmacology II. First Aid	Semifinal				
			30								

 $\ensuremath{\texttt{\#}}$ The grade influences the qualification of the diploma C = Credit point

L = Lecture (hours/week)

10th semester										
subjects code	subject	credit code	credit	lecture	practice	prerequisite(s)	examination			
Compulsory	Prosthodontics V.	C3L0P3	3	0	3	Conservative Dentistry and Endodontics IV., Prosthodontics IV.	Final#			
Compulsory	Orthodontics II.	C5L1P5	5	1	5	Orthodontics I.	Final#			
Compulsory	Gerostomatology	C2L1P1	2	1	1	Prosthodontics IV., Gnathology, Oral Medicine II.	Semifinal *			
Compulsory	Pedodontics II.	C5L1P5	5	1	5	Pedodontics I.	Final#			
Compulsory	Clinical Dentistry II.	C3L0P5	2	0	5	Clinical Dentistry I., Conservative Dentistry and Endodontics IV., Prosthodontics IV.	Practice mark			
Compulsory	Conservative Dentistry and Endodontics V.	C3L0P3	3	0	3	Conservative Dentistry and Endodontics IV., Prosthodontics IV.	Final#			
Compulsory	Periodontology IV.	C3L1.5P2	3	1.5	2	Periodontology III.	Final#			
Compulsory	Oral and Maxillofacial Surgery V.	C4L1P3	4	1	3	Implantology II., Oral and Maxillofacial Surgery IV., Periodontology III.	Final#			
Compulsory	Physical Education X.	C0L0P1	0	0	1		Signature			
Obligatory elective	Obstetrics and Family Planning	C1L1P0	1	1	0	Internal Medicine II., Pharmacology II.	Semifinal			
	Dermatology	C1L1P0.5	1	1	0.5	Internal Medicine II., Pharmacology II.	Semifinal *			
			29							
			265							

Semifinal * = Counted in the average, similarly # The grade influences the qualification of the diploma

C = Credit point L = Lecture (hours/week)

NOTE

FACULTY OF DENTISTRY BASIC MODULE

New curriculum to be introduced Please, follow the updated version on the home page



Faculty of Dentistry 1st year

BASIC MODULE

1st semester									
subjects code	subjects	credit code	examination						
compulsory	Macroscopic Anatomy I.	C6L1P5	semi-final						
compulsory	Physical Bases of Dental Materials	C2L2P0	semi-final						
compulsory	Medical Chemistry	C4L2P2	semi-final						
compulsory	Cell Sciences	C3L1P2	semi-final						
compulsory	Biophysics I.	C3L1.5P2,5	semi-final						
compulsory	Introduction to the Hungarian Language	C0L0P4	signature						
obligatory elective	Medical Terminology	C2L0P2	signature						
compulsory	Physical Education I.	C0L0P1	signature						
	Total Credit	18							

BASIC MODULE

	2nd semester										
subjects code	subjects	credit code	examination	prerequisites							
compulsory	Macroscopic Anatomy II.	C8L2P6	final	Macroscopic Anatomy I.							
compulsory	Microscopic Anatomy I.	C4L2P2	semi-final	Cell Sciences							
compulsory	Dental Biochemistry I.	C4L2P2	semi-final								
compulsory	Biophysics II.	C3L1.5P2	final	Biophysics I., Physical Bases of Dental Materials							
compulsory	Hungarian for Dental Medical Purposes I.	C0L0P4	practice mark	Introduction to the Hungarian language							
compulsory	General Dental Materials	C1L1P0	semi-final	Macroscopic Anatomy I., Physical Bases of Dental Materials							
obligatory elective	First Aid	C1L0P1	practice mark								
obligatory elective	Medical Informatics	C2L0P2	semi-final								
compulsory	Physical Education II	C0L0P1	signature								
obligatory elective	Dental Medical Terminology	C0L0P2	practice mark	Medical Terminology							
obligatory elective	Dental Psychology	C1L2P0	semi-final								
obligatory elective	Medical Sociology	C1L1P1	semi-final								
obligatory elective	History of Medicine	C1L2P0	semi-final								
compulsory	Dental Assistant Practice (summer, 2 weeks)	C0L0P30	signature	Prerequisite of registering to the 3rd semester							
compulsory	Dental Laboratory Practice (summer, 2 weeks)	C0L0P30	signature	Prerequisite of registering to the 3rd semester							
	Total Credit	26									

Explanation

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

#The grade influences the qualification of the diploma. C = Credit point

L = Lecture (hours/week)

LIST OF TEXTBOOKS (The list may change!)

- 1 Sobotta Atlas of Human Anatomy (Package), 15th English ed. Musculoskeletal system, internal organs, head, neck, neuroanatomy, By Waschke & Paulsen, ISBN-13: 9780702052507 2013
- 2 Gray's Anatomy for students with STUDENT CONSULT Online Access, 3rd Edition by R. Drake, A. W. Vogl, A. Mitchel Elsevier; 2014; ISBN 9780702051319
- 3 Gosling, Harris, Humpherson, Whitmore & Willan: Human Anatomy, Color Atlas and Textbook, 6th Edition, Elsevier 2016.
- 4 Stevens & Lowe's Human Histology, Elsevier, 4th edISBN 978-0-723435020, 2015.
- 5 The Developing Human Clinically Oriented Embryology, 10th ed. by KL Moore, TVN Persaud and M Torchia, Saunders, 2015; ISBN 9780323313384
- 6 Neuroanatomy An Illustrated Colour Text, 4th Edition by Crossman & Neary Publication Date: 13/04/2010 ISBN-13: 9780702030864
- 7 Oral Anatomy, Histology and Embryology, 4th Edition, by B. Berkovitz Paperback with STUDENT CONSULT Online Access and e-book ISBN: 9780723434115 Copyright: 2009
- 8 McMinn's Color Atlas of Head and Neck Anatomy, by Logan, Reynolds, Rice & Hutchings, 5th Edition, Elsevier 2016.
- 9 Ebbing, DD-Grammon, SD: General Chemistry. 9th ed. 2009. Houghton Mifflin Co. Boston ISBN 10: 0-618-85478-6 / 13: 978-0-618-85478-7
- 10 Harper's Illustrated Biochemistry, 30th edition, Lange, ISBN-10: 0071825347
- 11 Tóth: Concise Inorganic Chemistry for Medical Students. (SOTE) (Bp.)
- 12 Laboratory Manual I-II. (Bp.)
- 13 Hrabák: Selected Collection of Chemical Calculations (SOTE) (Bp.)
- 14 Sasvári: Bioorganic Compounds (Bp.) SOTE
- 15 Csermely P.-Hrabák A.: Principles of Organic Chemistry. Bp. 1999.
- 16 Harvey Lodish et al.: Molecular Cell Biology, 6th edition, ISBN-13: 978-0716776017, ISBN-10: 0716776014
- 17 Wilson, Mansfield, Heath, Spence: Dental Technology and Materials for Students. Blackwell Scientific Publications. ISBN 0632017635
- 18 Powers, Wataha: Dental Materials Properties and Manipulation. Mosby ISBN 9780323078368
- 19 Primary Preventive Dentistry. Ed.by Norman O.Harris, F.Garcia-Godoy. 5th ed. Appleton and Lange, Stamford. 1999. ISBN 0-8385-8129-3
- 20 Damjanovich Fidy Szöllősi (eds) Medical Biophysics, Medicine, Budapest, 2009. ISBN 978 963 226 127 0
- 21 Miklós Kellermayer: Medical Biophysics Practices. Semmelweis Publishers, Budapest, 2015. ISBN 978-963-331-349-7.
- 22 Alberts et al. Essential Cell Biology (4th edition) Garland Science, ISBN-13: 978-0815344544; ISBN-10: 0815344546
- 23 McMinn and Abrahams' Clinical Atlas of Human Anatomy with STUDENT CONSULT Online Access 7th Edition by Abrahams, Spratt, Loukas & van Schoor ISBN-13: 9780723436973 Publication Date: 22/03/2013
- 25 Andrea, Barta Éva Katalin, Varga Ákos, Zimonyi: Medical terminology for students of dentistry. Bp., 2019 (e-book, available at the Department for Languages for specific purposes).
- 26 Gyöngyösi L. & Hetesy B., 2011. Jó napot kívánok! Bp. Semmelweis Egyetem Egészségtudományi Kar (available at Vas u. 17. Bookshop)
- 27 Andrea Weidinger: Nyelvtan. Bp., 2019 (e-book, available at the Department for Languages for specific purposes).

Recommended textbooks:

- 1 Stryer: Biochemistry. 4th ed. 1995. ISBN 0-7167-2009-4
- 2 Zumdahl: Chemical Principles. 3rd ed. 1998. Houghton-Mifflin Co. Boston. ISBN 0-395-83995-5
- 3 Sasvári-Müllner: Bioorganic Compounds 4 kötet. (Bp.)
- 4 McCabe J.F.: Applied Dental Materials. Blackwell Scientific Publications. ISBN 0-632-02826-2
- 5 First Aid manual. St Andrews' Ambulance Association and the British Red Cross St John Ambulance. Ed. Dorling Kindersley, 2002. ISBN: 0751337048.
- 6 Wheater's Functional Histology, A Text and Colour Atlas, 6th Edition by B Young, G O'Dowd and P Woodford ISBN 9780702047473, Churchill Livingstone, Edinburgh, 2013.
- 7 Junqueira's Basic Histology: Text and Atlas; 13th Edition by Anthony Mescher, New York, McGraw-Hill Medical, ISBN13 978007178033,2013.
- 8 Langmann's Medical Embryology, 13th Edition by TW Sadler, Wolters Kluwer, ISBN 9781469897806, 2014
- 9 Netter's Head and Neck Anatomy for Dentistry, 3rd Edition, Elsevier, 2016.
- 10 McMinn and Abrahams' Clinical Atlas of Human Anatomy with STUDENT CONSULT Online Access 7th Edition by Abrahams, Spratt, Loukas & van Schoor ISBN-13: 9780723436973 2013.
- 11 A.L. Kierszenbaum Histology and Cell Biology: An Introduction to Pathology 3rd Edition, Paperback with STUDENT CONSULT Online Access and E-Book ISBN: 9780323085885 2012.
- 12 Illustrated Dental Embryology, Histology, and Anatomy, 3rd Edition by Mary Bath-Balogh ISBN: 9781437717303, 2011.

MACROSCOPIC ANATOMY I - II.

Department of Anatomy, Histology & Embryology

Course Director: Dr. Andrea D. Székely

LEARNING OBJECTIVES

Aims of the lectures in anatomy: Presentation of the important and/or complicated chapters such as introductory chapters, thorax, pelvis, hand, foot, skull, heart, chapters of the visceral organs, central nervous system, organs of special senses, topographical anatomy.

Aims of the practical sessions in the dissecting room: Based on the weekly programs (see separate), students will both observe prosected cadaver specimens (bones, joints, muscles, viscera, brain) and perform dissections on parts of, or on an entire, enbalmed cadaver. Students are supervised by the lab instructors. Bones, joints, muscles and peripheral nervous system will be primarily taught in the dissecting room. LECTURES: First semester: 1×45 min; second semester: 2×45 min. PRACTICAL CLASSES: First semester: 5×45 min; second semester: 6×45 min. ECTS CREDITS: Altogether 14 (first semester: 6; second semester: 8). MIDTERM TESTS: Oral and/or written

ACCEPTENCE OF THE SEMESTER:

Active participation in lectures, and dissection room sessions is obligatory for every student. Students should attend at least 75% of the scheduled hours to gain a signature proving the validity of the semester. Absences are therefore limited in **25%**. Attendance will be recorded in the lectures and in the dissection room classes.

One of the midterm tests will have to be passed to gain acceptence of the semester. In case neither of the midterm tests are successful, only the e-learning type written midterm may be retaken (2 consecutive retake times are offered).

Diligence of students will be evaluated by the instructor and this mark will form part of the semifinal/final examination.

Students are eligible to sit for the final examination only upon presentation of a dissected specimen. The dissection work may be done during the two semesters. The specimen will be evaluated by a departmental board.

TYPE OF EXAMS: oral and written

First semester: semifinal examination, second semester: final exam

Semifinal and final examinations consist of written and oral (practical and theoretical) parts

1. Written pretest (e-learning module - access to SeKA account is obligatory)

2. Macroscopic Anatomy (identification of structures on true anatomical specimens) including relevent theoretical questions

LIST OF TEXTBOOKS

- 1. Sobotta Atlas of Human Anatomy (Package), 15th English ed. Musculoskeletal system, internal organs, head, neck, neuroanatomy, By Waschke & Paulsen, ISBN-13: 9780702052507 2013
- 2. Gray's Anatomy for students with STUDENT CONSULT Online Access, 3rd Edition by R. Drake, A. W. Vogl, A. Mitchel, Elsevier; 2014; ISBN 9780702051319
- 3. McMinn and Abrahams' Clinical Atlas of Human Anatomy with STUDENT CONSULT Online Access, 7th Edition By Abrahams, Spratt, Loukas & van Schoor ISBN-13: 9780723436973, 2013
- 4. Human Anatomy, Color Atlas and Textbook, 6th Edition by J Gosling, P Harris, J Humpherson, I Whitmore and P Willan; ISBN 9780723438274 Elsevier, 2016.
- 5. Fitzgerald's Clinical Neuroanatomy and Neuroscience, 7th Edition, Elsevier, 2015.
- 6. Oral Anatomy, Histology and Embryology, 4th Edition, by B. Berkovitz Paperback with STUDENT CONSULT Online Access and e-book ISBN: 9780723434115 Copyright: 2009
- 7. McMinn's Color Atlas of Head and Neck Anatomy, by Logan, Reynolds, Rice & Hutchings, 5th Edition, Elsevier 2016.

Recommended textbooks:

- 1. Illustrated Dental Embryology, Histology, and Anatomy, 3rd Edition by Mary Bath-Balogh ISBN: 9781437717303, 2011.
- 2. Netter's Head and Neck Anatomy for Dentistry, 3rd Edition, Elsevier, 2016.
- 3. Anatomy, A Photographic Atlas, 8th Edition by Rohen, Yokochi; Wolters Kluwer, 2016, ISBN: 978-1-4963-0870-2
- 4. Bräuer: Sobotta Flashcards (Muscles; Bones, Ligaments, and Joints) URBFI, 2013.
- 5. KL Moore-AF Dalley: Clinically Oriented Anatomy. 4th ed. Lippincott William and Wilkins, 1999.
- 6. RMH McMinn: Last's Anatomy, Regional and Applied. Churchill Livingstone, Edinburgh 1990. ISBN 0-443-03484-4
- 7. Neuroanatomy An Illustrated Colour Text, 4th Edition by Crossman & Neary Publication Date: 13/04/2010 ISBN-13: 9780702030864
- 8. Functional Anatomy Anatomy, Histology and Embryology for medical and dental students by M. Réthelyi and J. Szentágothai, Medicina, 2018.

COURSE DESCRIPTION

Macroscopic Anatomy I.

Lectures and dissection classes

Subject matter : Macroscopy and clinically oriented anatomy of the parts of the musculoskeletal system, i.e. osteology, arthrology and myology, together with the vascular and nervous supply of the limbs and the trunk. Skull (viscerocranium, neurocranium). Cavities, muscles of the head & neck region. Macroscopy of the brain and spinal cord, membranes (dura, arachnoid and pia mater).

Credits: 6

Prerequisite: none

Week	Lectures	Dissection room
Week 1	 The role of anatomy in the medical curriculum. Terminology 	General introduction to practical work in the dissection room, tools and rules Bones of the upper limb and the girdle, shoulder joint
Week 2.	 General arthrology and myology. Joints , muscles and movements of the shoulder and the upper girdle 	Muscles (flexors) os the upper limb/ girdle Elbow joint
Week 3.	3. Muscles and actions of the elbow joint	Upper limb, arm, forearm Muscles and joints of the hand
Week 4.	4. Joints, muscles and actions of the wrist and the hand	Dissection of the muscles, vessels and nerves of the upper limb (branches of the axillary a+v, brachial plexus)
Week 5.	5. Bones, joints, construction of the pelvis. Muscles and actions of the hip joint	Dissection of the muscles, vessels and nerves of the upper limb 1. Midterm test (oral): Upper limb including the girdle
Week 6.	6. Muscles and actions of the knee joint. Muscles and joints of the foot. Architecture of the foot	Lower limb, pelvis, hip joint Dissection of the muscles, vessels and nerves Cadaver and free limb dissection
Week 7.	 Components, muscles, joints, ligaments and movements of the vertebral column. Intervertebral, atlantooccipital and atlantoaxial joints together with the muscles 	Dissection of the limbs and superficial regions of the the trunk (cadaver) Knee joint, bones of the leg and foot
Week 8.	8. Ribs, components and movements of the thorax. Diaphragm.	Dissection of the limbs and superficial regions of the the trunk (cadaver) Femoral vessels, lumbar plexus
Week 9.	 Components of the abdominal wall. Rectus sheath. Subinguinal hiatus. Inguinal canal. Adductor and femoral canals. 	Sacral plexus Diaphragm Components of the body wall, rectus sheath, hernia canals
Week 10.	10. Bony framework of the skull. Ethmoid bone. Cavities and spaces of the viscerocranium.	Dissection of the lower limb and superficial regions of the the trunk (cadaver) 2. Midterm test (oral): Lower limb including the girdle; bones, joints, muscles and fasciae of the trunk, hernia canals
Week 11.	11. Bony framework of the skull, neurocranium. Sphenoid and temporal bones.	Bones of the skull Internal and external skull bases Bones of the facial skeleton, mandible. Orbit, nasal cavity, pterygopalatine fossa
Week 12.	12. Introduction to the study of the nervous system Meninges, hemispheres, CSF, lateral ventricles	Bones of the skull Internal and external skull bases Bones of the facial skeleton, mandible. Orbit, nasal cavity, pterygopalatine fossa
Week 13.	13. Telencephalic hemispheres, lateral ventricle. Diencephalon, 3 rd ventricle.	Morphology of the brain and spinal cord Blood supply, meninges, sinuses CSF circulation, cisterns Cadaver dissection Demonstration of prosected specimens
Week 14.	14. Brain stem, cerebellum, 4 th ventricle, spinal cord	Telencephalic hemispheres, gyri and sulci, Diencephalon, lateral and 3 rd ventricles, Brain stem, cerebellum, 4 th ventricle Frontal sections of the brain 3. Midterm test (oral): Skull, bones and spaces. Macroscopy of the brain and spinal cord

Topic list for the semifinal examination

Musculoskeletal Anatomy

- General osteology, classification of bones
- Bones, spaces and connections of the skull, external and internal skull bases
- Neurocranium, components and cavities (anterior, middle and posterior cranial fossae)
- Viscerocranium, components and cavities (walls and connections of the nasal cavity, orbit, oral cavity, pterygopalatine and infratemporal fossae)
- Bones of the axial and appendicular skeleton
- Vertebrae, ribs, sternum
- Bones of the girdles and limbs
- General arthrology
- Fibrous and cartilaginous joints
- Components of the synovial joints
- Classification of synovial joints; movements and mechanisms
- Structure of the vertebral column, the gross anatomy of the muscles acting upon it
- Movements and muscles of the head&neck (atlantooccipital and atlantoaxial joints)
- Joints of the shoulder girdle, the gross anatomy of the muscles acting upon them
- Shoulder joint, the gross anatomy of the muscles acting upon it
- Elbow joint, the gross anatomy of the muscles acting upon it
- Structure and movements of the radiocarpal joint, gross anatomy of the muscles acting upon it
- Metacarpophalangeal and interphalangeal joints, the gross anatomy of the muscles concerned with the movements
- Carpometacarpal, metacarpophalangeal and interphalangeal joints of the thumb, the gross anatomy of the muscles concerned with the movements
- Hip joint and the gross anatomy of the muscles concerned with the movements
- Knee joint and the gross anatomy of the muscles concerned with the movements
- Ankle joint together with the gross anatomy of the muscles acting upon it
- Subtalar and talocalcaneonavicular joints, the muscles acting upon them
- Temporomandibular joint and the gross anatomy of the muscles acting on it
- Architecture and classification of bones
- Structure and actions of somatic muscles
- Osteofibrous structure of the thoracic cage (bones, joints, ligaments, movements)
- Muscles and movements of the thorax
- Muscles of the back and nape (occipital region)
- Axilla, the quadrangular and triangular spaces
- Cubital fossa
- Muscles and cross section of the arm
- Muscles and cross section of the forearm

- Osteofibrous spaces and muscle compartments of the hand, tendinous sheaths
- Muscles and spaces of the abdominal wall, rectus sheath
- Composition of the pelvis (bones, ligaments and membranes)
- Inguinal canal, femoral canal
- Subinguinal hiatus, vascular and muscular compartments; adductor canal, femoral canal
- Muscles of the buttock, the posterior abdominal wall and the pelvis (external and internal muscles of the hip)
- Osteofibrous compartments, muscles and cross section of the thigh
- Popliteal fossa
- Osteofibrous compartments, muscles and the cross section of the leg
- Structure of the foot, arches of the foot
- Osteofibrous compartments of the foot, tendinous sheaths

Vessels and nerves

- Dorsal branches of the spinal nerves, intercostal nerves
- Cervical plexus, brachial plexus, lumbar plexus, sacral plexus.
 - Innervation of limbs
- Innervation of the trunk
- Cutaneous innervation
- Axillary artery and branches
- Arteries and veins of the arm, forearm, and hand
- Arteries and veins of the lower limb

Lymphatic drainage

- Lymph nodes and vessels of the limbs
- Lymphatic drainage of the thoracic wall including the mamma
- Lymph nodes and lymphatic vessels of the head&neck

Macroscopy of the nervous system

- Intracranial topography
- Dura mater, dural sinuses
- Arachnoid mater, pia mater, cisterns, CSF circulation
- Description and meninges of the spinal cord
- Brain stem (medulla oblongata, pons, midbrain)
- Cerebellum
- Diencephalon (parts, blood supply).
- Thalamus, hypothalamus
- Lateral ventricles
- III. ventricle
- IV. ventricle
- Hemispheres
- Basal ganglia
- Internal carotid artery (course, parts and branches)
- Vertebral artery (course and branches)
- Circle of Willis
- Veins of the brain

Macroscopic Anatomy II. including Maxillofacial Anatomy

Lectures and dissection classes

Subject matter: Morpholgy, topography and clinically oriented anatomy of the internal organs (i.e. cardiovascular, gastrointestinal, respiratory and urogenital systems).

Morphology and topography of the intracranial spaces. Course and branches of cranial nerves. Autonomic nervous system. Maxillofacial Anatomy

Credits: 8

Prerequisite: Macroscopic Anatomy I.

Week	Lectures	Dissection room
1	 Composition and part of the oral cavity, palate, faucial isthmus and pharynx Nasal cavity, paranasal sinuses, larynx 	Cadaver dissection Demonstration of prosected specimens Cervical viscera
2	 Internal organs of the thoracic cavity. Divisions of the mediastinum. Lymphatic drainage. Morphology of the trachea and the lung. Pleura. Morphology of the esophagus Chambers of the heart, external features. Structure of heart wall, myocardium, valves, anuli fibrosi 	Organs of the thoracic cavity Pleura, recesses, lungs Heart, great vessels, pericardium
3	 Vessels, conducting system of the heart. Surface projection of the heart, pericardium. Auscultation points Stomach and small intestines (duodenum, jejunum, ileum) 	Organs of the thoracic cavity Mediastinum, passages of the diaphragm branches of the thoracic aorta
4	 Z. Liver, gall bladder, pancreas, spleen. 8. Large intestine, rectum, porto-caval anastomoses 	Organs of the abdominal cavity Esophagus, abdominal aorta, stomach, liver, gall bladder, spleen, celiac trunk Lesser omentum, omental bursa, duodenum, pancreas
5	 Peritoneum, peritoneal recesses, peritoneal relations of abdominal organs. Morphology of the kidney, capsules of the kidney, ureter, urinary bladder 	Organs of the abdominal cavity Jejunum, ileum, superior mesenteric artery Large intestines, greater omentum Inferior mesenteric artery, rectum
6	 Morphology and coats of the testicle. Morphology of the epididymis, spermatic cord, seminal vesicle and prostate 	Retroperitoneum, kidney, ureters Male urogenital system Male perineal regions
7	 Morphology and histology of penis and male urethra. Male perineum Ovary, Fallopian tube and uterus 	Female urogenital tract, broad ligament Female perineal regions
8	 Vagina, female perineum, external genital organs Blood supply and lymphatic drainage of the abdomen and lesser pelvis 	Dissection of organs of the lesser pelvis Cadaver dissection Demonstration of prosected specimens
MAXILLOFACIAL ANATOMY		
9	 Muscles of facial expression. Muscles, fasciae and muscular trigones of the neck. Temporomandibular joint, muscles of mastication 	Dissection of organs of the lesser pelvis Midterm test 1 (oral) Internal organs (gastrointestinal and respiratory tracts, urogenital system, perineal region)
10	 Anatomy of teeth I. Anatomy of teeth II. 	Teeth, tongue, pharynx, larynx Dissection of superficial regions of the head and neck. Temporomandibular joint Muscles of mastication and facial expression
	Easter break	

Week	Lectures	Dissection room		
MAXILLOFACIAL ANATOMY				
11	 Imaging anatomy of the jaws, teeth and the maxillary sinus (Radiology lecture) Topography of the salivary glands. Vessels of the head&neck region. Cutaneous innervation, lymphatic drainage. 	Dissection of superficial regions of the head and neck Topography of the parotid region Head and neck specimens		
12	23. Olfactory nerve (CN 1), optic nerve (CN 2). Orbit Extraocular muscles and eye movements. Protective and lacrimal apparatus of the eye.24. Trigeminal nerve (CN 5)	Head and neck specimens Dissection of deep regions of the head and neck. Infratemporal region Orbit		
13	 Oculomotor nerve (CN 3), trochlear nerve (CN 4), abducent nerve (CN 6), facial nerve (CN 7) Glossopharyngeal nerve (CN 9), vagus nerve (CN 10), accessory nerve (CN 11), hypoglossal nerve (CN 12) 	Dissection of the deep head and neck region Cranial nerves, para- and retropharyngeal spaces		
14	27. Sympathetic and parasympathetic nervous systems28. Innervation of the teeth and the gingiva, the anatomy of dental local anaesthesia	Dissection of deep head and neck region Deep cervical fascia, carotid sheath, sympathetic trunk 2. Midterm test (e-learning type): Maxillofacial Anatomy		

TOPICS OF THE FINAL EXAMINATION

1. Topics of the 1st semester (see at Macroscopic Anatomy I.)

2. Topics of the 2nd semester (see below)

Circulatory system

- Shape, external features of heart
- Chambers of heart
- Endocardium, ostia, valves of heart
- Skeleton of heart, anuli fibrosi
- Structure of heart wall
- Pulse generating and conducting system of heart
- Pericardium
- · Position and surface projections of heart
- Percussion and auscultation (area of cardiac dullness, heart sounds)
- · Radiology of heart
- Pulmonary circulation
- Ascending aorta, arch of aorta and its branches
- Thoracic aorta and its branches
- Abdominal aorta and its branches
- Celiac trunk and its branches
- Superior mesenteric artery and its branches
- · Inferior mesenteric artery and its branches
- External and internal iliac artery and its branches
- Internal pudendal artery and its branches
- Superior vena cava and its tributaries
- Inferior vena cava and its tributaries
- Azygos and hemiazygos veins and their tributaries
- Portal vein and its tributaries, portocaval anastomoses
- Cutaneous veins and lymphatic vessels of trunk

Digestive system

- Tongue (parts, vessels, innervation)
- Salivary glands (anatomy)
- Isthmus of fauces
- Palate, palatine muscles
- Pharynx, (shape, position, parts, muscles)
- Topography of the pharynx, para- and retropharyngeal spaces
- Esophagus (anatomy)
- Stomach (shape, position, parts)
- Peritoneal relations of stomach
- Blood supply and innervation of stomach
- Duodenum (shape, position, divisions, vessels)
- Jejunum-ileum (shape, position, vessels)
- Rectum, anal canal (shape, position, vessels)
- Liver (shape, position)
- Gall bladder and biliary passages (anatomy)
- Liver (peritoneal relations, vessels)
- Circulation of liver, liver sinusoids
- Pancreas (shape, position, vessels)
- Peritoneum, greater and lesser omentum, mesentery, omental bursa

Respiratory system

- Trachea and bronchial tree
- Lung (shape, parts, surfaces, hilum)
- Lung (position, topography, vessels, nerves)
- Surface projection of pleura and lung

Body cavities

Thoracic wall

- Pleura, pleural cavity
- Mediastinum (divisions and content)
- Diaphragm
- Abdominal cavity (divisions and surface projections)
- Abdominal wall (muscles, fasciae)
- Rectus sheath
- Hernia sites

Urogenital system

- Kidney (shape, position, hilum, sinus, capsules)
- Kidney (section, vascular architecture)
- Renal pelvis and calyces
- Ureter
- Urinary bladder (shape, position, muscles, vessels)
- Female urethra
- Testis (shape, position, vessels)
- Epididymis, vas (ductus) deferens, spermatic cord
- Scrotum, coats of testis
- Seminal vesicle
- Prostate
- Male urethra, bulbourethral gland
- Penis (shape, position, mechanism of erection, vessels, nerves)
- Pelvic floor, male perineum
- Hernia canals (inguinal and femoral)
- Ovary (shape, position, vessels)
- Uterine tube (shape, position, vessels)
- Uterus (shape, parts, wall, cavity)
- Uterus (position, supporting structures, vessels)
- Broad ligament (lig. latum) and its components
- Vagina, female perineum
- External female genital organs (mons pubis, labia, vestibule of vagina, greater vestibular gland, vessels)

MAXILLOFACIAL ANATOMY

- Muscles of mastication
- Muscles of facial expression
- Superficial muscles of the neck, muscle triangles
- Deep muscles of the neck and the laminae of the cervical fascia
- Subclavian artery and its branches
- · Common and external carotid arteries and their branches
- Maxillary artery and its branches
- Veins of face and neck
- Oral cavity (divisions, boundaries)
- Frontal section of the oral cavity
- Floor of mouth, sulcus lateralis linguae
- Types and morphology of teeth
- Blood supply and innervation of teeth
- Tonsils (anatomy)
- Faucial isthmus, palate
- Macroscopy of the tongue
- Salivary glands together with topography
- Pharynx and parapharyngeal spaces
- Blood supply and innervation of pharynx
- Pharyngeal muscles
- Nose, nasal cavity (boundaries, nasal meatus, vessels)
- Paranasal sinuses (connections, vessels)
- Larynx (shape, position, vessels, nerves)
- Skeleton and joints of larynx
- Laryngeal ligaments (fibroelastic membranes, mucous membrane)
- Muscles of larynx, innervation
- Cranial nerves, brain, dural and skull exits
- Branches of cranial nerves (CN 3, CN 4, CN 5, CN 6, CN 7, CN 9, CN 10, CN 11, CN 12)
- General composition of the autonomic nervous system
- Sympathetic system (cranial, cervical, thoracic and lumbar parts)
- Sympathetic trunk
- Parasympathetic system (cranial and sacral parts)
- Extraocular muscles. Eye movements.
- Eyelids, conjunctiva, fasciae of the orbit, lacrimal apparatus

MICROSCOPIC ANATOMY AND EMBRYOLOGY I (- II).

Department of Anatomy, Histology & Embryology

Course Director: Dr. Andrea D. Székely

LEARNING OBJECTIVES

Aims of the lectures in embryology: Presentation of the early development from the differentiation of the germ cells to the formation of the human embryo (general embryology). Presentation of the development of the organs and functional systems parallel with the gross anatomical and histological lectures including the frequently occurring malformations.

Aims of the lectures in histology: Presentation of the cell, basic principles in cell biology (mitosis, cytoskeleton, cellular motility), detailed presentation of the basic (epithelial, connective, muscle and nervous) tissues. Complementing gross anatomy with a detailed presentation of the fine structure of organs, including the ultrastructural details together with the molecular background. Important chapters: basic tissues, viscera, central nervous system.

Aims of the practical sessions in the histology room: Facilitate the understanding of ground (epithelial, connective, muscle and nervous) tissues and the fine structure of the organs through the observation and interpretation of histological specimens.

LECTURES: 2 × 45 min in both semesters PRACTICAL CLASSES: I.: 2 × 45 min; II.: 2 × 45 min. ECTS CREDITS: Altogether 8 (I.: 4; II.: 4). MIDTERM TESTS: written (e-learning type)

ACCEPTENCE OF THE SEMESTER:

Active participation in lectures, and dissection room sessions is obligatory for every student. Students should attend at least 75% of the scheduled hours to gain a signature proving the validity of the semester. Absences are therefore limited in **25%**. Attendance will be recorded in the lectures and in the dissection room classes.

Midterm tests will have to be passed to gain acceptence of the semester. In case the midterm tests are unsuccessful, two (2) consecutive retake times are offered.

Diligence of students will be evaluated by the instructor and this mark will form part of the semifinal/final examination.

TYPE OF EXAMS: oral and written

I.: semifinal examination, II.: final exam

Semifinal and final examinations consist of written and oral parts

1. Written pretest (e-learning module – access to SeKA account is obligatory)

2. Oral test in Microscopic Anatomy: identification of structures on virtual histological specimens including relevent theoretical questions

LIST OF TEXTBOOKS

- 1. The Developing Human Clinically Oriented Embryology, 10th ed. by KL Moore, TVN Persaud and M Torchia, Saunders, 2015; ISBN 9780323313384
- 2. Histology: A Text and Atlas: With Correlated Cell and Molecular Biology; 7th Edition by MH Ross and W Pawlina ; Wolters Kluwer 2015, ISBN 9781451187427
- 3. Wheater's Functional Histology, A Text and Colour Atlas, 6th Edition by B Young, G O'Dowd and P Woodford Churchill Livingstone, Edinburgh, 2013, ISBN 9780702047473
- 4. Oral Anatomy, Histology and Embryology, 4th Edition, by B. Berkovitz Paperback with STUDENT CONSULT Online Access and e-book ISBN: 9780723434115 Copyright: 2009

Recommended textbooks:

- 1. Langmann's Medical Embryology, 13th Edition by TW Sadler, Wolters Kluwer, ISBN 9781469897806, 2014
- 2. Junqueira's Basic Histology: Text and Atlas; 13th Edition by Anthony Mescher, New York, McGraw-Hill Medical, 01/03/2013 ISBN13 978007178033
- 3. Wheater's Functional Histology, A Text and Colour Atlas, 6th Edition by B Young, G O'Dowd and P Woodford ISBN 9780702047473, Churchill Livingstone, Edinburgh, 2013.
- 4. Langmann's Medical Embryology, 13th Edition by TW Sadler, Wolters Kluwer, ISBN 9781469897806, 2014
- 5. Illustrated Dental Embryology, Histology, and Anatomy, 3rd Edition by Mary Bath-Balogh ISBN: 9781437717303, 2011.

COURSE DESCRIPTION

Microscopic Anatomy and Embryology I.

Lectures in Histology and Embryology; practical classes in Histology

Subject matter

Histology: Microscopy of the ground (basic) tissues (epithelia, glandular tissues, connective and supporting tissues, types of muscle tissues. Histology of the corpuscular elements of the blood, cells of the red bone marrow. Microscopical strucure of the internal organs (cardiovascular, gastrointestinal, respiratory and the urogenital systems)

Embryology: Basic principles of human development, introduction to the clinical embryology.

General embryology, including spermatogenesis, oogenesis, fertilization, cleavage, blastulation, formation of germinal layers, body axes, molecular basis of right-left asymmetry, Hox genes, formation of the placenta, fetal membranes. Organ development including the early onset of fetal circulations. and the development of the limbs, together with the trunk and the skull. Factors inducing congenital malformations. Development of the internal organs together with their malformations

Credits: 5

Prerequisite: Cell Sciences

Week	Lectures	Histology laboratory
1	 Epithelial tissues, cell contacts, intercellular connections Glandular epithelium 	Simple and stratified epithelial tissues, Glandular epithelium
2	 Connective tissue cells and fibres. Extracellular matrix Blood. Corpuscular elements. Red bone marrow, erythropoiesis, Formation of leukocytes 	Connective tissues Cells and fibrous elements Blood and red bone marrow
3	 Supporting tissues (cartilage, bone) Ossification, bone remodelling 	Supporting tissues Cartilage, bone Types of ossification
4	 Muscle tissues Histology of vessels 	Smooth,skeletal and cardiac muscle types Blood vessels
5	 9. Histology of the tongue and airways, development of the respiratory system 10. Histology of the esophagus and stomach 	Gastrointestinal tract Lip, tongue, lingual papillae. Respiratory system Larynx, trachea, lung
6	 Gametes, fertilization, cleavage, blastulation Implantation. Placenta, placental circulation, fetal membranes 	Gastrointestinal tract Esophagus, stomach Placenta
7	 Microscopical anatomy of the small and large intestines Histology of the liver and pancreas 	Gastrointestinal tract Duodenum, jejunum, ileum, colon
8	 Molecular basis for gastrulation. Formation, differentiation and derivatives of the germinal layers Neurulation, folding of the embryo. Body axes, left-right lateralization, asymmety 	Gastrointestinal tract Liver, gall bladder, pancreas

Week	Lectures	Histology laboratory
9	 Miscroscopical anatomy and development of urinary organs Histology of the male genital system 	Urinary system Kidney, ureter, urinary bladder
10	 Histology of the female genital system Development of the genital system 	Midterm test : Histology and Embryology
	Easter break	
11	 Development of the heart. Fetal circulation Development of arteries and veins 	Male genital system I. Testis, epididymis, spermatic cord Seminal vesicle, prostate, penis, glans penis
12	23. Pharyngeal arches, development of the foregut, midgut and hindgut24. Histology of teeth I.	Female genital system I. Ovary, corpus luteum, uterine tube Uterus (proliferation, secretion), vagina, placenta
13	 25. Histology of teeth II. 26. Tooth development, malformations 	Tooth development, salivary glands
14	 Development of the face, malformations Parodontal tissues 	Histology of the oral cavity Midterm test : Maxillofacial Histology and Embryology

Topic list for the semifinal examination

GENERAL HISTOLOGY

- Concept of basic tissues
- Definition and classification of epithelial tissue
- Simple epithelia
- Stratified epithelia
- Membrane specializations of epithelia
- Glandular epithelia
- Pigment epithelium, sensory neuroepithelium
- Cells of connective tissue
- Ground substance and fibres of connective tissue
- Types of connective tissue
- Blood and the corpuscular elements of blood
- Histology of the bone marrow, maturation of erythrocytes and platelets
- Differentiation of granulocytes, lymphocytes and monocytes
- Histology of cartilage
- Histology of the bone tissue
- Intramembranous ossification
- Endochondral ossification
- Growth and remodeling of bone
- Smooth muscle and myoepithelial cells
- Skeletal muscle tissue
- Cardiac muscle tissue

HISTOLOGY OF ORGANS

- Wall structure of hollow organs
- General compsition of parenchymal (solid/compact) organs

Circulatory system

- Histological structure of arteries and arterioles
- Composition of capillaries and veins

Digestive system

- Lip
- Tooth
- Tooth bud
- Salivary glands
- Oesophagus
- Stomach
- Divisions of small intestine
- Fine structure of the intestinal vili
- Large intestine
- Histology of vermiform appendix
- Liver
- Gall bladder
- Pancreas

Respiratory system

- Larynx
- Trachea
- Lung

Urogenital system

- Histology of kidney (+JGA)
- Ureter
- Urinary bladder
- Testicle
- Epididymis
- Vas deferens
- Spermatic cord
- Seminal vesicle
- Prostate
- Penis

- Ovary, oogenesis and the corpus luteum
- Uterine tube
- Uterus (prolipherative, secretory phases) menstrual cycle
- Vagina

General Embryology

- Spermatogenesis, spermiogenesis
- Oogenesis
- Fertilization, cleavage of the zygote
- Blastocyst formation; the bilaminar embryonic disc
- Implantation
- Formation of body axes
- Formation of the intraembryonic mesoderm; the notochord
- Neurulation (neural tube and neural crest)
- Derivatives of ectoderm
- Derivatives endoderm
- Differentiation of the intraembryonic mesoderm; formation and derivatives of the somites
- Derivatives of the intermediate mesoderm
- Lateral plate mesoderm and its derivatives
- Folding of the embryo
- Development of the primitive cardiovascular system, the fetal circulation
- The structure and function of the placenta
- Development of the fetal membranes (chorion and amnion) and the umbilical cord
- Periods of embryonic / fetal life
- Twin formation

Development of internal organs

- Development of the heart, looping of the heart tube
- Formation of atria, development of the interatrial septum
- Formation of ventricles, development of the aorticopulmonary septum
- Development of arteries
- Development of the inferior vena cava
- Development of the portal vein
- Development of the suprior vena cava, azygos and hemiazygos veins
- Fetal circulation
- Face development
- Development and differentiation of the foregut
- Derivatives of pharyngeal pouches and grooves
- Derivatives of pharyngeal arches
- Development of the tongue
- Tooth development
- Development and differentiation of the midgut
- Development and differentiation of the hindgut
- Formation of the liver and pancreas
- Formation of the nasal cavity and paranasal sinuses
- Development of the lower airways including the lungs
- Kidney development
- Development of the urinary passages
- Gonadal development
- Development of the male genital tract
- Development of the female genital tract
- Development of the male/female external genitals
- Development and divisioning of the body cavities
- Development of the peritoneum

GENERAL DENTAL MATERIALS

Lecturer: Dr. Judit Borbély D.M.D., PhD – associate professor

Second Semester

Lectures (1 hour/week)

Topics of the lectures (weekly, numbered):

- 1. History of dental education
- 2. Impression materials I
- 3. Impression materials II
- 4. Casts, models and dies
- 5. Metals, technologies
- 6. Investment materials, flasking methods
- 7. Precious alloys, non precious alloys
- 8. Dental resins
- 9. Dental ceramics
- 10. Dental cad/cam technology
- 11. Implant materials
- 12. Luting materials
- 13. Restorative materials
- 14. Tooth whitening materials

PHYSICAL BASES OF DENTAL MATERIALS

Tutor: Dr. István Voszka

First Semester

Lecture (2 hours/week)

- 1. Basic forms of material, atoms, interactions, bonds
- 2. Multiatomic systems. Gases. Interpretation of temperature. Boltzmann-distribution.
- Fluids. Interface phenomena. Liquid crystals.
- 3. Solid materials.
- 4. Methods for structure examination (diffraction, microscopic, spectroscopic methods)
- 5. Crystallisation. Metals, alloys.
- 6. Ceramics, polymers, composites.
- 7. Mechanical properties of materials 1. Elasticity.
- 8. Mechanical properties of materials 2. Plasticity, hardness.
- 9. Mechanical properties of materials 3. Rheological properties, viscoelasticity.
- 10. Other physical (optical, electrical, thermal) properties of materials
- 11. Comparison of the properties of dental materials
- 12. Bases of biomechanics. Structure, mechanical and other properties of tissues.
- 13. Physical bases of implantology.
- 14. Physical bases of orthodontics.

MEDICAL CHEMISTRY

Department of Medical Chemistry, Molecularbiology and Pathobiochemistry Detailed information on the subject is available on our website under http://semmelweis.hu/orvosi-vegytan/en/students/medchem/

Cell Sciences

Department of Genetics, Cell- and Immunobiology

Address: NET Building, H-1089 Budapest, Nagyvárad tér 4. Course director: Edit Buzás MD, DSc Course coordinator: Orsolya Láng MD, PhD Credit: 3

Lectures (1 hour per week):

- 1. Cell theory. Model cells in medicine
- 2. Cell membrane
- 3. Structure and function of the nucleus
- 4. Endoplasmic reticulum
- 5. Golgi complex, vesicular transport and secretion
- 6. Endocytosis. Autophagy
- 7. Cell adhesion and cell junctions
- 8. Cytoskeleton
- 9. Cellular movement
- 10. Structure and function of mitochondria and peroxisomes
- 11. Cell communication. Extracellular vesicles.
- 12. Cell cycle and mitosis
- 13. Stem cells and differentiation
- 14. Cellular ageing and cell death

Practices (2 hours per week):

- 1. The light microscope
- 2. The general cell structure. Light microscopic microtechnique
- 3. The electron microscope. Cell membrane
- 4. The interphase nucleus. Cyto(histo)chemistry
- 5. Immunohistochemistry. Super-resolution microscopy
- 6. Cell and tissue culture
- 7. Endoplasmic reticulum
- 8. Golgi complex and secretion
- 9. Endocytosis and lysosomes
- 10. Cell surface differentiation, enzyme-histochemistry
- 11. Store and supply of energy. Mitochondria. Peroxisome.
- 12. Mitosis
- 13. Meiosis
- 14. Cell death (necrosis and apoptosis)
- The order of topics may vary

Course requirements: Students must participate at least 75% of the classes. More than three absences from the practice or more than three absences from the lecture invalidate the semester, no signature is given. There are no extra practices.

The course ends with an exam consists of an oral test (preparations, electron micrographs, methods applied in cell biology) and a written test (multiple choice, essays, drawings, etc. covering theoretical part of the subject). Further details will be announced on the website of the department (http://gsi.semmelweis.hu).

Core text: Alberts et al. Essential Cell Biology (4th edition) Garland Science ISBN-13: 978-0815344544 ISBN-10: 0815344546 Lecture and practice presentations and additional texts are available on the homepage: http://gsi.semmelweis.hu (The user name and password is on course datasheet of the Neptun)

DENTAL BIOCHEMISTRY I.

Department of Medical Biochemistry

Credits: 4 Total number of hours: 56; lectures (hours): 28; practices (hours): 28 Type of the course: obligatory Academic year: 2020/2021 Code of the course Course Director: Dr. Kraszimir Kolev

Contact details: H-1094 Budapest, Tűzoltó u. 37-47. Phone: +36-1-459-1500#60010 e-mail : Kolev.Krasimir@med.semmelweis-univ.hu Position: Professor Date of habilitation: 2008 Ref.: 266

Aim of the course:

The aim of this course is to examine biologically important molecules - namely amino acids, carbohydrates, lipids and nucleotides - identify their contributions to metabolic processes emphasized from a medical point of view, examine the structure and function of proteins, and address mechanisms of catalysis performed by enzymes. Furthermore, three basic biochemistry modules are outlined: The enzymology module, encompassing general principles of enzyme kinetics and how enzymes influence efficiency and controllability of chemical processes in biological systems, as well as how they affect structure and regulation of metabolic pathways; the bioenergetics module, addressing the relationships between mass-energy conversions in the human body emphasizing nutrional aspects, also elaborating on thermodynamic aspects of metabolism; and the 'first' intermediary metabolism module, presenting the salient features of carbohydrate and lipid metabolism which are essential for understanding physiological and pathological processes of the human body. During practices, students apply the theoretical knowledge acquired at lectures as part of case-oriented discussions in an effort to interpret - from a molecular point of view - relevant conditions.

Location of the course (lecture hall, practice room, etc.):

Premises located in the Basic Medical Sciences building (laboratory rooms located on the first floor and lecture halls located on the ground floor).

Upon the successful completion of the curriculum, the student should be able to:

Identify biochemical structures, know and understand the reactions in which medically important molecules participate; know and understand inter-organ biochemical processes; know and understand integrated metabolic functions of the human body. Overall, such knowledge is essential for understanding physiological and pathological processes and, consequently, for making sound professional decisions.

Prerequisite (s) for admission to the course: None

Terms and Conditions for Starting Student Course (Minimum, Maximum), Student Selection Method: Not applicable for compulsory subjects

How to apply for the course: Application is through the Neptun online system

The course in thematic details:

Lectures: weekly 1×90 min (2 hours) Practices (P): 2 hours every week

Lecturers: Dr. Komorowicz Erzsébet (KE), Dr. Szöllősi András (SZA), Dr. Bak Judit (BJ), Dr. Szabó Eszter (SZE)
Week	Lectures: weekly 1×90 min (2 hours)	Practices (P): 2 hours every week
1	The chemical structure of proteinogenic amino acids. The peptide bond. The primary, secondary and tertiary structure of proteins. (SZA)	P: Structural and chemical characteristics of amino acids; pH and temperature dependent properties.
2	The quaternary structure of proteins. Covalent modifications of proteins. Comparison of the structure-function aspects of myoglobin and haemoglobin. (SZA)	P: Structural and chemical characteristics of amino acids; pH and temperature dependent properties. Gel electrophoresis of LDH subunits.
3	Thermodynamic and structural aspects of enzyme function. Fundamentals of enzyme kinetics. Regulation of enzyme activity. Enzymes as components of physiological systems. Mechanisms of serine proteases. (SZA)	P: Interpretation of pathological conditions stemming from alterations in protein structure, elucidated by atomic resolution techniques.
4	Kinetic models of enzymatic function. Michaelis-Menten kinetics. Significance of the Michaelis constant (Km). Inhibition of enzymatic reactions. Allostery and cooperativity in enzymatic reactions. Levels of regulation of enzymatic reactions: compartmentalization, altering gene expression, reversible modification of the catalytic activity of enzymes. Enzymatic control by proteolytic activity. (SZA)	P: Enzyme kinetics.
5	The thermodynamics of biochemical pathways. Reversible and irreversible reactions. The coupling of endergonic and exergonic reactions in the human body. High energy compounds. The central role of ATP in the energetics of cells. Reducing equivalents. (BJ)	P: Identification of metabolic pathways.
6	Reactions and control of the citric acid cycle. Sources of citrate. The pyruvate dehydrogenase complex. The synthesis of ATP. ATP production by oxidative phosphorylation in mitochondria. Redox reactions of terminal oxidation (electron transport chain, ETC). The enzyme complexes of ETC. (BJ)	P: Bioenergetics
7	Carbohydrates. Digestion and absorption of carbohydrates, cellular glucose uptake, glucose transporters. Glycolysis. (BJ)	P: Carbohydrates in the diet. Food fibers and additives.
8	Gluconeogenesis. Regulation of glycolysis and gluconeogenesis. Cori-cycle. Metabolism of glycogen. Mobilization of glycogen in liver and muscle. (BJ)	P: Lactic acidosis
9	Blood glucose level and its regulation: hyperglycaemia. Insulin release, insulin receptors. Phosphorylation cascade. Lactate synthesis. Effects of glucagon. Biochemistry of diabetes mellitus. (BJ)	P: Determination of blood glucose level.
10	Metabolism of lipids – overview. Absorption of lipids. Metabolism of chylomicrons. (SZE)	P: Structure and function of the most important lipids in the body and in the diet.
11	Mobilization of fatty acids in adipose tissue, its regulation. Transport in the circulation. Free fatty acids, VLDL, IDL. (SZE)	P: Membrane-forming lipids and their pathologies. Precursor molecules for signal transduction.
12	Oxidation of fatty acids. Ketone bodies. Synthesis of fatty acids. Biosynthesis of triacylglycerol, phospholipids, their regulation. (SZE)	P: Tissue-specific aspects of lipoprotein lipase (LPL); LPL deficiency.
13	Metabolism of cholesterol, cholesterol transport in circulation. (KE)	P: Determination of triglycerides and cholesterol in blood plasma.
14	Biosynthesis and metabolism of bile acids, the importance of bile acids in lipid digestion. Cholesterol uptake and release by cells. (KE)	P: Signal transduction of insulin

Potential overlap(s) with other topics: none

Requirement for special study: not applicable

Policy regarding attending practice; policy regarding absences: Practices are mandatory. It is not possible to make up for missed practices. In case of absences amounting to more than 3 practices, the semester is not acknowledged. Arriving to a practice with a delay of more than 10 minutes is considered an absence.

Means of assessing acquired knowledge during the semester:

Two midterms take place, one in the 7th week and one in the 12th week. The midterms occur during the practice or seminar and each consists of 65 MCQs that must be answered within 30 minutes. Grading system is as follows: 60-65: grade 5 (excellent) 49-59: grade 4 (good) 41- 48: grade 3 (satisfactory) 33-40: grade 2 (pass) If 32 and below, then the grade of the midterm is 'fail'.

Requirement for acknowledging the semester, and for allowing the student to take the semi-final exam: Attendance of at least 75 % of the practical classes.

Exam Type: Colloquium (semi-final), Form: written test exam, based on material of the official textbook, lectures and practices published at the department's Moodle e-learning system (https://itc.semmelweis.hu/moodle/).

Exam Requirements: The material for the written test exam is the material of the lectures and practices in the subject, with the corresponding textbook chapters.

Types and modes of grading:

The competition is held in the last week, and the structure of the competition is the same as that of the semi-final.

The grade of the semi-final exam is based on:

Written test:

This test consists of multiple choice questions (MCQs) from which max 65 points can be obtained.

Grade calculation of the semi-final exam:

60-65: grade 5 (excellent) 49-59: grade 4 (good) 41-48: grade 3 (satisfactory) 33-40: grade 2 (pass)

If 32 and below, then the grade of the semi-final exam is 'fail'.

How to apply for the exam: The exam dates are announced on the 12th week of the semester. We provide at least one exam date each week. Applications are made in the Neptun system in accordance with the University Study and Exam Rules.

Opportunities to repeat the exam: A retake is possible on the closest announced exam date at least one day after an unsuccessful exam.

Printed, **electronic and online notes**, **textbooks**, **tutorials**, **and literature for online learning (html for online material)**: *Harper's Biochemistry (30th edition, or latest)*

Online material published in the department's Moodle e-learning system (https://itc.semmelweis.hu/moodle/).

MOLECULAR CELL BIOLOGY I.

Department of Medical Chemistry, Molecularbiology and Pathobiochemistry Detailed information on the subject is available on our website under http://semmelweis.hu/orvosi-vegytan/en/students/molcellbiol1/

BIOPHYSICS I.

Tutor: Dr. István Voszka

First Semester

Lecture (1.5 hours per week)	Laboratory (2 hours per week)
Radiations (basic concepts)	Laboratory safety rules
Properties of electromagnetic radiations; wave and corpuscular nature	Resonance
Attenuation of radiation	Emission spectroscopy. Light sources
Luminescence and its applications	Spectrophotometry
Lasers and their medical applications	Statistics
Thermal radiation, thermography. Biological effects of light	Detection of nuclear radiations
Production and spectrum of X-radiation	Dosimetry
Cyclotron; Linear accelerator;	
Attenuation of X-radiation, interactions	Special light microscopes
	X-ray diagnostics
Atomic structure; Radioactive decay law Gamma-radiation and its detection	Optics of the eye
Radiotherapy, radiosurgery; Isotope diagnostics	Polarimeter
SPECT, PET	Coulter counter
Beta-radiation, beta-decay	
Alpha-radiation, alpha-decay Interaction with matter	Determination of skin-impedance
Dosimetry	Concentration determination with refractometer
Radiation protection; estimation of risk	Repetition
	Lecture (1.5 hours per week) Radiations (basic concepts) Properties of electromagnetic radiations; wave and corpuscular nature Attenuation of radiation Luminescence and its applications Lasers and their medical applications Thermal radiation, thermography. Biological effects of light Production and spectrum of X-radiation Cyclotron; Linear accelerator; Attenuation of X-radiation, interactions Atomic structure; Radioactive decay law Gamma-radiation and its detection Radiotherapy, radiosurgery; Isotope diagnostics SPECT, PET Beta-radiation, beta-decay Alpha-radiation, alpha-decay Interaction with matter Dosimetry Radiation protection; estimation of risk

BIOPHYSICS II.

Second Semester

Week	Lecture (2 hours per week)	Laboratory (2 hours per week)
1	Bonds and their significance in macromolecular structure; Boltzmann distribution, examples	The attenuation of gamma-radiation
2	Liquid crystals, membranes	
3	Electronic properties of condensed materials (solids, macromolecules)	Amplifier
4	Ultrasound properties, generation of ultrasound	Gamma energy determination
5	Ultrasonography, Doppler methods	Pulse generators (e.g. pacemaker, defibrillator)
6	Methods for structure examination heat	Ultrasound
7	Basic concepts of Thermodynamics, First law	Audiometry
8	General description of transport phenomena,	Isotope diagnostics
	Onsager's equation, examples	
9	Diffusion; transport across membrane	Densitography (CT)
10	Resting potential and its local changes	Flow of fluids.
11	Action potential, properties, interpretation	Electrocardiography
12	General characteristics of sensory function, hearing, vision	Diffusion

- 13 Biophysics of muscle function
- 14 Motor proteins

Sensory function Repetition

BIOETHICS-DENTAL ETHICS

Institute of Behavioural Sciences

Type of the course: compulsory elective code: FOKVMAG113_1A credit: 2 credits Presenter of the course: Dr. József Kovács

Course objectives:

- a.) To enable students to recognize ethical issues when encountered in everyday clinical practice and research
- b.) To provide students with a conceptual-logical system, which helps them to address ethical questions and toresolve ethical dilemmas in an efficent way
- c.) To introduce students to a body of knowledge, which helps them to understand, respect and protect the rights of patienst research subjects and fellow health care professionals
- d.) To help the would be health care professional to undertand the responsibility of the individual, of the health care system and of the society as a whole in maintaining health

Course Syllabus:

1. week (Lecture)	Principles of Medical Ethics (Jozsef Kovacs)
2. week (Lecture)	Competence and Capacity to Make Health Care Decisions (Orsolya Peter)
	Information Disclosure to Terminally III Patients. Telling the Truth to Patients (Orsolya Peter)
3. week (Lecture)	Informed Consent I. (Jozsef Kovacs)
4. week (Lecture)	Infomed Consent II. (Jozsef Kovacs)
5. week (Lecture)	Information Disclosure to Terminally III Patients. Telling the Truth to Patients (Orsolya Peter)
6. week (Lecture)	Reproductive Issues (Orsolya Peter)
7. week	End of Life Issues (Jozsef Kovacs)
8. week	Organ and Tissue Transplantation (Jozsef Kovacs)
9. week (Lecture)	Doctor and Society (Jozsef Kovacs)
10. week (Lecture)	Doctor-Patient, Doctor-Doctor Relationship (Jozsef Kovacs)
11. week	Ethical Questions of Human Reasearch (Imre Szebik)
12. week (Lecture).	Malpractice (Orsolya Péter)

Participation and making up for absences:

A signature will be given with the prerequisite of participation (minimum 75% of the lectures and seminars). It is possible to make up for an absence by participating in another seminar group.

Justification of the absence in the lectures and examinations: Medical certificate

Checks during the semester (reports, written checks) :

Number of checks during the semester: 1

Type: written exam on the 9th week.

Subjects: the material of practice weeks 1-8 and the relevant chapters of the textbook.

It is possible to make up for an absence or correct grade by oral exam.

Requirements for the signature at the end of the semester: Participation of 75% of the lectures and seminars. Succesful written or oral exam. Method of the calculation of marks: The result of the exam

Type of the exam: kollokvium

Requirements for the exam: Succesful written exam or the successful oral exam

Application for the exam: Through the Neptun system.

Changing the application for the exam: Through the Neptun system.

Justification of the absence from the exam: Announcing it at the secretariat of the Institute

Course and recommended text books:

Conrad Fischer—Caterina Oneto (2016): Medical Ethics fot the Boards. (Third edition) New York: McGraw-Hill Education. ISBN: 978-1-259-64121-3**MHID 1-25-964121-X**

DENTAL PSYCHOLOGY

Institute of Behavioral Sciences

Code: FOKVMAG019 1A Credit: 2 Head of the Department: Prof. Dr. József Kovács Tutor: Dr. Gyöngyvér Salavecz

Second Semester

Course objectives:

- to introduce the concepts of stress, emotions, states of consciousness, and their role in pain perception
- to emphasize suggestive communication and therapeutic methods that may be used to improve doctor-patient relationship in dental practice
- to enable students to recognize and understand psychological and psychopathological issues when encountered in everyday dental practice

Topics:	
1-2.	Control problems and their relations to dental practice
3-4.	Principles of perception, pain, consciousness, emotions and communication -and their relations to dentistry.
5-6.	Stress and stress management in dental practice
7-8.	Psychological crisis, presuicidal syndrome, and burn-out prevention
9-10.	Role of psychological factors in producing and enhancing pain.
	Psychological interventions for pain suppression.
11-12.	National holiday
13-14.	Psychotherapeutic methods
15-16.	Fables and imagination in dental practice
17-18.	Substance misuse and surrounding areas in dentistry
19-20.	Dental consequences of eating disorders
21-22.	Hypnosis and relaxation therapies, and their possible use in dental practice
23-24.	Conscious states, sleep, dreaming, general anesthesia
25-26.	Affects, emotion and motivation
27-28.	Review

Department:

Institute of Behavioral Sciences

Department of Psychology

NET Building, 20th floor 1089. Budapest, Nagyvárad tér 4. Phone: 210-2953 Secretary: NET Building, 20th floor, Room-2005. Phone: 2102930/ 56114.

Dr. György Purebl	e-mail: purgyor@net.sote.hu
Dr. Róbert Bódizs	e-mail: bodrob@net.sote.hu
Dr. Adrienne Stauder	e-mail: staadr@net.sote.hu
Dr. László Harmat	e-mail: laszloharmat@yahoo.com
Éva Pollák	e-mail: evipoll@yahoo.com
Gabor Suhai	e-mail: shgabor@gmail.com
	Dr. György Purebl Dr. Róbert Bódizs Dr. Adrienne Stauder Dr. László Harmat Éva Pollák Gabor Suhai

Participation and making up for absences:

Participation list will be recorded at the end of every lecture. To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature. Maximum number of absences in a semester is 3.

Certifying absence from lesson and exam:

Medical certificate presented to the course leader.

Semester requirements:

Course will conclude with a written semi-final examination in the examination period.

Requirement of semester signature:

A signature will be given with the prerequisite of participation. One absence can be overlooked by the teacher if the student writes an essay. The topic of the essay must be discussed with the course leader in advance.

Method of granting grade: The result of the semi-final.

Type of exam: written semi-final examination Exam requirements: Content of the lectures Sign up for exam: through the Neptun system Modifying sign up for exam: through the Neptun system

Certifiying absence from exam:

A telephone message to the secretary of the Institute or an email message to the course leader.

Recommended text books:

- 1 Behavioral dentistry. Mostofsky DI, Forgione AG, Giddon DB (eds.), Blackwell Munksgaard, 2006.
- 2 Behavior & Medicine. 4th Edition, Danny Wedding, Hogrefe & Huber Publishers, Seattle, 2006.
- 3 Fadem B: Behavioral Science, Lippincott Williams & Wilkins, 5th ed., 2008.
- 4 Sarafino E.P.: Health Psychology. Biopsychosocial interactions. 6th ed., New York, Wiley, 2008.
- 5 Kopp M. Skrabski Á.: Behavioral Sciences Applied in a Changing Society, Corvina, 1996.

MEDICAL SOCIOLOGY (Dentsoc)

Second Semester

Hour/semester: 28 Credit: 1 Code: FOKVMAG235_1A Lecturer of the course:): Prof. Dr. József Kovács Contact details: SE ÁOK Magatartástudományi Intézet, 1089. Nagyvárad tér 4, (36-1)210-2930/ext.56199, or (36-1) 210-2940/ext.56199; or (36-1)210-2953; kovacs.jozsef@med.semmelweis-univ.hu Position: Professor of Bioethics, Head of the Department of Bioethics, Director of the Institute of Behavioral Sciences, Semmelweis University—Budapest. Date of habilitation and reference number: 2006.V.26. (231) Course leader: Zsuzsa Szanto (szanto.zsuzsa@med.semmelweis-edu.hu) Teachers : Bence Döbrössy e-mail: dobrossy.bence@chello.hu Katalin Kovács e-mail: kovacs@demografia.hu

Location of the course (address of lecture hall, seminar room etc.):

Nagyvárad téri Elméleti Tömb, 1089 Budapest Nagyvárad tér 4. Elméleti Orvostudományi Központ 1094 Budapest Tűzoltó utca 37-47 FOOC, 1088 Budapest, Szentkirályi u. 47.

Goals of the subject:

The aim of this course is to help students realise that social factors have a considerable influence on oral/ dental health and dentistry. Social, economic and cultural factors have a great effect on the dentist-patient relationship, the way people make sense of their symptoms and seek dental help, their oral/ dental health related behaviour as well as on the aetiology of oral and dental conditions.

By understanding how different societies are structured and organised and how the categories people belong to (gender, ethnicity, occupation, educational level, financial situation to name but a few) shape all aspects of their lives and opportunities, our hope is that students will better comprehend the social reality influencing the dental health status of people and the practice of dentistry for dentists.

Syllabus of the subject:

Week		
1	Introduction to sociology, basic concepts and principles.	Practice
2	General health and oral health status through history	Lecture
3	Social determinants of oral health and oral health related behaviour	Lecture
4	Intercultural dentistry	Lecture
5	Patient expectations regarding dentistry: the theory and practice of dental patient satisfaction studies.	Lecture
6	Socio-cultural aspects of pain	Lecture
7	The profession of dentistry, dentist patient relationship	Lecture
8	Introduction to practicals. Project work discussion	Practice
9	Social inequality and health inequality	Practice
10	Health Care Systems workshop	Practice
11	21st century dentistry technological and socio-cultural changes	Practice
12	Dental help seeking behaviour, illness behaviour	Practice
13	Medicalisation in dentistry, cosmetic detistry	Practice
14	Project reports	Practice

Courses (obligatory and elective) which in part or entirely overlap the topics of above course:

Public Health The Basics of Digital Healthcare

Special academic work required for completion of the course:

Project work done in the practicals

Attendance on practices and lectures, replacement in case of missed sessions:

75% of practicals must be attended. One practical absence can be made up by undertaking an extra task set by the practical leader or by participating in the practical with another group

Consequences of absence from sessions and exams:

No signature is given if 75% of the practicals is not attended, the project work is not done

Method of checking acquired knowledge during the study period:

Completion of project work is required for getting a signature. The project work is graded and makes up 40% of the final grade.

Requirements of an accepted semester (signature of the lecturer):

Completion of project work and 75% practical attendance is required for getting a signature

Type of the exam:

written semi-final in the examination period (60% of the final grade)

Requirements of the exam:

- The written exam will consist of multiple choice questions and an essay type case analysis where students are required to understand, explain and apply to the given case concepts and knowledge acquired in the course.
- In order to undertake the exam successfully, students must know the material made available to them on the departmental home page as well as the textbook.
- The material covered in the exam:
- 21st century dentistry technological and socio-cultural changes
- Dental help seeking behaviour
- Intercultural aspects of dentistry
- Medicalisation in dentistry, cosmetic dentistry
- Patient expectations regarding dentistry
- Social determinants of oral health and oral health related behaviour
- Social inequalities and inequalities in dental health
- Socio-cultural aspects of pain
- Systems of dental health care provision
- The profession of dentistry

Grading of courses :

40%- project work 60% -written semi-final

Grades:

0-50 points – 1 51-60 points – 2 61-74 points – 3 75-84 points – 4 85 points and over 5

All lecture notes and slides are made available on Moodle (https://itc.semmelweis.hu/moodle/) textbook: Graham Scrambler (ed) Sociology as Applied to Health and Medicine, Palgrave Macmillan 2018

Exam sign up: Through the Neptun System Modifying: Through the Neptun System Absence from the exam: With medical document submitted to the course director

HISTORY OF MEDICINE

Institute of Public Health Lecturer: Dr. Judit Forrai

The history of medical science, considered as a part of the general history of civilization The study of the history of medicine helps us to describe and understand how people in different times and cultures experienced and dealt with these fundamentals of human existence. This knowledge can inform debate about the present and the future, and help to bring medicine and science to a wide audience. All human societies have medical beliefs that provide explanations for birth, death, and disease. Many cultures in ancient times treated illnesses with magic and herbal remedies. Ancient Egyptians thought that their gods healed them. The ancient Greeks pursued medicine as a science. Hippocrates, the most famous physician of the time (c. 400 B.C.), believed that diseases had natural causes, not supernatural ones. By the Middle Ages, Europe was hit with a terrible epidemic that killed millions of people called the plague, or Black Death. The Renaissance marked a new period of interest in art and science throughout Europe. Despite new medical discoveries, many doctors still practiced old ways. Most sick people could not afford to see a trained physician. Instead, they consulted midwives who assisted with childbirths and made herbal remedies to treat illnesses. Minor surgeries were not done in the hospital but at the local barbershop. Medical research and training improved in the 18th century but there were still no cures for diseases like smallpox, a disease that killed millions of people over thousands of years. Middle Eastern doctors gave people mild doses of the smallpox to combat the disease. The portrayal of the history of medicine becomes more difficult in the 19th century. Discoveries multiply, and the number of eminent doctors is so great that the history is apt to become a series of biographies. Nevertheless, it is possible to discern the leading trends in modern medical thought. In the beginning of 20th century the research and technology have expanded medical knowledge and improved medical practices like surgery. Today, doctors are able to perform less invasive surgical procedures. The science of medicine has progressed dramatically in just the last 50 years. Career opportunities in health care have also expanded. There is a need for more skilled medical professionals, not only in hospitals, but in dentist and doctors' offices, research labs, rehabilitation centres, mental health clinics, nursing homes and even schools.

Topics/week

- 1. Introduction. What is Medicine? Methods and sources of Medical History. The birth of paleomedicine (bones teeth, mummies). Prehistoric medicine. Far East.
- 2. Far East Medicine. Chinese civilization, Japan, India.
- 3. Medicine of ancient civilizations, rivers valley's culture: Mesopotamia, Egypt, and the medicine knowledge. Medicine in the Bible time Heritage of the empirical knowledge. Practitioners. Theories of diseases.
- 4. Greco-Roman Medicine. Homeric medicine. Asclepius, Hippocrates. Corpus Hippocraticum- the concept and doctrine of his theories about the nature and diseases (the four humors). The Oath. Hygiene and health education. Post-Hippocratic schools the golden heritage in the school of Alexandria. The roman physicians, diseases. Advance of public health. Water supply and sanitation, climate, soil and health, diseases, endemics. The workers' health, provision of medical care. (Celsus, Galenus)
- 5. Medieval medicine. Byzantine Healers, Arabian Hakims, Monks, Crusaders and medieval "doctors." The Arabian medicine: chemistry, pharmacy, hospitals. Razes, Avicenna, Abulcasis. The medieval Monasteries (Monte Cassino). The growth of European cities, sanitary problems of urban life. The first religious medical school in Salerno. Medieval Universities, medical humanists, and Christian caritas.
- 6. Medicine in the Renaissance. The Arts and the humanism. The new mentality of medicine: Paracelsus. The revolution of anatomy: Vesalius and his contemporaries. The first step toward the specialization. Botany and mineralogy. The printing of book's role in medicine. Foundation of the administration of Public Health. Epidemic diseases: communicable and non-communicable diseases. Theories, therapies, and medical care, hospital. Quarantine.
- 7. Experimenters, Teachers and Theoreticians in the Sixteenth and Seventeenth Centuries. Body as machine -old schools: iatrochemical, iatrophysical theories. New schools: animism, tonus, vitalism, stimulation, homeopathy. The circulation of the blood. Harvey's method-ology Malpighi. Microscopy. Birth of modern clinical medicine: Sydenham. Boerhaave and his pupils.
- Industrialism in the Eighteenth Century. Clinical medicine- schools of clinical (French, English, German, and Habsburg). The first Vienna School: van Swieten. surgery (Hunter, Valsalva), pathology (Morgagni, Bichat). Public health and hygiene. Occupational health, prison reform, general health (death rate, statistics), Ramazzini, Frank. Smallpox. Infant mortality. Nursing, dispensaries and hospitals, development of obstetrics. Sanitary conditions – filthy towns.
- 9. Clinical medicine in the second half of the nighteenth Century. Bacteriology a new science in medicine. Revolution, concepts and theories under the microscope. New discoveries Pasteur, Koch. Social revolution, industrialism, public health. National and international movements and health reforms, and medical care. Period of great epidemics. International health organization. The Red Cross.

- 10. Development of surgery and gynaecology. The man-midwife (Smellie, Hunter), History of anaesthesia. General and local possibilities. Wells, Morton, Simpson, Jackson). Asepsis and antisepsis. Early efforts to develop aseptic techniques. Semmelweis, Lister. Progress in surgery, Billroth. Cholecystostomy, appendectomies.
- 11. Emergence of specialism. Logical outgrowth of locality pathology, new instruments. Initially the medical professions: Paediatrics, Psychotherapy, Ophthalmology, Otology, Rhinology and Laryngologist, Dentistry, Neurology and Psychiatry, Dermatology and Venerology.
- From the black death to the AIDS. The history of epidemics. The theories and therapies. Tropical medicine. The development of epidemics, the bacteriology and immunology. The new medicaments. Ehrlich and the chemotherapy, sulphonamides, antibiotics. Virology. Salk and Sabin. New diseases and screenings methods.
- 13. Consultation

Important: 3 absences are allowed. Doctor's certificate is required to certify absence from the exam. **Exam requirement:** written test

Textbook:

Chrestomathy on the History of Medicine. Ed. Dr. Forrai J., Dr. Ballér P., Budapest, 1992. SOTE

FIRST AID

Department of Oxyology and Emergency Care

Faculty of Health Sciences 1088 Budapest, Vas u. 17., room 145 Phone: +(36-1)486-5840 Head of the Department: Péter L. Kanizsai, MD, PhD, DEAA

Second Semester

Topics

Principles of first aid. Recognition of an emergency. Assessment of the scene. Dangerous scene. Safety measurements on the scene. Call for an ambulance. Emotional viewpoints of managing emergencies. Assessment of the patient. Responsiveness – unresponsiveness. Assessment of the responsive patient: complaints, signs for the severe condition. Positioning of the patient in specific conditions. The unconscious patient. Airway management. Assessment of the vital signs. Recovery position. Heart attack. Sudden death. Chain of survival. BLS (Basic Life Support) BLS AED (Automated External Defibrillator). PAD (Public Access Defibrillation) BLS + AEDBLS + AED Chocking. Drowning. Electrocution. Injuries. Extrication of the patient: Rautek maneuvers. Helmet removal. Mobilization and immobilization of injured patients. Bleeding control. Bandages. Burns. Fractures, dislocation, sprain. Fainting. Shock. Allergy Stroke. Convulsions. Diabetes mellitus: Hypoglycaemia. Shortness of breath. Poisoning. Drugs. Drunkenness. Note: Participation at 75% of practices is necessary. Compensation of absences is possible in subsequent practices. Development in learning skills will be controlled all the time during the practices in the semester. Mode of certifying absences: oral - referring to practices Requirements: The student should be able to recognize emergencies, and call for help start with BLS + AED

provide airway management in unconscious patients

provide first aid for patients complaining for chest-pain, shortness of breath, signs for hypoglycaemia and having suffered from fainting, shock condition, convulsion, injuries.

The practical exam on the last practical lesson is evaluated with 5 grades method.

MEDICAL INFORMATICS

Name of the educational organizational unit: SE EKK Institute of Digital Health Sciences

Name of the subject: Medical Informatics Type of the subject: 1 theory, 2 practice / week code: FOKVINF009_1A credit value: 3 Name of the lecturer of the subject: *Dr. Miklós Szócska*

Teachers: Dr. Ádám Zoltán Tamus (PhD, associate professor) Tamás Tóth (assistant lecturer) Zoltán Sándor (assistant lecturer) Péter Dombai (lecturer)

Administrator: Ms. Dóra Bacsa

Term: spring

The exercise of the subject in the in the realization of the aim of the education:

To introduce the students to the medical application of informatics, the characteristics of modern, integrated information systems with respect to quantitative aspects and to decision demands of the modern sciences.

The medical informatics leans on methods of mathematics, statistics and computer sciences and it also includes from the different engineering, management and informatics procedures.

Topics of the subject:

Topic of the theoretical lectures (broken down into weekly figures): 2×7 lectures = 14 lectures

- 1. Introduction: disruptive technologies in the healthcare
- 2. Medical data definitions, their collection and use on the individual and population level
- 3. Medical information on the Internet
- 4. Informatics background of the ambulance care mobilcommunication
- 5. The background of basic healthcare informatics integrated healthcare systems
- 6. The active aging lifestyle supported by informatics
- 7. Clinical evidences Scientific proofs and their data sources

Topic of the practical practices: 2×14 practices = 28 practices

1.	Application of MS Excel in the pharmacist practice	
	(functions, diagrams, advanced level)	4×2 lessons
2.	Application of MS Word in the pharmacist practice	2×2 lessons
3.	Execution of individual complex exercise	1×2 lessons
4.	Database management (PuPha (MS Access))	3×2 lessons
5.	Practice with data representation and data visualisation	
	(MS Powerpoint, Prezi)	3×2 lessons
6.	Execution of individual complex exercise	1×2 lessons

Requirements of participation of the lessons and the possibility of substitution of the absence:

According to rules of the Studies and Exam Code. Attendance at min. 75% of the classes (both lecture and practice). Max. 2 absence allowed from lectures. Max. 3 absence allowed from practices. Practices and lectures are evaluated separately!

The mode of the certificate in case of absence from the lessons and from the exams:

According to rules of the Studies and Exam Code. No certificate accepted.

The requirements of signature at the end of the term:

Suitable percentage of participation and solution of a computer test

Type of the exam:

Colloquium.

Exam requirements: Exam: solution of a computer test (five-grade valuation).

Mode of the application for the exam:

Via Neptun system.

Mode of the certification in case of absence from the exam: By a medical certification within three days.

List of lecture notes, course books, study-aids and literature which can be used to acquisition of the syllabus:

The educational materials are available at http://dei-cloud.semmelweis.hu Username and password is announced at the lecture/first practice.

LANGUAGE COURSES – Medical Terminology

Department of Languages for specific purposes

Lecturer: Dr. Fogarasi-Nuber Katalin

Subject name: Medical Terminology; Dental Medical Terminology

Code: FOKVNYE227_1A; FOKVNYE234_1A Credit value: 2 0

Thematics:

The aim of this course is to help students understand English, Latin and Greek medical and dental medical terms used in Hungary and worldwide. The material implies anatomical and clinical vocabulary adjusted to the schedule of the anatomy course. Terms for diagnoses and procedures are demonstrated by authentic medical documents. In addition, students get acquainted with the basic linguistic phenomena required for diagnostic skills.

Attendance and absence:

Attendance of lessons is obligatory. Students are allowed to have maximum 3 absences a semester. In case of more absences, the teacher may deny giving the signature. Students who miss a class, can make up for it (max. once a semester).

Certifying absence:

A medical certificate is required if the student has been absent more than 3 times.

Requirements:

midterms (week 7 and 13)

Topics of midterms: vocabulary, construction of Latin phrases, used in anatomy, pathology, pharmacology Students who fail a midterm have to retake it.

Semester signature:

Attendance of lessons is obligatory. Students are allowed to have maximum 3 absences a semester. In case of more absences, the teacher may deny giving the signature. Students who miss a class, can make up for it (max. once a semester). Students have to pass the two midterms.

Evaluation:

The evaluation of student performance is based on the marks for the 2 written papers as well as the active participation in classes.

0-50% = 1 51-60% = 2 61-75% = 3 76-89% = 490-100% = 5

Textbooks:

Teaching material

Andrea, Barta – Éva Katalin, Varga – Ákos, Zimonyi: Medical terminology for students of dentistry. Bp., 2019 (e-book, available at the Department for Languages for specific purposes).

Excerpts of the following optional textbooks (chapters containing the basic vocabulary of dentistry):

- 1. Donáth Tibor (szerk.): Anatómia szótár Lexicon Anatomiae Anatomical dictionary Anatomisches Wörterbuch. Budapest, Semmelweis Kiadó.
- 2. Paulsen F. Waschke J.: Sobotta Atlas of Human Anatomy. Munich-Jena.

Medical Terminology

Week	Topics
1.	Skills: Communication between medical professionals, distinguishing medical English and Latin-Greek medical terminology Vocabulary: parts of the human body, anatomical planes and directions Linguistic phenomena: pronunciation, alphabet, basic form and dictionary entry of medical nouns and adjectives
2.	Skills: Part-whole theory in anatomical nomenclature Vocabulary: general terms of skeletal system Linguistic phenomena: possessive phrases in anatomy and in elemental diagnostics
3.	Skills: Part-whole theory in diagnostics adjusted to anatomical studies Vocabulary: bones of the upper and lower extremities Linguistic phenomena: nouns and their adjectives in anatomy
4.	Skills: Attribution in anatomical nomenclature and maxillofacial diagnoses Vocabulary: bones and joints of skull, terms used in maxillofacial surgery Linguistic phenomena: nouns and their adjectives
5.	Skills: Attribution in dental and clinical diagnostics adjusted to anatomical studies Vocabulary: oral and nasal cavity, related clinical terms Linguistic phenomena: nouns and their adjectives in possessive phrases
6.	Skills: Understanding complex anatomical and diagnostical phrases Vocabulary: tooth names, parts of teeth Linguistic phenomena: nouns and their adjectives in possessive phrases of anatomy and elemental dental and clinical diagnostics
7.	1 st midterm Skills: Distinguishing types of medical and dental medical documentation Vocabulary: pectoral girdle Linguistic phenomena: common endings of anatomical and clinical terms
8.	Skills: Understanding plural forms in anatomy and in clinical documentation Vocabulary: bones, joints and muscles of hand and elbow, Greek and Latin endings of clinical terms Linguistic phenomena: plural phrases in anatomy
9.	Skills: Describing symptoms and locations in dental and clinical diagnoses Vocabulary: pelvic girdle Linguistic phenomena: possessive phrases of anatomy and dental diagnostics
10.	Skills: Understanding plural forms in clinical diagnostics Vocabulary: joints and muscles of lower extremity, Linguistic phenomena: complex phenomena of anatomical phrases and accident surgical diagnoses
11.	Skills: Describing common facial and dental lesions Vocabulary: muscles of neck and face Linguistic phenomena: complex phenomena of diagnostic phrases
12.	Revision
13.	2 nd midterm
14.	Evaluation of student performance; retake of the midterms

Dental Medical Terminology

Week	Topics
1.	Skills: Distinguishing pharmaceutical products Vocabulary: musculoskeletal system, composition, diseases and injuries Linguistic phenomena: gramma, litra, gutta; numerals
2.	Skills: Understanding medical prescriptions, factory products Vocabulary: circulatory system, composition, diseases Linguistic phenomena: Using Genitive and Accusative in prescriptions
3.	Skills: The use of anatomical and clinical word stems, pre-and suffixes Vocabulary: gastrointestinal tract, composition, symptoms, diseases Linguistic phenomena: splitting terms in pre-and suffixes and stems
4.	Skills: Understanding terms related to caries; ICD-10 in use Vocabulary: respiratory system, composition, significance, symptoms and diseases, terms used in conservative dentistry Linguistic phenomena: Prepositional phrases in diagnostics and prescriptions
5.	Skills: Use of terms pertaining to diseases of pulp and periapical tissues, phrases on surgical procedures due to a condition, conditions after a procedure Vocabulary: urinary passages, pelvis, ureter, and bladder, endodontic terms Linguistic phenomena: instructions in prescriptions (Imperative, passive and active voice)
6.	Skills: Use of terms related to the developmental disorders of dentition and craniofacial malformations, phrases on surgical procedures due to a condition, conditions after a procedure Vocabulary: urogenital apparatus, terms used in oral pathology Linguistic phenomena: instructions in prescriptions; packaging materials used in pharmacology
7.	Midterm test
8.	Skills: Understanding terms of drugs types, prescribing magistral products Vocabulary: terms of drug types and effects Linguistic phenomena: Greek and Latin roots of pharmacological terms, prepositional phrases in diagnostics and prescriptions
9.	Skills: Use of terms related to gingival, tongue and periodontal diseases, terms pertaining to sensory organs Vocabulary: anatomical and clinical terms of sensory organs in medical documentation, parodontological terms, terminology of maculopapular rash Linguistic phenomena: Analysis of metaphorical terms describing sensory organs
10.	Skills: Understanding terms related to salivary gland disorders, writing diagnoses and prescriptions Vocabulary: endocrinological terms, terms pertaining to endocrine and exocrine glands Linguistic phenomena: complex phenomena of medical terminology
11.	Skills: Understanding terms related to diseases of the lips and oral mucosa. Infectious diseases Vocabulary: nomenclature of microorganisms, terms describing forms of cheilitis and stomatitis Linguistic phenomena: Latin terms and constructions used in clinical and dental infectology
12.	Skills: Use of terms describing tumour diseases of the oral cavity, dental lesions Vocabulary: histopathological findings, attrition of teeth Linguistic phenomena: Latin-Greek terms combined in complex diagnoses
13.	Endterm test
14.	Evaluation of student performance; retake of the midterms

Introduction to the Hungarian Language, Hungarian for Dental Medical Purposes I.

Department of Languages for specific purposes

Lecturer: *Dr. Fogarasi-Nuber Katalin* Subject name: Introduction to Hungarian Language, Hungarian for Dental Medical Purposes I. Code: FOKONYE268_1A; FOKONYE269_1A Credit value: 0

Thematics:

The subject prepares students for the most important everyday communication situations in Hungary. Students get acquainted with the basics of the Hungarian language necessary for everyday communication. In the 2nd semester students expand their communication skills in language basics and become familiar with simpler terms used in conversations in the pharmacy and dental office and in the medical records of internal medicine.

Attendance and absence:

Attendance of lessons is obligatory. Students are allowed to have maximum 7 absences a semester. In case of more absences, the teacher may deny giving the signature. Students who miss a class, can make up for it (max. two times a semester).

Certifying absence:

A medical certificate is required if the student has been absent more than 7 times.

Requirements:

midterms (week 7 and 13), oral test (week 14) Topics of midterms: see detailed course description Students who fail a midterm or the oral test have to retake it.

Semester signature:

Attendance of lessons is obligatory. Students are allowed to have maximum 3 absences a semester. In case of more absences, the teacher may deny giving the signature. Students who miss a class, can make up for it (max. two times times a semester). Students have to pass the two midterms and the oral test.

Evaluation:

The evaluation of student performance is based on the marks for the 2 written midterms, the oral test as well as the active participation in classes. . Tests under 50% must be retaken. In the latter case, the mark fail will also be calculated towards the final mark. For the oral examination two teachers evaluate separately the grade of the student.

0-50% = 1 51-60% = 2 61-75% = 3 76-89% = 490-100% = 5

Curriculum and detailed course requirements

Term 1 Introduction to the Hungarian Language

Hungarian Language is a course for students in the first year without any previous exposure to Hungarian. Students will be introduced to the basic vocabulary of general Hungarian. Topics of the course are arranged into 14 teaching units (weeks), with special attention to the most important expressions. Each text is linked to vocabulary, grammar issues and tasks. The course consists of 56 hours (4 hours per week).

Week	Topics
1.	Hungarian alphabet, greeting "lenni" (to be) verb in present tense adjectives: hungry, thirsty, tired, sad, happy, (plus "lenni")
2.	nationalities: Hungarian, English, German, Iranian, Canadian, Russian, etc occupation names: eg. dentistry student, student, dentist, doctor, teacher, assistant, dental technician Verbs 1: introduction
3.	Verbs 2: to stand, sit, read, look, ask, talk, cook, relax, walk, dance, like, can, study their use in simple sentences (s. lesson 10)
4.	Verbs 3: -ik Verbs
5.	"szeretek olvasni, tudok táncolni, fogorvos szeretnék lenni," (I like to read, I can dance, I'd like to be a dentist) "tilos" -ni, "szabad" -ni (enni, inni, dohányozni) (forbidden to, allowed to) (eat, drink, smoke) When? parts of the day (s. greetings), days (s. lesson 12.) With who? to live, study
6.	Numbers + How much is it? How old are you? What time is it? Bus, tram line nr ("hányas"), which district / floor? ("hányadik") With what? (with metro,)
7.	Summary, 1st written test
8.	course book pp. 50-51, hot, cold, sensitive to hot, cold (What is it sensitive to?) Practicing verbs Where do you live?
9.	course book: lessons 7. and 8. "I'd like" + -t other foods and drinks Repetition from 8th week: Where do you live? (in detail, which district, floor)
10.	course book: lessons 9., 11. three-directedness in detail a.) library, school, restaurant, bank, cafe, shop, hospital, surgery, pharmacy b.) university, square, clinic What is the flat like?
11.	course book: lesson 13. practice: three–directedness (with pictures)
12.	course book: lessons 14., 16. What do we do from morning to night?
13.	Summary, 2nd test
14.	Oral test

Textbooks

L. Gyöngyösi – B. Hetesy: Jó reggelt kívánok!

A. Weidinger: Nyelvtan

Term 2 Hungarian for Dental Medical Purposes I.

Hungarian for Dental Medical Purposes I. is a course for students who completed the course Introduction to the Hungarian Language in the first term.

Course objectives are to acquire basic knowledge and skills in order to understand general medical communication, apply the acquired skills freely and creatively to minimize communication problems with Hungarians and use medical language correctly in practice.

Week	Topics
1.	Repetition, conversations (important verbs, questioning pronouns)
2.	Expression of ownership in Hungarian language; body parts. Adjectives: healthy, sick, weak, having a cold ("náthás), having fever ("lázas") Verbs: to cough, sneeze, stay, examine, take
3.	At the pharmacy 1.
4.	At the pharmacy 2. Since when? ("Mióta?"), How long? ("Mennyi ideje?")
5.	Medical record (Internal Medicine) 1. (patient records, family history, social history) Past tense
6.	Medical record (Internal Medicine) 2. (medications, allergies, surgeries, present complaints) speech understanding: coherent, longer text narrated in singular 3rd person.
7.	Summary, 1st written test
8.	Introduction to dental vocabulary, terms for teeth. Which tooth hurts? Where exactly does it hurt?
9.	Questions about pain 1., practice (pronunciation, grammatical explanations)
10.	Questions about pain 2, practice (pronunciation, grammatical explanations)
11.	Questions about pain 3., practice (discussing possible answers, practicing listening skill, targeted questions)
12.	Reading and discussing a sample dialogue Incomplete dialogue: writing or saying the dentist's sentences based upon the answers of the patient and writing or saying the patient's sentences based on the dentist's questions. Case history-taking (questions of the medical record->complaint, pain)
13.	Summary, 2 nd written test
14.	Oral test

Textbooks

L. Gyöngyösi – B. Hetesy: Jó napot kívánok!

Á. Silló: Szituációk

A. Marthy – Á. Végh: *Egészségére!*

A. Weidinger: Nyelvtan.

Syllabus of Physical Education

Department of Physical Education

Subject: Physical Education I.

Type of Subject: Compulsory Code of Subject: FOKOTSI007_1A Credit: 0 Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:

One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):

Reduced to bi-weekly scheduled double-classes (90min.).

I. St. year I. semester:

1 – 2 weeks:	General information
	Accident, fire and environmental education. The mid-year adoption requirements, the construction of classes and the
	presentation of the university recreational and sports opportunities for extra – curricular activities. The purpose and prac-
	tice of the warm-up, such as preventing sport injuries. Common warm-up. Free exercises.
3 – 4 weeks:	Stamina Development
	Preferably outdoors, on grass ground running, with the aim of developing good running and breathing techniques.
5 – 6 weeks:	Coordination enhancing exercises
	Various arm and leg exercises in place and in motion (walking, running, jumping, etc.)
7 – 8 week:	Balls skill development
	Introducing the most popular ball-games (football, basketball, handball, volleyball). Exercising technical and tactical ele-
	ments of the games.
9 – 10 weeks:	Strengthening exercises
	Hand-wait exercises in walking, running and jumping stationary.
11 – 12 weeks:	Posture improving exercises
	Core muscle strengthening exercises in various positions.
13 – 14 weeks:	Stretching exercises and it's relaxing effects
	The physiological background of stretching and it's practical role and importance in everyday activities.

Requirements to participate in the sessions and the potential for absences:

Active participation in sport classes.

The method of proof for the workshops and the exam absence:

The absence can not be proved, should make up for the lost lessons

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type):

Active participation in six classes approved by the staff.

How to prove absence regarding the exam:

Absence must be retaken!

Faculty of Dentistry

Subject: Physical Education II.

Type of Subject: Compulsory Code of Subject: FOKOTSI007_2A Credit: 0 Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:

One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):

Reduced to bi-weekly scheduled double-classes (90min.).

I. St. year II. semester:

1 – 2 weeks:	General information Accident, fire and environmental knowledge. Requirement for acceptance of the semester system, the structure of the classes and the presentation of the university recreational sports opportunities for extra -curricular activities. Theory and practical application of the warm-up as a sports injury risk significantly reducing factor. Common to the bench. Free exercises.
3 – 4 weeks:	Stamina Development
	Moderate – intensity continuous running load. Skipping exercises, practice free base form of gymnastic exercises.
5 – 6 weeks:	Coordination enhancing exercises
	The Floorball – learning the basic technical and tactical aspects of the game to improve hand-eye coordination.
7 – 8 week:	Strengthening exercises
	Using medicine-balls focusing on different muscle groups.
9 – 10 weeks:	Ball games
	Basketball – skill improving exercises (dribblings, throws, passes, etc.)
11 – 12 weeks:	Posture improving exercises
	Wall-bar exercises (pull-ups, crunches, etc)
13 – 14 weeks:	Stretching exercises
	Stretching exercises in pairs using sitting, standing, recumbent positions.

Requirements to participate in the sessions and the potential for absences:

Active participation in sport classes.

The method of proof for the workshops and the exam absence:

The absence can not be proved, should make up for the lost lessons.

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type): Active participation in six classes approved by the staff.

How to prove absence regarding the exam:

Absence must be retaken!

COMPULSORY SUMMER PRACTICE

Ι.

Dental Assistant Practice – 2 weeks (60' hours)

Week 1

- Introduction of the summer assistant practice, Fire and job sec. Rules, code of conduct

- Introduction of the Dental Clinical Training Centre, patients check in and patient pathway, dental departments in the Centre

- Lecture: General tasks of a dental assistant, the most important parts of their profession in the different departments.
- **Lecture:** The basic structure of the patient registration system.
- Visit of the main sterilization unit
- Lecture: Contamination, surface-, and instrument desinfection. Basic rules of sterilisation, and assistant tasks besides the dental chair Lecture: Infectioncontrol, documentation and guality control
- Lecture: Hand hygiene, prevention of the pinprick accidents
- Presentation of manual and machine driven mixing of impression materials, different types of material mixing practices: silicone, polyether, alginate.
- Lecture: Basic and auxilliary materials used in the dental office: Impression-, filling-, luting materials, endodontic desifenctants Mixing practice of phosphate-, carboxilate-, and glass ionomer cements Introduction of four-handed treatment
- Lecture: Basic rules of four-handed treatment and patient positions during the dental treatment

Week 2 (practicing the things learnt the previous week) Clinical assistant practice in the clinical Department

II.

Dental Laboratory Technical Practice (60 hours)

Topics of the practical sessions:

- 1. week: visiting of a dental laboratory
- Introduction of the laboratory, of its structure. Demonstration of the cast making, metall casting and porcelain veneering.
- Getting aquainted with the making of fixed and removable dental appliances.
- Presentation of a specific odontotechnological workphase, as a group assignement (8 minute ppt presentation).
- 2. week:
- Introduction to the training laboratory, handing out of the instruments, demonstration of the instruments
- Cast making
- Wax pattern making of and incisor and a praemolar tooth.
- Waxing up of an occlusal surface.
- Artificial teeth

Important note: Document certifying the completion of the practice must be handed in at registration! Registration to the next year is not allowed without it!

BASIC MODULE

New curriculum to be introduced Please, follow the updated version on the home page



Faculty of Dentistry 2nd year

STUDY PROGRAMME

BASIC MODULE

3rd semester				
subjects code	subjects	credit code	examination	prerequisites
compulsory	Microscopic Anatomy II.	C5L2P2	final	Macroscopic Anatomy II., Microscopic Anatomy I., Cell Biology
compulsory	Dental Biochemistry II.	C3L2P1	final	Dental Biochemistry I.
compulsory	Molecular Cell Biology II.	C3L3P0	final#	Dental Biochemistry I.
compulsory	Medical and Dental Physiology I.	C8L5P3.5	semi-final	Microscopic anatomy I., Macroscopic anatomy II., Biophysics II.
compulsory	Odontotechnology and Prosthodontics Preclinical Course I.	C3L1P2	practice mark	General Dental Materials, Macroscopic anatomy II.
compulsory	Hungarian for Dental Medical Purposes II.	C0L0P4	signature	Hungarian for Dental Medical Purposes I.
compulsory	Physical Education III.	C0L0P1	signature	
	Total Credit	21		

BASIC MODULE

4th semester				
subjects code	subjects	credit code	examination	prerequisites
compulsory	Medical and Dental Physiology II.	C8L5P3.5	final#	Medical and Dental Physiology I., Microscopic anatomy II., Molecular Cell Biology I.
compulsory	Odontotechnology and Prosthodontics Preclinical Course II.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I. Macroscopic anatomy II.
compulsory	Conservative Dentistry and Endodontics, Pre-clinical I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course I.
compulsory	Hungarian for Dental Medical Purposes II.	C4L0P4	signature	Hungarian for Dental Medical Purposes II.
compulsory	General Dental Preclinical Practice	C4L1P3	semi-final	General Dental Materials, Anatomy, Histology, Embryology II.
compulsory	Physical Education IV.	C0L0P1	signature	
	Total Credit	24		

Explanation

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

#The grade influences the qualification of the diploma.

15 credits should be gained from the elective subjects during the 5-year studies. C = Credit point, L = Lecture (hours/week), P = Practice (hours/week)

LIST OF TEXTBOOKS (The list may change!)

- 1 Textbook: Koeppen-Bruce M- Stanton- Bruce A: Berne & Levy Physiology (7th edition).
- 2 Practice book: Practices in Medical Physiology (Edited by: Péter Enyedi and Levente Kiss, 2017)
- 3 Harper's Illustrated Biochemistry (30th edition). ISBN-13: 978-0071825344
- 4 Wilson, Mansfield, Heath, Spence: Dental Technology and Materials for Students. Backwell Scientific Publications. ISBN 0-632-01763-5
- 5 A.Newbrun: Cariology Quintessence. ISBN 0867152052
- 6 C.M.Sturdevant: Operative Dentistry. Mosby ISBN 0-80166366-0
- 7 Walton-Torabinejad: Principle and Practice of Endodontics. W.B.Saunders Co. 2nd ed. 1996. ISBN 0-7216-4924-6
- 8 Herbert T. Shillingburg: Fundamentals of Fixed Prosthodontics Quintessence 4th ed. 2012. ISBN 931386500
- 9 R.M. Basker, J.C. Davenport: Prosthetic Treatment of the Edentulous Patient McMillan Press Ltd 5th ed. 2011. ISBN 978-1405192613

Recommended textbooks:

- 1 Monos E.: Physiology of the Venous systems. Bp. 1999.
- 2 Monos E: Hemodynamics: Biomechanics of the Blood Circulation. Semmelweis Univ. KODK. Bp. 2002.
- 3 Lodish et al.: Molecular Cell Biology. 3rd ed. Scientific American Books Inc. 1995.
- 4 Murray, Robert K.-Granner, Daryl K-Mayes, Peter A.-Rodwell, Victor W: Harper's Illustrated Biochemistry. 26th Ed. McGraw-Hill. ISBN 0-07-138901-6 (Online version: www.lib.sote.hu)
- 5 G.Nikiforuk: Understanding Dental Caries (1-2) Karger. ISBN 3-8055-3906-1(set)
- 6 Biochemistry Laboratory Manual. Ed.Gy.Szabados. Bp. Semmelweis Univ.
- 7 Field, James: PreClinical Dental Skills at a Glance, Blackwell Publishers (Wiley) ISBN-13: 9781118766675
- 8 Hermann Péter, Szentpétery András: Gnatológia (Semmelweis Kiadó, 2018)

MICROSCOPIC ANATOMY AND EMBRYOLOGY (I -) II.

Department of Anatomy, Histology & Embryology

Course Director: Dr. Andrea D. Székely

LEARNING OBJECTIVES

Aims of the lectures in embryology: Presentation of the early development from the differentiation of the germ cells to the formation of the human embryo (general embryology). Presentation of the development of the organs and functional systems parallel with the gross anatomical and histological lectures including the frequently occurring malformations.

Aims of the lectures in histology: Presentation of the cell, basic principles in cell biology (mitosis, cytoskeleton, cellular motility), detailed presentation of the basic (epithelial, connective, muscle and nervous) tissues. Complementing gross anatomy with a detailed presentation of the fine structure of organs, including the ultrastructural details together with the molecular background. Important chapters: basic tissues, viscera, central nervous system.

Aims of the practical sessions in the histology room: Facilitate the understanding of ground (epithelial, connective, muscle and nervous) tissues and the fine structure of the organs through the observation and interpretation of histological specimens.

LECTURES: 2 × 45 min in both semesters PRACTICAL CLASSES: I.: 3 × 45 min; II.: 2 × 45 min. ECTS CREDITS: Altogether 9 (I.: 5; II.: 4). MIDTERM TESTS: written (e-learning type)

ACCEPTENCE OF THE SEMESTER:

Active participation in lectures, and dissection room sessions is obligatory for every student. Students should attend at least 75% of the scheduled hours to gain a signature proving the validity of the semester. Absences are therefore limited in **25%**. Attendance will be recorded in the lectures and in the dissection room classes.

Midterm tests will have to be passed to gain acceptence of the semester. In case the midterm tests are unsuccessful, two (2) consecutive retake times are offered.

Diligence of students will be evaluated by the instructor and this mark will form part of the semifinal/final examination.

TYPE OF EXAMS: oral and written

I.: semifinal examination, II.: final exam

Semifinal and final examinations consist of written and oral parts

1. Written pretest (e-learning module – access to SeKA account is obligatory)

2. Oral test in Microscopic Anatomy: identification of structures on virtual histological specimens including relevent theoretical questions

LIST OF TEXTBOOKS

- 1. The Developing Human Clinically Oriented Embryology, 10th ed. by KL Moore, TVN Persaud and M Torchia, Saunders, 2015; ISBN 9780323313384
- 2. **Histology: A Text and Atlas:** With Correlated Cell and Molecular Biology; 7th Edition by MH Ross and W Pawlina ; Wolters Kluwer 2015, ISBN 9781451187427
- 3. Wheater's Functional Histology, A Text and Colour Atlas, 6th Edition by B Young, G O'Dowd and P Woodford Churchill Livingstone, Edinburgh, 2013, ISBN 9780702047473
- 4. **Oral Anatomy, Histology and Embryology,** 4th Edition, by B. Berkovitz Paperback with STUDENT CONSULT Online Access and e-book ISBN: 9780723434115 Copyright: 2009

Recommended textbooks:

- Langmann's Medical Embryology, 13th Edition by TW Sadler, Wolters Kluwer, ISBN 9781469897806, 2014
- Junqueira's Basic Histology: Text and Atlas; 13th Edition by Anthony Mescher, New York, McGraw-Hill Medical, 01/03/2013 ISBN13 978007178033
- Wheater's Functional Histology, A Text and Colour Atlas, 6th Edition by B Young, G O'Dowd and P Woodford ISBN 9780702047473, Churchill Livingstone, Edinburgh, 2013.
- Langmann's Medical Embryology, 13th Edition by TW Sadler, Wolters Kluwer, ISBN 9781469897806, 2014
- 9. **Illustrated Dental Embryology, Histology, and Anatomy**, 3rd Edition by Mary Bath-Balogh ISBN: 9781437717303, 2011.

COURSE DESCRIPTION

Microscopic Anatomy and Embryology II.

Lectures in Histology and Embryology; practical classes in Histology

Subject matter

Histology: Microscopical structure of the CNS and PNS (cerebulm, cerebellum, brain stem, spinal cord, ganglia) organs of special senses (apple of eye, inner ear), endocrine glands (pineal, pituitary, thyroid, suprarenal glands) skin and appendages, lymphatic system and the mammary gland.

Embryology: Development of the central and peripheral nervous systems, development of the organs of senses together with their malformations

Credits: 4

Prerequisites: Macroscopic Anatomy I-II. Microscopic Anatomy I. Cell Biology

Week	Lectures	Histology laboratory
Week 1	 Cellular components of lymphatic tissue. Thymus, tonsils, MALT Structure and circulation of lymph nodes and spleen 	Thymus, tonsils
Week 2	 Microscopy of the CNS – fine structure of the spinal cord Microscopy of the CNS – spinal reflexes, receptros, effectors, monosynaptic/ proprioceptive reflexes 	Lymph node, spleen
Week 3	 Microscopy of the CNS – Nociceptive (withdrawal) and autonomic reflex arcs Microscopy of the CNS – Fine structure of the cerebral cortex. Cortical fields, Brodmann areas 	Histology of the peripheral nervous system (peripheral nerve, motor end plate, spinal cord)
Week 4	 Microscopy of the CNS – Diencephalon, thalamic nuclei Microscopy of the CNS – Sensory systems, epicritical and protopathic pathways 	Histology of the central nervous system
Week 5	 Microscopy of the CNS – Motor systems, pyramidal tract Microscopy of the CNS – Structure and connections of the basal ganglia. Motor pathways arising from the brain stem 	Endocrine system
Week 6	 Microscopy of the CNS – Microscopy of the cerebellum, pathways. Functional considerations Microscopy of the CNS – Hypothalamus, the hypothalamo-hypophysial system. 	1. Midterm test (Histological slides of weeks 1-5)
Week 7	 Microscopy of the CNS – Brainstem monoaminergic systems Microscopy of the CNS – Limbic system 	Microscopy of the CNS - consultation
Week 8	 Development of the neural tube. Cranio-caudal and dorso-ventral differentiation. Differentiation of the brain vesicles 	Microscopy of the CNS - consultation
Week 9	17. Formation and derivatives of the neural crest and placode ectoderm18. Development of the skull	2. Midterm test Microscopy of the CNS Development of the nervous system
Week 10	 Development of the vertebral column, limb development Skin and appendages. Mammary gland 	Histology of palm skin, scalp skin Mammary gland
Week 11	21. Fibrous and vascular coats of the eyeball. Lens, chambers of the eye, vitreous body, accommodation22. Inner coat of the eyeball, retina	Organs of special senses I. Eyeball, retina, lacrimal gland
Week 12	23. Optic nerve, visual pathway, visual cortex, disorders. Visual reflexes 24. Middle ear - tympanic cavity, tympanic membrane, auditory ossicles	Organs of special senses II. Organ of Corti
Week 13	25. Bony and membranous labyrinth. Vestibular system 26. Spiral organ of Corti. Auditory pathway, auditory cortex	Revision
Week 14	27. Microscopy of the CNS – Olfactory and gustatory systems 28. Histology revision	Histology test

TOPICS OF THE FINAL EXAMINATION Topic list of the semifinal examination (see there)

+

Topic list of the present semester (see below)

Lymphatic organs

- Histological structure of lymph nodes
- Spleen (fine structure and circulation)
- Thymus
- Tonsils, MALT

Development of the nervous system and organs of special senses

- Development and primary differentiation of the neural tube
- Development of brain vesicles
- Development of the peropheral nervous system (neural crest, placodes)
- Development of the organ of vision
- Development of the organ of hearing&equilibrium

Development of the locomotor system

- Membranous and cartilaginous neurocranium and viscerocranium
- Development of the limbs and vertebral column
- Development of the muscular system

Neurohistology

- Histology of the neurons developing from the neural tube
- Glial cells
- Histology of the neurons and supporting cells developing from the neural crest
- Fine structure of peripheral nerves
- Receptors and effectors
- Interneuronal synapses

Microscopy of the central nervous system

- Fine structure (microscopy) of the spinal cord
- Proprioceptive reflexes
- Nociceptive reflexes
- Autonomic reflexes
- Fine structure of the medulla oblongata
- Fine structure of the pons
- Fine structure of the midbrain
- Classification of cranial nerve nuclei
- Tracts of the brain stem
- Reticular formation, monoaminergic systems
- Fine structure of the cerebellum
- Cerebellar afferents and efferents
- Fine structure of the thalamus
- Hypothalamo-hypophyseal system
- Fine structure of the basal ganglia
- · Fine structure of the cerebral cortex, cortical fields
- Tracts of the protopathic sensibility (anterolateral system)
- Tracts of the epicritic sensibility (posterior funiculus/medial lemniscus)

- Corticospinal tract (pyramidal tract)
- Extrapyramidal system
- Limbic system (nuclei and tracts)

Endocrine organs

- Gross and microscopical anatomy of the pituitary gland; development of the posterior lobe
- Blood supply, histology and development of the anterior and
- intermediate lobes of the pituitary gland
- Microscopical anatomy of the pineal gland
- Microscopical anatomy and the development of the thyroid gland
- Microscopical anatomy and the development of the parathyroid gland
- Microscopical anatomy and the development of the suprarenal gland
- Histology of the islands of Langerhans

Organs of special senses

- Microscopical structure of the skin (scalp and palm)
- Histology of the mammary gland (lactating and non-lactating)
- Coats of the eyeball
- Chambers of the eye, vitreous body
- Lens, accomodation
- Visual pathway, visual reflexes
- External ear, tympanic membrane. Tympanic cavity, auditory tube, hearing ossicles.
- Organ of Corti. Auditory pathway
- Vestibular system
- Bony and membranous labyrinth
- Cochlea and cochlear duct
- Organs of olfaction and taste

DENTAL BIOCHEMISTRY II.

Department of Medical Biochemistry

Credits: 3 Total number of hours: 42; lectures (hours): 28; practices (hours): 14 Type of the course: obligatory Academic year: 2020/2021 Code of the course Course Director: Dr. Kraszimir Kolev Contact details: H-1094 Budapest, Tűzoltó u. 37-47. tel: +36-1-459-1500#60010 email: Kolev.Krasimir@med.semmelweis-univ.hu Position: Professor Date of habilitation: 2008 Ref.: 266

Aim of the course:

The aim of the course is to comprehensively describe metabolic processes in the human body, from a medical point of view. The main theme of the semester is to elaborate further on carbohydrate and lipid metabolism commenced in Medical Biochemistry I, elaborate on amino acid and nucleotide metabolism, examine more thoroughly intermediary metabolism including the integration of processes throughout the organs and the human body as a whole. Furthermore, this course aims to afford to medical students the skills of being able to interpret complex physiological processes in the human body at a molecular level. During practices they discuss rapidly developing, promising areas of medicine ("tomorrow's medicine"). The medical biochemical orientation of the course is based on the presentation of molecular bases of diseases that pose serious public health problems (cardiovascular, neurodegenerative, cancer states), with particular emphasis on discussing potential molecular targets of therapy.

Location of the course (lecture hall, practice room, etc.):

Premises located in the Basic Medical Sciences building (laboratory rooms located on the first floor and lecture halls located on the ground floor).

Upon the successful completion of the curriculum, the student should be able to:

Identify biochemical structures, know and understand the reactions in which medically important molecules participate; know and understand inter-organ biochemical processes; know and understand integrated metabolic functions of the human body. Overall, such knowledge is essential for understanding physiological and pathological processes and, consequently, for making sound professional decisions.

Prerequisite (s) for admission to the course: Medical Biochemistry I.

Terms and Conditions for Starting Student Course (Minimum, Maximum), Student Selection Method: Not applicable for compulsory subjects.

How to apply for the course: Application is through the Neptun online system.

The course in thematic details:

Lectures: weekly 1x90 min (2 hours) Lecturers: Dr. Bartha Katalin (BK), Dr. Ambrus Attila (AA), Dr. Komorowicz Erzsébet (KE), Dr. Törőcsik Beáta (TB)

Week	Lectures: weekly 1x90 min (2 hours)	Practices (P): 2 hours every other week
1	Nitrogen balance. Digestion of proteins. Function of proteases, their regulation. Absorption of amino acids, amino acid transporters. (BK)	P: Determiantion of transaminases and creatine kianse activity
2	Catabolism of amino acids. Elimination of ammonia, reactions and regulation of ornithine cycle. Degradation of amino acids: fate of their carbon skeleton. The role of vitamins in amino acid metabolism. (BK)	P: Determiantion of transaminases and creatine kianse activity
3	Biosynthesis and degradation of heme. Iron homeostasis (BK)	P: Vitamin B12 deficiency and methylmalonic acidemias
4	Structure and function of nucleotides. The fate of nucleotides obtained through diet. Formation and elimination of uric acid; its metabolic role in humans. Synthesis and degradation of purine and pyrimidine nucleotides. Effects of cytostatic drugs on nucleotide metabolism. (AA)	P: Vitamin B12 deficiency and methylmalonic acidemias
5	Integration of metabolism. Metabolism of red blood cells. Red blood cell enzymopathies. Kidney metabolism, and dependence on fasting and acidosis. Metabolism of muscle and heart. Comparison of kidney and liver gluconeogenesis. Metabolic adaptation to physical effort. (TB)	P: Acute and chronic liver disease
6	The starvation-feeding cycle and its regulation. Regulation of hepatocyte metabolism in starvation. (TB)	P: Acute and chronic liver disease
7	General overview of blood clot formation and elimination. Fibrinogen and fibrin. Prothrombin activation and regulation of thrombin activity. Triggers of blood clotting, amplification of the initiation. (TB)	P: Tumor metabolism
8	Fibrinolysis. Activation of plasminogen. Inhibitors of plasmin. (KE)	P: Tumor metabolism
9	Inhibitors of blood coagulation and negative feedback mechanisms. (KE)	P: Gut-brain interaction through metabolites of the intestinal flora
10	Cellular elements of the haemostatic system. Platelets and von Willebrand factor. Neutrophils and endothelial cells in haemostasis. Hemodynamic and biochemical interactions in haemostasis. The role of endothelial dysfunction in atherosclerosis. LDL oxidation and pattern-recognition receptors (TLR, scavenger receptors). (KE)	P: Gut-brain interaction through metabolites of the intestinal flora
11	Membrane transporters. Na+/K+ ATPase isoforms. (TB)	P: Molecular background of congenital and acquired thrombophilias.
12	Chemical neurotransmission. Cholinergic neurotransmission. Biosynthesis of acetylcholine. receptors, acetylcholine esterase. Molecular mechanism of exocytosis. (TB)	P: Molecular background of congenital and acquired thrombophilias.
13	Noradrenergic neurotransmission. Synthesis and metabolism of norepinephrine. Synaptic uptake. Adrenergic receptors. Molecular mechanism of epinephrine and norepinephrine effects on various organs. (TB)	P: The relationship between metabolism and the functions of the nervous system
14	Glutamatergic and GABA-ergic neurotransmission. (TB)	The relationship between metabolism and the functions of the nervous system

Potential overlap(s) with other topics: none Requirement for special study: not applicable

Policy regarding attending practices; policy regarding absences:

Practices are mandatory. It is not possible to make up for missed practices. In case of absences amounting to more than 2 practices, the semester is not acknowledged. Arriving to a practice with a delay of more than 10 minutes is considered an absence.

Means of assessing the students' progress during the semester:

Two midterms take place, one in the 7th week and one in the 12th week. The midterms occur during the practice or seminar and each consists of 65 MCQs that must be answered within 30 minutes. Grading system is as follows:

60-65: grade 5 (excellent) 49-59: grade 4 (good) 41- 48: grade 3 (satisfactory) 33-40: grade 2 (pass) If 32 and below, then the grade of the midterm is 'fail'.

Requirement for acknowledging the semester, and for allowing the student to take the final exam: Attendance of at least 75 % of the practical classes.

Exam Type: Final. Form: written test exam, based on material of the official textbook, lectures and practices published at the department's Moodle e-learning system (https://itc.semmelweis.hu/moo-dle/).

Exam Requirements: The material for the written test exam is the material of the lectures and practices in the subject, with the corresponding textbook chapters.

Types and modes of grading:

The competition is held on week 13, and the structure of the competition is the same as that of the final.

The grade of the final exam is based on:

Written test:

This test consists of multiple choice questions (MCQs) from which max 65 points can be obtained.

Grade calculation of the semi-final exam:

60–65: grade 5 (excellent) 49–59: grade 4 (good) 41–48: grade 3 (satisfactory) 33–40: grade 2 (pass)

If 32 and below, then the grade of the semi-final exam is 'fail'. The cumulative mark of both midterms is added to the grade of the final exam.

How to apply for the exam: The exam dates are announced on the 12th week of the semester. We provide at least one exam date each week. Applications are made in the Neptun system in accordance with the University Study and Exam Rules.

Opportunities to repeat the exam: A retake is possible on the closest announced exam date at least one day after an unsuccessful exam.

Printed, electronic and online notes, textbooks, tutorials, and literature for online learning (html for online material):

Harper's Biochemistry (30th edition, or latest) Online material published in the department's Moodle e-learning system (https://itc.semmelweis.hu/moodle/).

MOLECULAR CELL BIOLOGY II.

Department of Medical Chemistry, Molecularbiology and Pathobiochemistry Detailed information on the subject is available on our website under http://semmelweis.hu/orvosi-vegytan/en/students/molcellbiol1/

MEDICAL AND DENTAL PHYSIOLOGY

Department of Physiology

Credit Points: 8 (I. semester) + 8 (II. semester) Head of the Department: *Dr. László Hunyady, Full Professor* Course Director: *Dr. Péter Várnai, Full Professor* Tutor: *Dr. András Balla*

Aim of Medical and Dental Physiology course:

The goal of Medical and Dental Physiology course is to give the students the understanding of the concepts and principles of medical and dental physiology. The lectures provide the information base while the seminars and practices provide the student with an opportunity to assimilate and integrate the material. Appropriate clinical perspectives are presented throughout the course.

First semester

- 1. Introduction, body fluids. Functions of cellular membranes, transport across membranes. Transepithelial transports.
- 2. Signal transduction: receptors, G proteins, second messengers. Cellular calcium metabolism, receptors of growth factors and cytokines. Membrane trafficking and vesicular transport.
- 3. Ion channels and resting membrane potential. Action potential. Physiology of nerve cells, synaptic transmission in the central nervous system.
- 4. Neuromuscular junction and physiology of skeletal muscle. Autonomic neurotransmitters and physiology of smooth muscle.
- 5. Physiology of the blood.
- 6. Physiology of the heart 1.: origin and spread of cardiac excitation Cardiac cycle. Regulation of cardiac output.
- 7. Electrocardiography (ECG). Physiology of blood circulation: introduction.
- 8. Hemodynamics, systemic circulation. Microcirculation.
- 9. Venous circulation and lymph flow. Local control of circulation. Reflex control of circulation.
- 10. Circulation of blood in the brain and coronary circulation. Splanchnic circulation, circulation of skin and skeletal muscle.
- 11. Respiration: pulmonary ventilation. Gas exchange in the lungs. Pulmonary circulation, ventilation-perfusion relationship.
- 12. Gas transport, hypoxias. Regulation of respiration. Adaptation of cardiovascular and respiratory system.
- 13. Renal function: renal circulation, glomerular filtration. Tubular functions. Concentration, dilution.
- 14. Regulation of body fluids and osmotic concentration. Introduction to acid-base balance. Acid-base balance: role of lungs and kidneys.

Second semester

- 1. General principles of regulation in the gastrointestinal tract. Motor functions of the gastrointestinal tract.
- 2. Secretory functions of the gastrointestinal tract. Digestion and absorption of food.
- 3. Endocrine regulations. The hypothalamo-adenohypophyseal system; growth hormone, somatomedins.
- 4. Function of the adrenal cortex. Function of the thyroid gland. Energy balance, quality and quantity requirement of food.
- 5. Hormonal regulation of intermedier metabolism.
- Calcium metabolism, bone tissue, growth. Function of the reproductive system: endocrinology of the sexual differentiation and development.
- 7. Function of the reproductive system: male sexual function; female sexual function; endocrinology of pregnancy, parturition, and lactation.
- 8. Introduction to neurophysiology. Physiology of nerve & glia cells.
- 9. Sensory functions.
- 10. Physiology of hearing and equilibrium.
- 11. Physiology of vision.
- 12. Motor functions.
- 13. Integration of autonomic responses.
- 14. Electroencephalogram (EEG); sleep phenomena. Learning and memory. Regulation of behavioral mechanisms, motivation; emotion.

Practices, I. semester:

- Typing of Blood Groups, Blood Coagulation Test
- Blood cell counting, determination of hemoglobin concentration and hematocrit.
- · Leukocyte differential count on peripheral blood smear
- Recording and analyzing the human ECG
- Blood pressure measurement in humans
- Computer simulation: Skeletal and smooth muscle
- Evaluation of acid-base parameters with the Siggaard-Andersen nomogram

Practices, II. semester:

- Human pulmonary function tests
- Smooth muscle of rabbit small intestine
- Oral glucose tolerance test (OGTT)
- Electrooculography (EOG) and investigation of the vestibular system
- Reflex function
- Computer simulation: Studies on circulatory reactions of a virtual rat
- Computer simulation: Neuromuscular junction

Attendance on practices and lectures, replacement in case of missed sessions:

The lecture hours per week are 5; the practice hours per week are 3.5. The attendance of a minimum of 75% of practices (including "seminars") is necessary for the end-term signature. Students must write a lab report for each practice using the Practical Book. The Practical Book should be signed by the teacher not later than one week after the practice. Participation in the practices is compulsory. No more than three absences from practices are allowed for any reason; otherwise the semester will not be credited. There are no extra practices and missed practices cannot be retaken. Absence from the exam must be certified at the Head of the Department or Course Director within 3 working days.

Consequences of absence from sessions and exams:

No more than three absences from practices are allowed for any reason; otherwise the semester will not be credited. There are no extra practices and missed practices cannot be retaken. Failing to certify absence from an exam causes registering "absence" = "nem jelent meg" in the NEPTUN system.

Method of checking acquired knowledge during the study period:

The knowledge of the students is tested in a written form on a weekly base. The written short tests cover the material of lectures of the previous week.

Semi-final and final exams:

In the examination period the students have to give semi-final exam in the first semester and final exam in the second semester.

Requirements of the exam:

Semi-final exam: material of the Medical and Dental Physiology I.

Final exam: material of the Medical and Dental Physiology I. and Medical and Dental Physiology II.

The semi-final exam is oral exam. The oral exam consists of two theoretical questions (I-II). The overall result of the oral exam is based on the two theoretical grades; a failed (1) theoretical question results in an overall failed (1) exam.

Lists of the theoretical questions can be found in the webpage of the Department of Physiology. The following rules will be enforced during the exams: electronic devices must be kept in the baggage; baggage and coats should be placed next to the wall of the exam place; any form of communication is disallowed; students not complying with these rules will be disqualified immediately.

Grading of courses:

Semi-final exam: The students need to bring ID card and the laboratory report book to participate in the exam. The oral exam consists of two theoretical questions (I-II). Grouping of questions, the topics of the semi-final exam can be found in the webpage of the Department of Physiology.

I: 1 and 2 topics of the semifinal exam II: 3, 4 and 5 topics of the semifinal exam The overall result of the oral exam is based on the two theoretical grades but a failed (1) theoretical question results in an overall failed (1) exam. The mathematical average of two oral exam grades gives the grade of the semi-final exam:

The following rules will be enforced during the exam: electronic devices must be kept in the baggage; baggage and coats should be placed next to the wall of the lecture halls or the practice rooms; any form of communication is disallowed; students not complying with these rules will be disqualified immediately.

Failing to certify absence causes registering "absence" = "nem jelent meg" in the NEPTUN system.

Final exam: The final exam consists of a written and an oral part. The written and oral part of the final exam starts at 8:45 by showing up in the selected exam place. Your exam place and examiners are announced in written form at 8:30 (attached to the front door of the corridor of the Physiology Practice Rooms). The students need to bring ID card and the laboratory report book to participate in the exam. The written part consists of 30 questions and takes 45 minutes. Grading of the written part:

- 0-14 correct answers = 1
- 15-18 correct answers = 2
- 19-22 correct answers = 3
- 23-26 correct answers = 4
- 27-30 correct answers = 5

The oral exam starts at 9:45 and consists of two theoretical questions (I-II). Grouping of questions, the topics of the final exam can be found in http://semmelweis.hu/elettan/teaching/second-semester.

I: 1, 2, 3, 4 and 5 topics of the final exam

II: 6, 7 and 8 topics of the final exam

The overall grade of the final exam is the mean of three (written exam grade, two oral exam grades), but a failed (1) theoretical question results in an overall failed (1) exam.

Excellent (5):	4.51 - 5.00
Good (4):	3.51 - 4.50
Satisfactory (3):	2.51 - 3.50
Pass (2):	2.00 - 2.50
Fail (1):	below 2.00 or in case of failed (1) theoretical question.

The following rules will be enforced during the exam: electronic devices must be kept in the baggage; baggage and coats should be placed next to the wall of the lecture halls or the practice rooms; any form of communication is disallowed; students not complying with these rules will be disqualified immediately.

Failing to certify absence causes registering "absence" = "nem jelent meg" in the NEPTUN system.

Exam registration:

Registration for the exam must be recorded through the NEPTUN system.

Rules of repeating exams:

Repetition of the exam is possible at least three days after the unsuccessful trial.

Requirements of the exams:

Semi-final exam: material of the Medical and Dental Physiology I. Final exam: material of the Medical and Dental Physiology I. and Medical and Dental Physiology II.

List of textbooks:

Textbook: Koeppen-Bruce M- Stanton- Bruce A: Berne & Levy Physiology (7th edition). 2017. ISBN: 9780323393942 **Practice book:** Practices in Medical Physiology (Edited by: Péter Enyedi and Levente Kiss). 2017. ISBN: 9789633314159.
CONSERVATIVE DENTISTRY AND ENDODONTICS, PRE-CLINICAL I.

Department of Conservative Dentistry

Head of Department: Dr. Zsuzsanna Tóth D.M.D., Ph.D.

Second Semester

Phantom-course (Pre-clinical laboratory course)

Practical course grade.

<i>Lecture</i> (1 hour/week)	<i>Manual training</i> (3 hours per week)
Introduction to operative dentistry	Introduction to practice: general
	Department's policy. Rules of the house.
	Distribution of instruments.
	Handing over of instruments.
Clinical dental anatomy, histology.	Discussion of drilling methods
Occlusion	Drilling practice I.
Cariology: the lesion (macromorphology	Drilling practice II.
enamel caries, dentinal caries, advanced	
carious lesion). Fundamentals in cavity	
preparation (nomenclature/caries, cavity	
from. cavity classification/)	
Steps in cavity preparation by Black.	Drilling practice III. Practical exam
Cutting instruments and mechanical and	Grinding of extracted carious
biological considerations.	human teeth
Class I. Facial Pit Cavity preparation for	Black's class I. and V. cavity
amalgam. Class I. Occlusal Cavity	preparation for plastic restoration.
Preparation for Amalgam. Class VI. Cavity	
preparation for Amalgam.	
Class V. Facial Cavity preparation for	Preparation of class II. Cavities (I.)
amalgam and Tooth-Colored Material.	
Class II. Cavity preparation for	Preparation of class II. cavities. (II.)
Amalgam.	
Class III. Cavity preparation for Tooth-	Preparation of class III. and IV. cavities
Colored Material.	
Class IV. Disto-Incisal Cavity Preparation	Cavity preparation by modified Black's
for Tooth-Colored Material.	principles. Practical exam
Class II. Cavity preparation for Tooth	Class I. and V. cavity preparation for inlay
Colored Material. Tunnel preparations for	
proximal Restorations.	
Class II. Cavity preparations for Gold	Class II. cavity preparation for metal inlay
(metal) inlay and gold onlay restaurations.	
Class I, IV, V, VI. Cavity preparation for	Class II. inlay cavity preparation.
gold inlay restaurations	Due et est esteres
Cavity preparations for Composit resin and	Practical exam
Din retained restorations (type of pins	Complete of the works
Indications and contraindications)	complete of the works.
Preparation for Porcelain Veneers	
<i>Note:</i> The maximum number of absences	in a semester is 3.
During the semester 3 midterm exan	ninations should be passed.

GENERAL DENTAL PRECLINICAL PRACTICE

Department of General Dental Preclinical Practice

Head: Prof. Dr. Krisztina Márton D.M.D., Ph.D.

Second Semester

Lectures (1 hour/week) Practices (3 hours/week)

The **Department of General Dental Preclinical Practice** is responsible for the preparation of dental students for the practical stages of the clinical practice requiring high precision and excellent manual skills. The aim of this special education is to provide the students with a professional preclinical conservative dentistry, prosthodontics, periodontology, oral surgery and orthodontics manual and theoretical training, which will be used in the clinical treatment procedures. It consists of the simulation of the clinical stages on phantom heads, but furthermore students also have the opportunity to study the basics of minimal- and micro invasive dentistry and the most important rules of infection control.

Theoretical lessons:

- 1. Oral diseases.
- 2. Establishment of the Dental Clinic. Instrumentation of the Dental Office.
- 3. Dentistry in the Field of the Life Sciences. Role of Dental Science in Human Medicine. The Dental Team.
- 4. Infection Control. Cross Infection.
- 5. Infection Control. Disinfection and Sterilization in Dentistry.
- 6. Organization of the Dental Team. Fluid Control, Four-handed Dental Treatment.
- 7. Macroscopic Anatomy of the Teeth, Guiding Planes and Nomenclature.
- 8. Preparation Techniques. Restorative Dentistry and Endodontics.
- 9. Preparation Techniques. Prosthodontics.
- 10. Operative Techniques. Oral Surgery.
- 11. Operative Techniques. Periodontology.
- 12. Operative Techniques. Paedodontics and Orthodontics.
- 13. Minimal Invasive and Micro Invasive Techniques in Dentistry.
- 14. Consultation.

Recommended textbook:

Field, James: PreClinical Dental Skills at a Glance, Blackwell Publishers (Wiley) ISBN13: 9781118766675

INTRODUCTION TO ODONTOTECHNOLOGY AND PROSTHODONTICS PRE-CLINICAL COURSE I-II.

Department of Prosthodontics

Head of Department: Prof. Dr. Péter Hermann Lecturer: Dr. Ida Barbara Kispélyi

Since the creation of an independent training, the Stomatological curriculum has put great emphasis on a preclinical foundation course, the Prosthodontics Propaedeutic course, the syllabus of which has also included mastery of dental techniques, indispensable for a dentist. Until the visit of the EU Committee in the late 90s, the course was structured in such a manner that in the first and second semester of the second academic year students had 3 hours of practices and one hour of lecture per week; during the first semester treatment of complete edentolousness was simulated through fabrication of complete dentures, while in the second semester students prepared 3-unit bridges and single crowns on partial edentolous moulages. During both semesters, medical and dental laboratory steps followed each other just like in real life, and students performed alternatively medical work phases and dental laboratory tasks, for one week each. After the proposal of the EU Committee on the amendment of several courses (including the Prosthodontics Preclinical course), dental laboratory and medical work phases had to be separated sharply, while an independent Odontotechnology course had to be included in the curriculum. According to the request, this Odontotechnology course was built into the theoretical module in order to provide the earliest possible recognition and consolidation of the chosen profession.

Taken more than ten years of experience into account, while maintaining the values that undoubtedly resulted from these changes, we wish to modify those controversial points that in our opinion can be still improved. A sharp separation of the two disciplines (dental techniques and dentistry) rather confuses students, thus they fail to get a grip of the process, and it is the essence that is lost, since these processes are based each on the other. The essence of the new syllabus is the integration of the two courses that are currently taught separately, and thus new and crucial areas (not taught so far) can be emphasized, with concomitant reduction of teaching hours and credit points.

The curriculum of the course concludes with a comprehensive examination at the end of the first semester of the third academic year.

Timing of the Odontotechnology and Prosthodontics Preclinical course:

3rd, 4th and 5th Semester

Preliminary studies requested for the course of Odontotechnology and Prosthodontics Preclinical course module I: General Dental Material Science, Macroscopic Anatomy II.

Preliminary studies requested for the course of Odontotechnology and Prosthodontics preclinical course module II: Odontotechnology and Prosthodontics preclinical course module I, Macroscopic Anatomy II.

Preliminary studies requested for the course of Odontotechnology and Prosthodontics Preclinical course module III:

Odontotechnology and Prosthodontics Preclinical course module II, Conservative Dentistry and Endodontics, Preclinical I, Molecular Cell Biology II.

Odontotechology and Prosthodontics preclinical course I.

Topics of the lectures:

- 1. Primary impression, primary cast
- 2. Special trays
- 3. Labside and chairside steps of making complete denture
- 4. Types of casts, casting as a kind of information transfer
- 5. Secondary impression
- 6. The occlusal rim, centric occlusion
- 7. Articulators, jaw registration
- 8. Fabrication of the trial denture, and the try in procedure
- 9. Fitting of dentures, Short time and long time recall procedures.
- 10. Types of the prostetic appliances
- 11. Gnatological aspects in making complete denture
- 12. Partial edentulousness, and partial dentures (RPD)
- 13. Labside and chairside steps of making partial and complex denture
- 14. Consultation

Topics of the Practices:

- 1. Introduction, Instrument Delivery
- 2. Impression Taking for Maxillary and Mandibular Complete Dentures
- 3. Impression Taking for Maxillary and Mandibular Complete Dentures
- 4. Outlining The Borders of The Special Trays,
- 5. Fabrication of Special Trays
- 6. Secondary Impressions. Fabrication of Maxillary and Mandibular Occlusal Rims
- 7. Fabrication of Maxillary and Mandibular Occlusal Rims
- 8. Jaw Registration
- 9. Mounting of Articulators
- 10. Setting Up Teeth
- 11. Setting Up Teeth
- 12. Setting Up Teeth
- 13. Processing Dentures, Insertion
- 14. Consultation

Odontotechnology and Prosthodontics Preclinical II.

Topic of the lectures (weekly, numbered):

- 1. Types of the fixed dental restaurations
- 2. Labside and chairside steps of making fixed appliances
- 3. Fundamentals of tooth preparation, periodontal aspects
- 4. Impression taking for fix appliances, sectional models, and dies
- 5. Fabrication of wax pattern, casting of fix appliances , trial of the metal framework of the fix appliances
- 6. Dowel core restorations
- 7. Tooth Shade Determination
- 8. Temporary Dental Restaurations
- 9. Veneering of fixed appliances
- 10. Metal free fixed restauration, CAD/CAM technology
- 11. History of implant dentures, labside and chairside steps
- 12. Explanation of different kind of implant systems. Impression methods of implant cases
- 13. Dental cements
- 14. Consultation

Practical sessions

- 1. Handing out of the instruments introduction
- 2. Tooth preparation 24 and 27 for fixed partial denture
- 3. Tooth preparation 24 and 27 for fixed partial denture
- 4. Tooth preparation 24 and 27 for fixed partial denture
- 5. Tooth preparation 24 and 27 for fixed partial denture
- 6. Two-phase impression
- 7. Antagonistic impression, bite-registration
- 8. Preparation of the sectional model, mounting of the average value articulator
- 9. Waxing up of the four-unit bridge: Adapta deep drawing
- 10. Wax pattern fabrication of the four-unit bridge: outlining and shaping of the occlusal surface
- 11. Wax pattern fabrication of the four-unit bridge
- 12. Spruing of the wax pattern, preparation for investing
- 13. Wax pattern fabrication for a four unit porcelain fused to metal four unit bridge
- 14. Instrument collection, consultation

ELECTIVE SUBJECT for Dentistry 2nd year

Title: CULTURE IN MEDICINE, CULTURE OF MEDICINE – Popular Themes of Current Clinically Applied Medical Anthropology

Institute of Behavioral Sciences

Course Director: Prof. Dr. Ferenc Túry Lecturer: Dr. László Lajtai

Prerequisite: Dental Psychology

Second Semester

Weekly topics of the seminars:

- 1. "We have never been modern?" An initiation to critical approaches to evidence base in medicine How to respond? / Discussion of the semester: Requirements and timescale.
- 2. Alternatives 1: Narratives and explanatory models Confusions and the lay perspective
- 3. Alternatives 2: Complementary medicine Competition at our doorstep
- 4. Alternatives 3: Healing and folk medicine Wisdom or beliefs?
- 5. Alternatives 4: Biomedicine for anthropology, or the twist of perspectives
- 6. Challenges 1: Migrants, refugees and minorities
- Challenges 2: Reproduction, sex, age, death and other trends in "western" medicalization
- 8. Challenges 3: Nutrition and taboos biopower and social body
- 9. Challenges 4: Placebo, pharmaceuticals and the rule of pharmaceutical industry
- 10. Challenges 5: Public medicine, private medicine and the reproduction of inequities
- 11. Favourite themes 1: Alcohol, drug, and AIDS at crossroads of culture and law
- 12. Favourite themes 2: Shrinks and madness CBS and the mirage of the normal
- 13. Fieldworks: Discussion 1.
- 14. Fieldworks: Discussion 2. Recapitulation, feedback and evaluation.

LANGUAGE COURSE

Department of Languages for specific purposes

Term 3 Hungarian for Dental Medical Purposes II.

Hungarian for Dental Medical Purposes II. is a course for students who completed the course Hungarian for Dental Medical Purposes I. Course objectives are to extend the range of basic knowledge and skills, as well as to improve the ability to use what has been learnt so far. Students are introduced to dental language to ensure that they use it correctly in practice.

Attendance and absence:

Attendance of lessons is obligatory. Students are allowed to have maximum 7 absences a semester. In case of more absences, the teacher may deny giving the signature. Students who miss a class, can make up for it (max. two times a semester).

Certifying absence:

A medical certificate is required if the student has been absent more than 7 times.

Requirements:

midterms (week 7 and 13), oral test (week 14) Topics of midterms: see detailed course description Students who fail a midterm or the oral test have to retake it.

Semester signature:

Attendance of lessons is obligatory. Students are allowed to have maximum 3 absences a semester. In case of more absences, the teacher may deny giving the signature. Students who miss a class, can make up for it (max. two times times a semester). Students have to pass the two midterms and the oral test.

Evaluation:

The evaluation of student performance is based on the marks for the 2 written midterms, the oral test as well as the active participation in classes. Tests under 50% must be retaken. In the latter case, the mark fail will also be calculated towards the final mark. For the oral examination two teachers evaluate separately the grade of the student.

 $\begin{array}{rrrr} 0-50\% &= 1\\ 51-60\% &= 2\\ 61-75\% &= 3\\ 76-89\% &= 4\\ 90-100\% &= 5 \end{array}$

Detailed course/lecture description:

Week	Topics
1.	Revision: Medical record (Internal Medicine)
2.	Revision: complaint, pain (location, time, type,)
3.	The tooth. Parts and material of the tooth Terms for teeth What does DMF mean?
4.	Number of decayed, missing and filled teeth (based on listening or reading tasks); Dialogues
5.	Tooth decay 1.
6.	Brushing teeth
7.	Summary, 1st written test
8.	Basics of dentist-patient dialogues 1. Introducing oneself, short case history-taking
9.	Basics of dentist-patient dialogues 2. Instructions during examination, diagnosis
10.	Basics of dentist-patient dialogues 3. Treatment, saying goodbye
11.	Exercises on the topics above (eg. reading comprehension) Revision: types of teeth, caries, tooth cleaning
12.	Listening exercises on the topics above Improvised dialogues, vocabulary expansion based on possible responses, strategies for improving speech understanding
13.	Summary, 2nd test
14.	Oral test

Textbooks

- 1. I. Gera: Angol-magyar fogorvosi szótár
- 2. M. Putz: Magyar fogorvosi szaknyelv I.
- 3. A. Weidinger: Nyelvtan

Term 4 Hungarian for Dental Medical Purposes III.

Hungarian for Dental Medical Purposes III. is a course for students who completed the course Hungarian for Dental Medical Purposes II. Course objectives are to extend the range of basic knowledge and skills, as well as to apply creatively what has been learnt so far. Students focus on professional communication and learn expressions of dental documentation.

Attendance and absence:

Attendance of lessons is obligatory. Students are allowed to have maximum 7 absences a semester. In case of more absences, the teacher may deny giving the signature. Students who miss a class, can make up for it (max. two times a semester).

Certifying absence:

A medical certificate is required if the student has been absent more than 7 times.

Requirements:

midterms (week 7 and 13), oral test (week 14) Topics of midterms: see detailed course description Students who fail a midterm or the oral test have to retake it.

Semester signature:

Attendance of lessons is obligatory. Students are allowed to have maximum 3 absences a semester. In case of more absences, the teacher may deny giving the signature. Students who miss a class, can make up for it (max. two times times a semester). Students have to pass the two midterms and the oral test.

Evaluation:

The evaluation of student performance is based on the marks for the 2 written midterms, the oral test as well as the active participation in classes. . Tests under 50% must be retaken. In the latter case, the mark fail will also be calculated towards the final mark. For the oral examination two teachers evaluate separately the grade of the student.

0-50% = 1 51-60% = 2 61-75% = 3 76-89% = 490-100% = 5

Detailed course/lecture description:

- 1. week Revision: case history-taking, topics of the 3rd semester, dialogues
- 2. week Fillings (descriptive text, basic vocabulary; dialogues)
- 3. week Gingivitis (descriptive text, basic vocabulary; dialogues)
- 4. week Tooth decay 2. (descriptive text, basic vocabulary; dialogues)
- 5. week Initial steps in differential diagnosis, use of important verbs
- 6. week "General Health Questionnaire" (discussion, translation, practical use: based on listening and hearing tasks)
- 7. week Summary, 1st written test
- 8. week Sentences required by the Faculty of Dentistry 1. (symptoms, medications, medical treatment, heart murmur, hospital, ...)

Weeks 8-12: translating sentences and discussing them using grammatical explanations; searching for similar words, other terms, and making learning easier with vocabulary cards, dialogues, games and associations.

9. week Sentences required by the Faculty of Dentistry 2. (health, heart disease, haemorrhage, ...)

- 10. week Sentences required by the Faculty of Dentistry 3. (operations, blood pressure, fainting, hereditary diseases, ...)
- 11. week Sentences required by the Faculty of Dentistry 4. (pregnancy, lactation, infectious diseases, ...)
- 12. week Sentences required by the Faculty of Dentistry 5. (sensitive teeth, dental calculus, brushing, floss, smoking, alcohol ...)
- 13. week Summary, 2nd written test
- 14. week Oral test

Textbooks

- 1. M. Győrffy: Mi a panasz?
- 2. R. Halász: Anamnézis magyarul
- 3. Á. Silló: Szituációk
- 4. A. Marthy Á. Végh: Egészségére!
- 5. J. Kovács: A fogászati szaknyelv alapjai
- 6. I. Gera: Doctor Patient, Doctor Assistant Communication, compiled by Prof. Dr. I. Gera
- 7. M. Putz: Magyar fogorvosi szaknyelv I.
- 8. I. Gera: Angol-magyar fogorvosi szótár
- 9. A. Weidinger: Nyelvtan

Introduction to English Dental Terminology I-II - elective course

Library Informatics - AOVKPK088_1A

Lecturer: **Dr. Lívia Vasas PhD.** – Central Library Institute: Semmelweis University Central Library, 1088 Budapest Duration: One semester, 30×45 minutes (10×3 lessons)

SUGGESTED SEMESTER 5-10.

Exam-form Credit-value Minimum/maximum group-size	Practical mark 3 credit-points 8/200
The aim of the subject:	Teaching students how to use/search in literature sources of medicine, analyse the result of their work supporting the proper competencies.
Thematic:	Medical e-catalogues, e-books, e-libraries, databases, scientific resources of internet
Assistant lecturer: Student records officer:	Anna Berhidi, Edit Csajbók, Skultéti Attila, Szluka Péter
Application deadline:	September 4 -8, 2019
Precondition:	There isn't.
Introduction, technical details, VPN access, t	echnical details, about the history of the Central Library's Homepage: www.lib.semmelweis.hu and its facilities,
UpToDate, ClinicalKey, HS talks: Dissertations:	Biomedical & Lifesciences Collections, EBSCOhost, ProQuest, Pharmacopoeia, Turnitin Dart Europe, Open dissertations, OATD,
Catalogs: Semmelweis University catalog Hunteka:	books, online books http://hunteka.lib.semmelweis.hu/search Online book catalog: https://lib.semmelweis.hu/nav/ekonyvek National Library of Medicine (Bethesda, USA) NLM catalog: https://www.ncbi.nlm.nih.gov/nlmcatalog Worldcat: https://www.worldcat.org/ Copac: https://copac.jisc.ac.uk/ Books PPT
Scientific publishers and periodicals:	printed/electronic/open access
Browser and matching searching, archive and	I the newest editions Characterization of periodicals/reviews/journals, ISSN, DOI, Crossmark,

Article metrics - Online attention Publishers: Springer, LWW, Wiley, video journal: JOVE Nature: https://www.nature.com/%0A BMC https://www.biomedcentral.com/ PLOS https://www.plos.org/, DOAJ https://doaj.org/, etc. New routes: Open Science, Open Access The dangers of publishing on Open Access https://lib.semmelweis.hu/nav/open_access_general_information Support for Open Access Communication at Semmelweis University https://lib.semmelweis.hu/nav/open_access_tamogatas The Semmelweis repository https://repo.lib.semmelweis.hu/ The concept of plagiarism, its forms of appearance, Plagiarism Search: Turnitin, Copyright questions

NLM databases: history, OpenI: https://openi.nlm.nih.gov/ PubMed https://www.ncbi.nlm.nih.gov/pubmed/ value added services: registration, advances search. MeSH, PMC, etc. Dictionary: https://www.merriam-webster.com/

OVID databases, online books, electronic periodicals, Evidence Based Medicine databases: the role of the EBM in research, full text journals in Ovid databases MEDLINE, PsycINFO, subject heading systems, value-added services, access to the full text version, WHO https:// www.who.int/

Bibliographic and citation databases, search engine: Web of Science platform, Google Scholar; citations, general searching in the databases, bibliographic and citation searching on keywords, using Boolean operators, value-added services Scientometrics: quality of journals: Clarivate Analytics InCites JCR (Science Edition and Social Science Edition), IF: calculating Impact factor; SCImago: SJR

Reference Manager: EndNote, EndNote Online; the role of reference softwares in modern publishing, Literature searching: Importing and exporting records (from Web of Science, OVID Medline, PubMed) creating own records search facilities within our records and from PubMed; data handling: creating groups, filtering duplicates

Semmelweis Knowledgebase, Scientific Discovery of the Internet: find medical information you can trust, Building search strategies, Google Scholar, Medworm

Summary of the course, Test writing

Consultation, Retake the 1st/2nd test OR Renewal opportunity for each tests

Syllabus of Physical Education

Department of Physical Education Subject: Physical Education III. Type of Subject: Compulsory Code of Subject: FOKOTS1007_3A Credit: 0 Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:

One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):

Reduced to bi-weekly scheduled double-classes (90min.).

II. St. year I. semester:

1 – 2 weeks:	General information
	Accident, fire and environmental knowledge. Requirement for acceptance of the semester system, the structure of the classes and the presentation of the university recreational sports opportunities for extra -curricular activities. Theory and practical application of the warm-up as a sports injury risk significantly reducing factor. Common to the bench. Free exer-
	cises.
3 – 4 weeks:	Stamina Development
	Long-term (at least 45 – 60 minutes) running and skipping exercises.
5 – 6 weeks:	Balls skill development
	Practicing the fundamentals of volleyball (serves, over – and underhand touches, movements, etc.)
7 – 8 week:	Strength development
	Overall strength development using the circle-training method-setting up different stations working on different muscle
	groups.
9 – 10 weeks:	Coordination enhancing exercises
	Jumping rope exercises in place and in motion.
11 – 12 weeks:	Posture correction
	Stick exercises, in various position and motion.
13 – 14 weeks:	Stretching – relaxation exercises
	Stretching exercises using large medicine-balls in sitting, standing, kneeling and recumbent positions.

Requirements to participate in the sessions and the potential for absences:

Active participation in sport classes.

The method of proof for the workshops and the exam absence:

The absence can not be proved, should make up for the lost lessons.

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type): Active participation in six classes approved by the staff.

How to prove absence regarding the exam:

Absence must be retaken!

Subject: Physical Education IV. Type of Subject: Compulsory Code of Subject: FOKOTSI007_4A Credit: 0 Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:

One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):

Reduced to bi-weekly scheduled double-classes (90min.).

II. St. year II. semester:

1 – 2 weeks: General information

Accident, fire and environmental knowledge. Requirement for acceptance of the semester system, the structure of the classes and the presentation of the university recreational sports opportunities for extra -curricular activities. Theory and practical application of the warm-up as a sports injury risk significantly reducing factor. Common to the bench. Free exercises.

3 – 4 weeks: Cardio – vascular system development

The floorball: Using the basic elements of the game dribbling, passing, shooting, etc. Playing againts each other in the interval system on high intensity level.

5 – 6 weeks: **Posture corrective exercises**

Exercises on floor mats, focusing on the core muscles in various body-positions.

7 – 8 week: Coordination enhancing exercises

Special education and practice material for spatial vision, perception of body schema, right-left orientation, muscle development and perception of coordination at the technical skills of playing sports (tennis, badminton).

9 – 10 weeks: Strengthening exercises

Using manual and other exercises equipment (dumbbells, boxes, bench, wall bars, etc.)

11 – 12 weeks: Balls skill development

Exercise of basic technical elements of football. Learning and practicing tactical elements. During locomotion ball control exercises, skill development.

13 – 14 weeks: Stretching – relaxation exercises

Various stretching relaxing exercises after the meditative practices and knowledge (yoga, tai chi, etc.)

Requirements to participate in the sessions and the potential for absences:

Active participation in sport classes.

The method of proof for the workshops and the exam absence:

The absence can not be proved, should make up for the lost lessons.

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type): Active participation in six classes approved by the staff.

How to prove absence regarding the exam:

Absence must be retaken!

IMPORTANT NOTE: You can only register to any third year subject after completing the Basic Module!

NOTE

PRE-CLINICAL MODULE

New curriculum to be introduced Please, follow the updated version on the home page



Faculty of Dentistry 3rd year

STUDY PROGRAMME

PRE-CLINICAL MODULE

5th semester				
subjects code	subjects	credit code	examination	prerequisites
	Conservative Dentistry and Endodontics. Pre			Anatomy (Maxillofacial Anatomy) IV.
compulsory	clinical II.	C4L1P3	final#	Conservative Dentistry and Endodontics, Pre-clinical I. General Dental Preclinical Practice
compulsory	General and Oral Microbiology	C4L2P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.
7				Medical and Dental Physiology II.
compulsory	General and Oral Pathophysiology	C4L2P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.
7	1 / 0/			Medical and Dental Physiology II.
compulsory	Basic Immunology	C3L2P1	semi-final	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.
,		CJEZITI	Seriii-Iinai	Medical and Dental Physiology II.
compulsory	Hungarian Dental Terminology III.	C2L0P4	practice mark	Hungarian Medical Terminology II.
compulsory	Oral and Maxillofacial Surgery,	C2L0P2	practice mark	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.
	Pre-clinical course			Medical and Dental Physiology II.
compulsory	Pathology	C4L3P2	final#	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.
, ,				Medical and Dental Physiology II.
compulsory	Preventive Dentistry I.	C3L1P2	practice mark	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.
				Medical and Dental Physiology II.
compulsory	Odontotechnology and Prosthodontics Preclinical Course III.	C3L0P3	final#	Odontotechnology and Prosthodontics Preclinical Course II. General Dental Preclinical Practice
compulsory	Medical Aspects of Disaster Preparedness and Response I.	C0L2 hours/sem	signature	
	Total Credit	30		

Explanation

15 credits should be gained from the **elective subjects** during the 5-year **#** The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

P = Practice (hours/week)

PRE-CLINICAL MODULE

6th semester				
subjects code	subjects	credit code	examination	prerequisites
compulsory	Conservative Dentistry and Endodontics I.	C4L1P3	practice mark	Conservative Dentistry and Endodontics, Pre-clinical Course II., Odontotechnology and Prosthodontics Preclinical Course III.
compulsory	Internal Medicine I.	C3L2P2	practice mark	General and Oral Pathophysiology, Pathology
compulsory	Oral and Maxillofacial Surgery I.	C4L1P3	practice mark	Oral and Maxillofacial Surgery, Pre-clinical course, Pathology
compulsory	Oral Biology	C5L3P2	final#	General and Oral Pathophysiology General and Oral Microbiology , Anatomy (Maxillofacial Anatomy) IV.
compulsory	Genetics and Genomics	C2L2P1	final#	Biochemistry, Molecular and Cellbiology III., Medical and Dental Physiology II.
compulsory	Oral Pathology	C3L2P2	final#	Pathology, General and Oral Microbiology, General and Oral Pathophysiology
compulsory	Preventive Dentistry II.	C1L1P0	final#	Preventive Dentistry I., Conservative Dentistry and Endodontics, Pre-clinical Course II., Odontotechnology and Prosthodontics Preclinical Course III.
compulsory	Prosthodontics I.	C4L1P3	practice mark	Odontotechnology and Prosthodontics Preclinical Course III., Conservative Dentistry and Endodontics, Pre-clinical II.
compulsory	Radiation protection	C2L1.5P1	semi-final	Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.
				Medical and Dental Physiology II.
compulsory	Hungarian Dental Terminology IV.	C2L0P4	final	Hungarian Dental Terminology III.
compulsory	Oral Diagnostics I.	C2L1P1	semi-final	Pathology, General and Oral Pathophysiology
compulsory	Medical Aspects of Disaster Preparedness and Response II.	C0L2 hours/sem	signature	Medical Aspects of Disaster Preparedness and Response I.
compulsory	Dento-Alveolar practice (summer, minimum 1 week)	C0L0P30	signature	prerequisite of registering to the 7th semester
	Total Credit	33		

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

P = Practice (hours/week)

IMPORTANT NOTE: Signing up for Physical Education (PE) V. in the 1st semester and for PE VI. in the 2nd semester is compulsory.

LIST OF TEXTBOOKS (The list may change!)

- 1 McCracken's Removable Partial Prosthodontics (10/e) Glen P.McGivney-Alan B.Carr. Hardback Mosby, 1999. ISBN 0323006787
- 2 Schillinburg et al.: Fundamentals of Fixed Prosthodontics. Quintessence 4th ed. 1997. ISBN 93-13-86-500
- 3 Craig, R.G.: Restorative dental material. Mosby, 10th ed.
- 4 R.M.Basker-J.C.Davenport: Prosthetic Treatment of the Edentolous Patient. 5th ed. McMillan Press Ltd. ISBN 978-1405192613
- 5 C.M.Sturdevant: Operative Dentistry. Mosby. ISBN 0-80166366-0
- 6 A.Newbrun: Cariology Quintessence. ISBN 0-867152052
- 7 Walton, Torabinejad: Principles and Practice of Endodontics. W.B. Saunders Co. 2nd ed. 1996. ISBN 0-7216-4924-6
- 8 Primary Preventive Dentistry. Ed.by:Norman O.Harris, F.Garcia-Godoy. 5th ed. Appleton and Lange, Stamford. 1999. ISBN 0-8385-8129-3
- 9 Samaranayake et al.: Essential Microbiology for Dentistry. Edinburgh, Churchill Livingstone. ISBN: 0443049890
- 10 Sibernagl S.-Lang F.: Color Atlas of Pathophysiology. Thieme, Stuttgart, 2000. ISBN 0-86577-866-3(TNY) ISBN 3-13-116551-0 (GTV)
- 11 Ferguson D.B.:Oral Bioscience. Churchill Livingstone, 1999. (Harcourt Publ.Ltd.) ISBN 0-443-05373-1
- 12 Heckner F: Practical Microscopic Hematology. 4th ed. Williams and Wilkins Trada Bldh. 1993. ISBN 0-8121-1711-5
- 13 Robbins: Basic Pathology, 2008. V. Kumar, A. K. Abbas, N. Fausto, R. Mitchell Saunders; 8 edition
- 14 Szende B.-Suba Zs: Introduction to histopathology. Bp. Medicina. 1999.
- 15 Szabó Gy: Oral and Maxillofacial Surgery. Bp. Semmelweis Publ. 2001.
- 16 Koesner K.R.:Manual of Minor Oral Surgery for the General Dentist. Blackwell Munsgaard, 2008
- 17 Worthington-Lang-LaVelle: Osseointegration in Dentistry. An Introduction. Quintessence, Chicago, 1994.
- 18 Sethi, A.-Kaus, Th: Practical implant dentistry. Quintessence, London. 2005.
- 19 Andreoli, T.E.-Bennett, J.C.-Carpenter, C.C.J.-Plum, F.: Cecil Essentials of Medicine. 4th ed. W.B. Saunders Co. 2000.
- 20 Medical Genetics and Genomics (e-book)
- 21 KUBY Immunology W. H. Freeman and Company New York 2013
- 22 Immunology seminars (e-book)

Recommended textbooks:

- 1 Nikiforuk: Understanding Dental Caries.(1-2) Karger.
- 2 Murray, J.J.: The Prevention of Oral Disease. 3rd ed. Oxford Univ. Press 1996. ISBN 0 19 2624563 (Hbk) ISBN 0 19 2624571 (Pbk)
- 3 Fluoride in Dentistry. 2nd Ed.: Fejerskov,O.-Ekstrand,J.-Burt,B.A. Munksgaard, 1996. ISBN 87-16-11282-2
- 4 Preventiv fogászat. Szerk. Bánóczy J.-Nyárasdy I. Bp. Medicina. 1999. ISBN 963-242-003-9
- 5 Pathophysiology and Disease. An Introduction to Clinical Medicine. Lange Medical Book. Prentice-Hall International Inc. ISBN 0-8385-8095-5
- 6 Jansen van Rensburg B.G: Oral Biology. Quintessence Publishing Co. Inc. 1995. ISBN 0-86715-271-0
- 7 Goldschlager N.:Principles of Clinical Electrocardiography. 3rd ed. Appleton and Lange, 1989. ISBN 0-8385-7951-5
- 8 Marsh, Ph.-Martin, M.V: Oral Microbiology. Oxford, Wright. ISBN: 0723610517
- 9 D.Tóth F.: Microbiology for Dentistry. Vol.I-II. University of Debrecen, 2002.
- 10 E.C.Combe: Notes on dental materials. Univ.Manchester, 1986.
- 11 J.F.McCabe: Applied dental materials. Univ. Newcastle, 1990.
- 12 Howe: A Minor Oral Surgery. Wright. 1987. ISBN 723608237.
- 13 Howe: The Extraction of Teeth. Wright. 1990. ISBN 723622310.
- 14 Seward et al.: An Outline of Oral Surgery. Wright. 1998. ISBN 0-7236-0735-4 és -0407-x
- 15 Hupp JR et al.: Contemporary Oral and Maxillofacial Surgery. Mosby, 2014
- 16 Peterson: Principles of Oral and Maxillofacial Surgery. Decker, 2004.
- 17 Robinson, Howe: Tooth Extraction. A Practical Guide. Oxford, 2000.
- 18 Harrison's Principles of Internal Medicine, Petersdorf, Adams, Braunwald, Isselbacher, Martin, Wilson, McGraw-Hill Book Company. 15th ed.
- 19 Ward Booth, Hausamen, Schendel: Maxillofacial Surgery, C.Livingston Elsevier, 2007
- 20 Neil-Nairne: Complete Denture Prosthetics. Wright. ISBN 72 36 20 636
- 21 Neil-Walter: Partial Dentures. ISBN 06 32 08 025 8
- 22 Moor UJ: Principles of Oral and Maxillofacial Surgery, 6th Edition, Wiley-Blackwell 2011.
- 23 Hermann Péter, Szentpétery András: Gnatológia (Semmelweis Kiadó, 2018)

GENERAL AND ORAL PATHOPHYSIOLOGY

Department of Oral Biology

Lecturer: Prof. Dr. Gábor Varga Tutor: Dr. Kristóf Kádár M.D.

First Semester

Lectures (2 hours per week):

- 1. Pathophysiology of liver
- 2. Gastric secretion and exocrine pancreas function
- 3. Cardiac insufficiency
- 4. Hypertension
- 5. Shock
- 6. Pathophysiology of the kidney
- 7. Pathophysiology of acid base regulation
- 8. Impairment in fluid an electrolyte balance
- 9. Pathophysiology of respiration
- 10. Impaired glucose homeostasis
- 11. Disturbances of hypothalamus and pituitary gland
- 12. Effects of peripheral endocrine gland disorders
- 13. Atherosclerosis
- 14. Midterm (1-12 lectures)
- 15. Disorders of lipid metabolism

Practicals (2 hours per week):

- 1. Liver Laboratory diagnosis of hepatobiliary diseases
- 2. ECG Normal ECG
- 3. ECG Disorders impulse formation
- 4. ECG Disorders of conductance
- 5. ECG Myocardial infarction
- 6. ECG Repolarisation abnormalities, hypertrophy, electrolyte abnormalities
- 7. ECG Midterm
- 8. Salt and water metabolism, Acid base analysis
- 9. Laboratory tests in diabetes mellitus
- 10. Gastric function and exocrine pancreas
- 11. Clinico-chemical assays for endocrine disorders I.
- 12. Clinico-chemical assays for endocrine disorders II.
- 13. Urine analysis, renal function tests
- 14. Molecular laboratory diagnostic
- **Note:** The maximum number of absences in a semester is 3 (practices) More than 3 absences invalidate the semester Theoretical demonstration from the material of the lectures in the 13th week (1-12 lectures material) ECG demonstration at week 7 (from ECG material)

During the semester all midterms (one theoretical midterm – from the lectures, one ECG midterm – on ECG practice) should be passed. In case of an unsatisfactory final grade (1), the semester will not be accepted.

PATHOLOGY

1st Department of Pathology

Course director and tutor: Dr. Attila Zalatnai

First Semester

<i>Lectures</i> (3 hours per week)	<i>Practices</i> (2 hours per week)
Lecture	Laboratory
Introduction. Historical backgrounds. Cell and tissue injury. Adaptive responses. Necrosis. Acute inflammation. Vascular and cellular events.	AUTOPSY Schemical meditors.
Acute inflammation Morphological patterns. Chronic inflammation. Extracellular matrix. Repair. Wound healing.	autopsy histology
Immunopathology. Cellular components. Immunologically mediate tissue injury. Transplantation. Immunodeficiency. Autoimmune diseases. Neoplasia. Classification. Histological diagnosis. Invasion and metastasis. Growth patterns.	AUTOPSY
Carcinogenesis. Epidemiology of malignancies. Preblastomatosis. Screening.	AUTOPSY
Benign and malignant tumors of epithelial and mesenchymal origin. Developmental and genetic diseases.	HISTOLOGY
Environmental and nutritional pathology Hemodynamic diseases. Water and electrolyte disturbances. Edema. Shock.	AUTOPSY
Hyperaemia. Haemorrhage. Thrombosis.	AUTOPSY
Embolism. Infarct. Infectious and parasitic diseases. Viral and bacterial diseases. Tuberculosis. Syphilis. Leprosy. Diseases caused by fungi, nematodes, cestodes.	HISTOLOGY
Blood vessels. Atherosclerosis. Hypertension. Inflammatory diseases. Aneurysms. Tumors. Heart diseases. Congenital, ischemic, hypertensive heart diseases.	AUTOPSY
Rheumatic heart disease. Inflammatory diseases. Cardiomyopathy. Respiratory system. Pathology of larynx and trachea. Lung cancer.	AUTOPSY
Bronchitis. Asthma. Emphysema. Pneumoconiosis. Diseases of the pleura. Gastrointestinal tract. Esophagus. Stomach.	HISTOLOGY
Small and large intestine. Peritoneum. Liver and biliary system. Mechanism of jaundice. Hepatic failure. Acute and chronic hepatitis.	AUTOPSY
Liver cirrhosis. Toxic injury. Tumors Kidney. Non-inflammatory lesions. Inflammatory glomerular lesions	AUTOPSY
Tubulointerstitial diseases. Renal diseases associated with systemic conditions. Vascular diseases. Tumors.	HISTOLOGY Consultation.
Urinary tract and male reproductive system Gynecologic pathology. Vulva. Cervix. Body of uterus and endometrium. Fallopian tube. Ovary. Placenta and neonatal pathology.	autopsy autopsy
Gestational throphoblastic disease. Pathology of the breast.	AUTOPSY

Blood and lymphoid organs. Benign and malignant disorders of lymphoid cells. Hodgkin's disease. Disorders of the spleen.	AUTOPSY
Disorders of the mononuclear phagocyte system. Acute and	AUTOPSY
chronic myeloproliferative syndromes.	
Endocrine system.	AUTOPSY
Gallbladder and extrahepatic bile ducts. Pancreas. Diabetes.	HISTOLOGY
Head and neck pathology.	AUTOPSY
Bones and joints, skeletal muscles.	AUTOPSY
Pediatric oncology.	HISTOLOGY
Nervous system. Trauma. Circulatory and inflammatory diseases.	AUTOPSY
Demyelinating and metabolic diseases.	
Tumors of the nervous system. Peripheral nervous system.	AUTOPSY
Pathology of the skin.	AUTOPSY
Clinicopathological conference	HISTOLOGY

EXAMINATION (FINAL)

The semifinal examination at the end of the first semester will be a written test. Three different times for the test writing can be chosen. Students are requested to announce the time they have chosen to the tutor of the 1st Institute of Pathology and Experimental Cancer Research until mid – December. Students who have failed the exam on one occasion can retake the exam on the next test-writing day, at least one week from the first trial.

Note: Lectures will be held in the lecture hall of the 1st Institute of Pathology and Experimental Cancer Research.

Autopsy and Histopathology practices will be held in the 1st Institute of Pathology and Experimental Cancer Research. During the histopathology exercises 100 slides will be studied. The list of slides will be available at the beginning of the semester.

The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester two midterm examinations should be passed.

ORAL PATHOLOGY

1st Department of Oral, Dental and Maxillofacial Surgery Lecturer: *Dr. Attila Zalatnai*

Second Semester

Lecturs (2 hours/week) Practices (2 hours/week)	Diseases of microbial origin of oral and paraoral structures.
Developmental disturbances in number of teeth. Developmental dis- turbances in shape and size of teeth. Developmental disturbances in structure of the teeth.	Diseases of the blood and blood forming organs. Injury from inorganic chemicals and disturbances of metabolism of oral and paraoral structures.
Growth disturbances of teeth. Premature eruption, delayed eruption. Disturbances of situation of the teeth. Impacted and embedded	Diseases of accessory nasal sinus. Diseases of the temporomandib- ular joint.
teeth. Lobodontia.	Diseases of the nerves and muscles, facial hemihyperplasia and
Developmental disturbances of the jaws and the temporomandibular	hemihypoplasia.
Joint. Devideo mental encomplice of the face and onft and tions.	Premalignant lesions
Developmental disturbances of the salivary glands. Etiology of mal	Benign oral epithelial tumors. Benign oral mesenchymal tumors.
formations	Adontogenic tumors, Benigh tumors of the Jaws.
Discoloration of the teeth. Dental plaque, Dental calculus.	Malignant tumors of mesenchymal origin
Dental caries. Etiology and epidemiology. Contributing factors in	Malignant lymphomas
dental caries.	Malignant odontogenic and non-odontogenic tumors of the jaws.
Clinical aspects of dental caries. Histopathology of dental caries. Microbiology and immunobiology of caries. Attrition. Abrasion. Fro-	Metastatic tumors of the jaws. Biopsy technique. Healing of oral
sion.	Staging and grading of oral tumors. Spread of oral and paraoral tu-
Hypercementosis. Resorption of the teeth.	mors.
Diseases of the pulp. Periapical lesions.	Regional and general metastases of oral and paraoral tumors.
Periodontal diseases Implantation. Reimplantation. Transplantation.	Etiology of paraoral tumors.
Homoiotransplantation.	Diseases of oral and paraoral lymphoid tissue. Joining of diseases.
Inflammation of the oral mucosa and tongue. Halitosis (Stink of the	Diseases of salivary glands.
mouth.)	Benign tumors of salivary glands.
Cysts of jaws.	Malignant tumors of salivary glands.
Cysts of the oral floor, neck and salivary glands.	Oral and paraoral syndromes.
Focal infection. Diseases of the jaws.	General manifestations of oral diseases.
Physical, heat, chemical and electrical injuries of oral and paraoral	Forensic oral pathology.
structures.	

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester

GENERAL AND ORAL MICROBIOLOGY

Department of Medical Microbiology

Program Director: **Dr. Dóra Szabó** Tutor: **Dr. Ágoston Ghidán**

First Semester

Lectures (2 hours per week)	Practices (2 hours per week)
Introduction to microbiology. General bacteriology (morphology, physiology and cultivation of bacteria) Bacterial genetics.	Introduction to basic microbiology. Microscopic examination of bacteria (staining procedures).
Infections and diseases (pathogenesis of bacterial infection, virulence, importance of biofilm formation). Specific and non-specific host defences. Active and passive immunization.	Cultivation of aerobic and anaerobic bacteria (culture media, colony morphology of bacteria).
Sterilization and disinfection. Antibacterial chemotherapy (mode of actions, resistance, side effects).	Methods used for sterilization and disinfections (physical and chemical possibilities).
Gram-positive facultative and obligate anaerobic cocci. Gram-negative facultative ananerobic, microaerophilic and obligate anaerobic cocci and coccobacilli.	Antibiotic susceptibility of bacteria
Gram-positive aerobic and anaerobic rods. Gram-positive spore-forming rods.	In vitro antigen-antibody reactions (serological methods).
Gram-negative facultative anaerobic rods. Gram-negative anaerobic rods.	Gram-positive and -negative cocci and coccobacilli
Mycobacteria. Rickettsia, Chlamydia. Mycoplasma.	Gram-positive rods (Corynebacterium, Lactobacillus, Actinomyces).
Spirochetes. Importance of bacterial infections involving the oral, perioral tissues and salivary glands.	Gram-negative rods (Enterobacteriaceae)
Medical importance of fungi (general mycology, chemotherapy of fungal infections). Importance of fungal infections involving the oral and perioral tissues.	Gram-negative anaerobic rods (Bacteroides, Prevotella, Porphyromonas, Fusobacterium, Leptotrichia). Gram-positive spore-forming aerobic and anaerobic rods (Bacillus, Clostridia)
Protozoa (general characterization and the most important human pathogenic protozoa). Helminths (general characterization and the most important human worms).	Mycobacteria. Spirochetes. Rickettsiae. Chlamydiae. Mycoplasma.
General properties of viruses. Antiviral chemotherapy. Adeno- and Poxviruses.	Medically important fungi
Important respiratory pathogen viruses. Important enterally transmitted viruses.	Medically important protozoa. Medically important helminths.
Hepatitis viruses. Retroviruses (AIDS). Viruses and cancer.	General virology (cultivation of viruses, cell-virus interactions, serological tests and moleculare techniques used in laboratory diagnosis of viral diseases)
Arbo- and robovirus infection. Rabies. Slow viruses. Viral infections involving the oral, perioral tissues and salivary glands.	Pathogenesis and symptomatology of viral diseases.
Normal oral flora. Oral ecosystem and dental plaque. Microbiology of dental caries, periodontal diseases. Dentoalveolar infections.	Summary of microbiological laboratory techniques and diagnostic procedures. Consultation.

More than 3 semester absences invalidate the semester.

BASIC IMMUNOLOGY

Department of Genetics, Cell and Immunobiology

Course director: Prof. Dr. Edit Buzás

Tutor: Dr. Marianna Csilla Holub

Subject code: FOKGEN037_1A

Prerequisite subject: Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.; Medical and Dental Physiology II

Credits: 3

	Lectures (2 hr / week)	Practicals / Seminars (1 hr / week)
1.	The role, processes, organs and cells of the immune system	Basic terms, the immune system in the lab
2.	Principles of natural immunity	Methods based on antigen-antibody interactions I. Immunoserology
3.	The complement system; inflammation and acute phase reaction	Methods based on antigen-antibody interactions II.
4.	Antigen, antigen presentation and MHCs	Methods based on antigen-antibody interactions III.: Flow cytometry
5.	Antigen receptors and their formation	Complement assays
6.	T lymphocytes and cell-mediated immune response	HLA typing
7.	B lymphocytes and humoral immune response	Vaccination I.
8.	Mucosal immunity	Vaccination II.
9.	Immune response in infections	Biological therapies I.
10.	Immunodeficiencies	Biological therapies II.
11.	Hypersensitivity	Hypersensitivity I
12.	Tolerance and autoimmunity	Hypersensitivity II-IV.
12.	Antitumor immunity	Screening methods for autoantibodies
13.	Immunology of transplantation	Case studies
14.	Immunology of transplantation	Case studies II.

The sequence of lessons may change.

75% minimum attendance of both the lectures and practical lessons is necessary for the end-term signature. Retake for the midterm will be organized for those student, how miss the midterm because an acute disease, but they have to show up the medical record.

Midterm: written test once in the semester. The midterm is not a requirement for the validity of the semester. Retake (one make up day) will be organized for those student, who miss the midterm because an acute disease, but they have to show up the medical record.

Exam: written test in the exam period. The exam grade will be calculated from the sum of midterm scores and exam scores. For passing you have to reach more than 50 % of both the exam scores and total scores.

Literature:

KUBY Immunology • W. H. Freeman and Company • New York • 2013 Immunology seminars (e-book): http://gsi.semmelweis.hu (The user name and password is on the course datasheet of the Neptun.)

CONSERVATIVE DENTISTRY AND ENDODONTICS

Department of Conservative Dentistry

Head of Department: Dr. Zsuzsanna Tóth D.M.D., Ph.D.

CONSERVATIVE DENTISTRY AND ENDODONTICS, PRECLINICAL II.

First semester

Lectures (1 hour per week):

- 1. Indirect restuarations (inlay, onlay),
- 2. Tooth preparation for cast metal restorations. Cementation of cast metal restaurations.
- 3. Tooth-coloured indirect restorations. (Ceramic, composite). Differences in preparation and cementation. Different luting materials.
- 4. Pathosis in consequence of caries. Pathology and therapy of the pulp.
- 5. Pathosis in consequence of caries. Pathology and therapy of the periapical region.
- 6. Indications, contraidnidcations of endodontic therapy, urgency.
- 7. Trepanation, exstirpation. Instruments of root canal treatment
- 8. Preoperative-working lenght determination (needle-control) and control x-ray. Using of electronic apex-locators.
- 9. Cleaning and shaping, chemical adjuncts, medication.
- 10. Midterm
- 11. Sealing of root canals. Lateral condensation. The problems of control x-ray.
- 12. Functional and esthetic restoration of root canal treated teeth.
- 13. Patient assessment and treatment plan.
- 14. Equipments of the dentist's office, orders of the clinical practical courses.

Manual training (3 hours/week):

Indirect restorations: inlays, onlays (metal and esthetic); preparation in artificial teeth. Root canal treatment in extracted teeth (front, bicuspid, molar).

List of textbooks:

- 1 Sturdevant's Art And Science Of Operative Dentistry. Edited by T. Roberson, H. Heymann and E. Swift. Mosby, St Louis, 2006. ISBN 978-0-323-03009-0
- 2 Walton R.E., Torabinejad M. ed.: Principles and Practice of Endodontics. W.B. Saunders Co. Philadelphia, 2002.
- 3 Newbrun A.: Cariology Quintessence. ISBN 0867152052

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester a midterm exam must be passed. Practical exam and practical course grade. Final oral exam: questions from two topic groups and identification of an extracted tooth.

CONSERVATIVE DENTISTRY AND ENDODONTICS I.

Second semester

Lectures (1 hour per week):

- 1. Guidelines to case reports
- 2. Dental photography
- 3. Four-handed dental treatment
- 4. Cariesdiagnostic methods
- 5. Dental anaesthesia
- 6. Isolation in conservative dentistry and endodontic treatments
- 7. Dental materials: composites
- 8. Adhesive systems
- 9. Class I and II restorations and matrix systems
- 10. Demonstration (Midterm)
- 11. Therapy of caries: Class III and IV restorations
- 12. Lesions in the cervical area of the tooth
- 13. Glassionomer cements, compomer materials
- 14. Infection control, patients requiering special care

Clinical practice (3 hours per week).

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester a midterm exam must be passed. Practical grade: consists of midterm, "small tests", and evaluation of work and knowledge presented at clinical practice.

PREVENTIVE DENTISTRY I.

Department of Conservative Dentistry

Tutor: Dr. Károly Bartha

First Semester

Lectures 1 (hour/week)

Primary, secondary and tertiary prevention. Health-protection, health-education: collective, group and individual prophylaxis. 1. Dental-prophylaxis 2. Caries. Caries-indexes and epidemiological relations. Characteristics of Hungarian epidemiology 3. Caries-aetiology. Plaque. Risk-factors 4. Caries incipient and remineralisation 5. Oral hygiene 6. Gingivitis and periodontal disease. Epidemiological characteristics. Pathogenesis and diagnosis. Strategy for prevention of periodontal diseases. 7. 8. Possibilities in prevention of orthodontic anomalies. 9. Midterm exam 10. Fluorides 11. Systemic and local fluoride-prevention 12. Fissure-sealing 13. Infection control 14. Other possibilities in caries prevention

Practices (2 hours/week) Seminar or clinical practice

PREVENTIVE DENTISTRY II.

Second Semester

Lectures 1 (hour/week)

- 1. Prevention in pregnancy and in the intrauterine life to the age of three
- 2. Dental plaque Biofilm
- 3. Oral hygiene toothpastes
- 4. Organization and realization of collective prevention
- 5. Cervical sensitivity, dentinal hypersensitivity and erosion
- 6. Integrated preventive dentistry prosthodontics
- 7. Integrated preventive dentistry preventive fillings
- 8. Integrated preventive dentistry Finishing, polishing of fillings
- 9. Midterm exam
- 10. Integrated preventive dentistry orthodontics
- 11. Dental public health programs. Primary and secondary prevention in screening program for oral cancer
- 12. Care of handicapped and hospitalized patients
- 13. The role of dental hygienists in dental practice
- 14. latrogenic damaging factors

PROSTHODONTICS I.

Second Semester

- 1 The reasons and the consequences of tooth loss
- 2 Complains, medical history, extra-oral and intra-oral examination, treatment plans and prognosis at edentulous patient
- 3 Infection control in dentistry. The upper and the lower denture bearing area
- 4 First impression, casting, outline of the special tray
- 5 Second (working) impression, mucostatic and mucodisplacive techniques. Beading and boxing, casting of working impression
- 6 Basic gnathology (OVD, RVD, freeway space, RCP, ICP, Posselt diagram)
- 7 Basic gnathology (canine guidance, unilateral and bilateral balanced occlusion)
- 8 Jaw registration (type of articulators, face bow registration)
- 9 Mounting in articulator, setting up the teeth
- 10 Try-in procedure, flasking and packing (processing) at complete denture
- 11 Fitting and advice to the patient. Short time and long time recall procedures
- 12 Complex functional approach. Implant techniques
- 13 Emergency denture. Immediate denture. Copy denture
- 14 Relining, rebasing, repairing of complete denture
- **Note:** The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester During the semester two midterm examinations should be passed Practical course grade.

INTRODUCTION TO ODONTOTECHNOLOGY AND PROSTHODONTICS PRE-CLINICAL COURSE III.

Department of Prosthodontics

Head of Department: **Prof. Dr. Péter Hermann** Lecturer: Dr. Ida Barbara Kispélyi

Since the creation of an independent training, the Stomatological curriculum has put great emphasis on a preclinical foundation course, the Prosthodontics Propaedeutic course, the syllabus of which has also included mastery of dental techniques, indispensable for a dentist. Until the visit of the EU Committee in the late 90s, the course was structured in such a manner that in the first and second semester of the second academic year students had 3 hours of practices and one hour of lecture per week; during the first semester treatment of complete edentolousness was simulated through fabrication of complete dentures, while in the second semester students prepared 3-unit bridges and single crowns on partial edentolous moulages. During both semesters, medical and dental laboratory steps followed each other just like in real life, and students performed alternatively medical work phases and dental laboratory tasks, for one week each. After the proposal of the EU Committee on the amendment of several courses (including the Prosthodontics Preclinical course), dental laboratory and medical work phases had to be separated sharply, while an independent Odontotechnology course had to be included in the curriculum. According to the request, this Odontotechnology course was built into the theoretical module in order to provide the earliest possible recognition and consolidation of the chosen profession.

Taken more than ten years of experience into account, while maintaining the values that undoubtedly resulted from these changes, we wish to modify those controversial points that in our opinion can be still improved. A sharp separation of the two disciplines (dental techniques and dentistry) rather confuses students, thus they fail to get a grip of the process, and it is the essence that is lost, since these processes are based each on the other. The essence of the new syllabus is the integration of the two courses that are currently taught separately, and thus new and crucial areas (not taught so far) can be emphasized, with concomitant reduction of teaching hours and credit points.

The curriculum of the course concludes with a comprehensive examination at the end of the first semester of the third academic year.

Timing of the Odontotechnology and Prosthodontics Preclinical course: $3^{\rm rd},\,4^{\rm th}$ and $5^{\rm th}$ Semester

Preliminary studies requested for the course of Odontotechnology and Prosthodontics Preclinical course module I: General Dental Material Science

Preliminary studies requested for the course of Odontotechnology and Prosthodontics preclinical course module II: Odontotechnology and Prosthodontics preclinical course module I

Preliminary studies requested for the course of Odontotechnology and Prosthodontics Preclinical course module III: Odontotechnology and Prosthodontics Preclinical course module II

ODONTOTEHCNOLOGY AND PROSTHODONTICS PRECLINICAL COURSE – practices

First Semester

Odontotechnology and Prosthodontics Preclinical III.

Topics of the practices:

- 1. Delivering of the instruments
- 2. Tooth preparation for solo crown, tooth 13
- 3. Tooth preparation for solo crown, tooth 13. Grading
- 4. Tooth preparation for porcelain veneer, tooth 21
- 5. Midterm. Tooth preparation for porcelain veneer, tooth 21, Grading
- 6. Wax pattern fabrication for acrylic crown, tooth 21.
- 7. Fabrication of light cured acrylic solo crown, tooth 13
- 8. Finishing and polishing of the acrylic crown, made for tooth 21
- 9. Grading
- 10. Midterm. Finishing and polishing of the light cured crown made for the 13 tooth. steps of constructing metal based removable partial dentures. Wax pattern fabrication a mandibular metal base plate.
- 11. Wax pattern fabrication for a maxillary metal base plate. Grading
- 12. Steps of making an implant retained dental prosthesis. Impression taking for an implant retained prosthesis (open special tray method)
- 13. Consultation. Practice course grade. Handing down the instruments.
- 14. Practical final examination

INTERNAL MEDICINE I.

1st Department of Internal Medicine

Second Semester

<i>Lectures</i> (2 hours per week)	Practices (2 hours per week)
Introduction to internal medicine.	The bases of the diagnostic procedures
History taking.	in the internal medicine
Physical examination	(The exact preparation of the patient's
	case history, the methods of physical examination of the patients)
Respiratory diseases. Physical examination	
and respiratory diagnostic procedures. Bronchitis.	
Pneumonias. Syndromes of the respiratory system.	The medical examination of the heart
	and lung (percussion, auscultation)
Bronchiectasis. Lung abscess. Pulmonary embolism.	
Chronic aspecific respiratory disorders.	The investigation of the peripheral
Tumors of the lung.	arterial pulse rata and blood pressure
Disorders of the cardiovascular system.	
Physical examination.	
Examination of the peripheral blood vessels.	
Coronary heart disease.	Practicing injection technique
Acute myocardial infarction.	
Acute heart failure. Shock.	
Chronic heart failure.	The physical examination of the abdominal organs
Rheumatic fever. Valvular heart disorders.	
Infective endocarditis. Disorders of the pericardium.	The medical considerations of
Cor pulmonale.	dentistry and dental considerations
	of internal medicine
Cardiac arrhythmias. Conduction disturbances.	
Hypertension.	Consultation
Atherosclerosis. Thromboangiitis obliterans.	
Raynaud's phenomenon.	
Headache. Dental relation of the heart diseases	Consultation
Note: The maximum number of absences in a semi	

More than 3 absences invalidate the semester Practical course grade

ORAL AND MAXILLOFACIAL SURGERY, PRE-CLINICAL COURSE

Tutor: Dr. Kinga Körmöczi

First Semester

Practices (2 hours per week)

Oral surgery as a part of general surgery The surgical anatomy of the teeth The splanchnocranium. The Maxillary Nerve The mandible, the Mandibular Nerve The injection (instrumentation, rules, techniques) Midterm (written) Surgical hygiene. The principle of antisepsis and asepsis The operation theater Oral surgical instrumentation The removal of teeth/ practice on phantom Semester closing midterm (oral + practical) Practicing, repetition

ORAL AND MAXILLOFACIAL SURGERY I.

Second Semester

<i>Lectures</i> (1 hour per week)	Practices (3 hours per week)
The history of oral surgery Clinical examination and diagnostics	Surgical anatomy of the jaws and teeth Local anesthesia
Pain control. The physiologic and psychologic aspects of pain	Oral and maxillofacial surgical instruments
The mode of action of local anaesthetics. The pharmacological properties of local anaesthetic drugs	Clinical diagnosis, medical examination of the patients
The technique of local anaesthesia Part I. (anaesthesia of teeth)	Midterm demonstration
The technique of local anaesthesia Part II. (Matas, block of n. alv. sup. ant., anaesthesia of the tongue, the lip, the bucca)	Practicing simple tooth extraction
The technique of local anaesthesia Part III. (Inflammed tissues, trismus) Summericing clinical implications (video/	Practicing simple tooth extraction
Complications of local anaesthesia. Conscious sedation in dentistry	Practicing tooth extraction
Operation technique of dentoalveolar surgery Part I. (surg. tools, flaps, suturing)	Minor oral surgery
Operation technique of dentoalveolar surgery Part II. (complications of tooth removal, surgical root removal) (video)	Minor oral surgery
Problems with the eruption of teeth. The removal of the impacted teeth	Midterm Demonstration
Guest speaker Midterm exam	Minor oral surgery
Consultation	Midterm Demonstration

Note: Lectures will be held in the lecture hall of the Department of Maxillofacial Surgery and Dentistry. The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester three midterm examinations should be passed. Practical course grade (five-scale).

ORAL BIOLOGY

Lecturer: **Prof. Dr. Gábor Varga** Tutor: **Dr. Beáta Kerémi D.M.D.**

Second Semester

Lectures (3 hours per week):

Hard tissues

- 1. Ca homeostasis
- 2. Mineral composition of enamel and dentine. Bioapatites
- 3. Development of tooth germ
- 4. Fibres and extracellular matrix of hard tissues
- 5. Formation of primary-, secondary- and tertier dentine, dentinogenesis and dentine permeability
- 6. Amelogenesis
- 7. Osteogenesis
- 8. Bone resorption and the osteoclasts
- 9. Nutrition and oral health, characterization of oral tissues and functions in elderly
- 10. Radiation, oral symptoms associated with radiotherapy
- 11. Cementogenesis

The oral cavity

- 12. Pathomechanism of bleeding and its relation to dentistry
- 13. The morphology and function of the salivary glands
- 14. Hypo-, and hypersecretory states, xerostomia
- 15. Saliva as a diagnostic fluid
- 16. Pathophysiology of chewing and deglutition
- 17. Dental stem cells
- 18. Gene therapy and gene polymorphisms in dentistry
- 19. Pathomechanisms in oral cancer
- 20. Metabolism of fluoride, hard tissues and fluoride, dental fluorosis
- 21. Tooth eruption and tooth movement
- 22. Pathophysiology of inflammation
- 23. Structural and functional characteristic of dental pulp, blood supply to the oral tissues, pulpal pain and inflammation
- 24. Periodontitis and systemic disorders25. Caries, the dental plague and saliva
- Midterm (1-24 lectures)
- 26. Gingival sulcus and crevicular fluid
- 27. Oral sensation
- 28. Wound healing

Practices (2 hours per week):

- 1. Oral clearance
- 2. Haematology Part 1 Normal blood
- 3. Haematology Part 2 Reaktive blood smears
- 4. Haematology Part 3 Chronic Leukemias
- 5. Haematology Part 4 Acute Leukemias
- 6. Haematology Part 5 Haemostasis
- 7. Haematology Part 6 Anemias

- 8. Haematology MIDTERM
- 9. Chewing
- 10. Mineralized tissues + fluorid
- 11. Analysis of dental plaque
- 12. Salivary secretion
- 13. PCR technique in dental research
- 14. Oral defense mechanisms

The maximum number of absences from practice in a semester is 3! More than 3 absences invalidate the semester.

Theoretical demonstration from the material of the lectures in the 13th week (1-12 lectures material) ECG demonstration at week 7 (from ECG material) During the semester all midterms (one theoretical midterm – from the lectures, one ECG midterm – on ECG practice) should be passed. In case of an unsatisfactory final grade (1), the semester v

semester will not be accepted.

RADIATION PROTECTION

Department: Independent Division of Radiology

Lecturer: **Prof. Dr. Csaba Dobó Nagy** prerequisites: basic module

Third year second semester

Lectures (1,5 hours per week) Atomic structure, radioactivity Ionization, Dosimetry Health physics Protection against external exposure Measurement of exposure at work General rules of application of ionization Types and levels of exposure Radiation protection legislation Regulation of accident prevention at work Controlling system of the radiation supervisory authority Protection of patients Dose limits X-ray equipments Consultation Written exam

Practices (1 hour per week) Measurement and calculation effective dose of the patient receiving intraoral x-ray Importance of collimation, receptors Operating the equipment

Notes: maximum number of absences in a semester is 3. more than 3 absences invalidate the semester. closing semi-final
ORAL DIAGNOSTICS I.

Department of Oral Diagnostics

Address: Bp. VIII., Szentkirályi u. 47. 1088 Phone: 459-1500/59161, 317-1044 Tutor: **Prof. Dr. Csaba Dobó Nagy** E-mail: oral@fok.usn.hu

Third year 2nd semester

Week Lecture (1 hour/week) Practice (1 hour/week)

- 1. Introduction to Oral Diagnostics. Importance and rules of dental diagnostics and document .
- 2. Dental anamnesis. Difficulties of the general health status assessment. Indication and contraindication of dental treatment relating to the general health status. Risk patients.
- 3. Examination of oral mucosa. Stomato-oncological screening.
- 4. Oral diseases in general practice.
- 5. The diagnostics of disorders of TMJ, upper and lower jaws and dentures. Planning of the treatment.
- 6. Fábián and Fejérdy Classification of partially edentulous arches.
- 7. Orthodontic Diagnostics and treatment plan.
- 8. Diagnostics of the caries. Methods and instruments. Dental disorders with non-caries origin.
- 9. Endodonthic Diagnostics and emergency interventions
- 10. Examination methods of parodontium and oral hygiene. Influence of the results on the treatment plan. Examinations of oral hygiene, dental status and parodontium within screenings. Indices.
- 11. Diagnostics of the salivary glands and their function. Diagnostic procedures of halitosis.
- 12. Role of diagnostics in Esthetic Dentistry. Optical and formal charactheristics of the teeth. Diagnostics and rehabilitation with the harmony of dentures and the face.
- 13. Diagnostic failures in general praxis.
- 14. Early diagnosis and preventive approach

Rules of practices

Activity of the students:

- 1. Clinical evaluation and registration of medical and dental conditions, extraoral and intraoral examination of the patients, stomato-oncological cheque-up. Registration of medical and dental history.
- 2. Documentation of the above, taking oral photos, and preparing diagnostic casts.
- 3. Making decisions about additional diagnostic methods, X-ray examinations, referrals and consultations.
- 4. Making diagnosis and complete preliminary treatment planning.
- 5. Preparing written case-demonstrations including history, clinical finding, diagnosis, preliminary treatment plan and conclusions.
- 6. Written case demonstrations should be made at home, with the use of the students notes in the practice. Students are responsible for and should take great care about the patients personal rights. No personal data, medical certificate, x-ray pictures or other relevant findings can be brought home, for preparation of the case demonstrations! (only the notes made by the student during the practice, containing no personal data, no offi cial documentation.)

Written theoretical evaluation will be organized in one of the practices in this semester.

SEMMELWEIS UNIVERSITY / FACULTY OF DENTISTRYFaculty of Dentistry Exam:

Practical hours should be visited during 2 days. The time of practices is between 8.00 a.m - 1.00 p.m. Semifinal exam will be organized at the end of third year, second semester.

Minimal expectations: reaching the minimum level of the written theoretical evaluation (mark 2) presentation of three written case-demonstrations reaching the minimum quality level (mark 2) Non-performance of the minimal expectations invalidate the semester!

Textbook:

1. Bricker, Langlais, Miller: Oral Diagnosis, Oral Medicine and Treatment Planning (second edition) 2 BC Decker Inc Hamilton London 2002.

Recommended books:

- 1 Bengel, Veltman, Loevy, Taschini: Diff erential Diagnosis of Diseases of the Oral Mucosa Quintessence Publishing Co. Inc. Chicago, Illinois 1989
- 2 Manfred Strassburg/Gerdt Knolle : Diseases of the Oral Mucosa A Color Atlas (Second Edition) Quintessence Publishing Co. Inc. Carol Stream Illinois 1994 3 "hand-outs" will be prepared and presented for the students by the lecturers

GENETICS AND GENOMICS

Department of Genetics, Cell- and Immunobiology

Course director: Prof. Dr. Edit Buzás

Course coordinator: Dr. F. Ágnes Semsei

Subject code: FOKGEN181_1A

Prerequisite subject: Medical Biochemistry, Molecular and Cell Biology III., Medical and Dental Physiology II Credit: 2

Lectures (2 hours per week):

- 1. Introduction to human genetics, the human genome
- 2. Monogenic inheritance (Autosomal inheritance)
- 3. Role of sex in inheritance
- 4. Genetic variations
- 5. Chromosomal aberrations I.
- 6. Chromosomal aberrations II.
- 7. Epigenetics
- 8. Introduction to genomics. Methods in genomics
- 9. Genomic approach of complex inheritance
- 10. Pharmaco- and nutrigenomics
- 11. Midterm
- 12. Gene and genome manipulation
- 13. Genetics of biological processes
- 14. Population genetics and genomics; Genome and environment

Practices (1 hour per week):

- 1. Cytogenetics I.
- 2. Cytogenetics II.
- 3. Molecular genetic methods and applications in human genetics I.
- Molecular genetic methods and applications in human genetics II.
- 5. Pedigree analysis: autosomal inheritance I. (AD)
- 6. Autosomal inheritance II. (AR)
- 7. Sex-linked inheritance I. (XR)
- 8. Sex-linked inheritance II. (XD, mitochondrial)
- 9. Complex inheritance
- 10. Consultation
- 11. Case studies
- 12. Genetic aspects of cell cycle and cell division disorders
- 13. Meiosis, gametogenesis; pre-implantation genetic testing
- 14. From genes to bedside

Important notes:

Students must visit at least 75% of the lessons. More than three absences from the practice or more than three absences from the lecture invalidate the semester, no signature is given. There are no extra practices.

There is one midterm during the semester. Spare midterm is organized for those students, who miss the midterm because an acute illness, but they have to show up the medical record to the tutor in one week. There is no opportunity to improve the midterm scores.

After the course there is a written exam (single choice and essay questions, family tree, karyogram, evaluation of molecular genetic studies etc.). The exam grade is calculated from the sum of midterm scores (maximum 40) and exam scores (maximum 60). Students have to reach more than 50 % of both the exam scores and total scores to pass the exam. In the third exam midterm scores are not calculated.

Core text: Medical Genetics and genomics (e-book)

Lecture and practice presentations and additional texts are available on the homepage: http://gsi.semmelweis.hu (The user name and password is on course datasheet of the Neptun)

MEDICAL ASPECTS OF DISASTER PREPAREDNESS AND RESPONSE I-II.

Directorate for Safety Technology Department for Disaster Management and Education

Supervisor: *Pál Kocsik* Lecturer: *Csaba Csendes* **Type of Course: indispensable** Credit value: 0

First and Second Semester

Purpose of the lecture:

The goal of the subject is to provide basic knowledge of the definition, mission, reasons and circumstances of establishment of civil protection/disaster management, on its place and role in the country's defense/protection system; to provide information on the types of disasters and their features. Based on experience gained in real incidents, to provide information on the peculiarities of disaster management and the tasks of medical authorities in this context.

The syllabus:

5th semester, 2 teaching hours: (M1) Concept, mission, tasks and establishment of civil protection and disaster management in Hungary. Types and features of disasters, the disaster vulnerability of Hungary, the organizational system of the protection against disasters, command and control of protection, the role of medical authorities.

6th semester, 2 teaching hours: (M2) The early warning system and signals of disaster management. The elimination of the consequences of disasters, the staff work applied during protection. Features and activities of Hungarian disaster management organizations and authorities, international possibilities of disaster management and the lessons learnt, demonstrated by examples.

Requirements and the potential for absences to participate in the sessions:

The subject consists of 4 modules. Module 1 does not have any prerequisites; module 2 anticipates the fulfillment of module 1. Students must register to attend the course announced as required. Those who are unable to fulfill module 1 or 2 (do not attend), may participate in a supplementary lesson in the 1st semester of the following year.

The method of certificate for the workshops and the exam absences:

Certificate of absence: medical, official - court of justice, local government, Students' Union, etc.

The mid-term controls' (reports, midterm) number, topic and date, replacements and repairs:

Method of making up for the absence justified by certificate: participation in a supplementary lesson.

Requirements for the signature:

Students must participate in the lesson announced to acquire signature, or in case of absence justified by certificate, in a supplementary lesson. Only registered students may participate in a supplementary lesson announced.

The method of grading: signature

Type of examination: none

Requirements: none, students must fulfill the obligation to attend the lessons.

Application for exam: none

Changing procedure for exam application: none

Absence from the examination: none

Notes, textbooks, study aids and literature list: to be issued later

ELECTIVE SUBJECTS

Modern research methods in dentistry

Leader of the course: **Prof. Gábor Varga** 1st semester –2 credits Wednesdays at 17.00-18.30 (2x45minutes)

Topics to be covered:

- 1. Stem cells and scaffolds
- 2. Gingival blood circulation and inflammation Laser Doppler Flowmetry
- 3. Isolation, maintenance, differentiation and in vitro functional assays of oral stem cells and progenitors
- 4. CAD/CAM techniques and LASCA
- 5. Care for children having cleft lip and palate
- 6. Patch clamp electrophysiology technique
- **Requirements:**
- 1. Participation in the course compulsory, absences do not exceed 25% of the total number of hours.
- 2. The tasks to be fulfilled during the semester:
- 3. create a professional interview (3-5 pages, word doc) with one of the lecturer on the course

Challenges in modern dental research

Leader of the course: *Prof. Gábor Varga* 2nd semester – 2 credits Wednesdays at 17.00-18.30 (2x45minutes)

Topics to be covered:

- 1. Artificial organs and tissues; artificial salivary glands biological regeneration of the human glands
- 2. Anesthesia in dentistry
- 3. Saliva as diagnostic factor
- 4. Informatics biology dental research practice dentistry
- 5. Gene therapy in dentistry
- 6. Laboratory animals for dental research possible alternative methods; animal studies pros and cons
- 7. Homeopathy in dentistry

Requirements:

- 1. Participation in the course compulsory, absences do not exceed 25% of the total number of hours.
- 2. PowerPoint presentation, lecture and leading related discussion
- 3. crtitical written review of one Researcher Student Conference presentation

INTERDISCIPLINAR ASPECTS OF ORTHODONTICS

Department of Oral diagnostics

- 7. Investigation of epithelial transport
- 8. Investigation methods of implant stability
- 9. Psychosomatics examination of saliva samples
- 10. Clinical periodontal research
- 11. Dental epidemiological studies, saliva as a diagnostic factor
- 12. Structural studies of non-decalcified hard tissues
- 13. Micro CT investigations
- 14. Real time 3D rendering of oral tissues

- 8. Medical and dental use of stem cells; isolation and possible use of tooth-derived stem cells in craniofacial regeneration
- 9. Gene polymorphism SNP dental genomics what is the use?
- 10. Bone loss bone augmentation craniofacial tissue regeneration – new directions
- 11. Smile design aesthetics and dental/medical ethics
- 12. GERD and dental erosion
- 13. Implantology
- 14. Biodentin and alternatives in dentistry

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LANGUAGE COURSE

Language Communication Center

Term 5 Hungarian Dental Terminology III

Hungarian Dental Terminology III is a course for dental students who completed the course Hungarian Dental Terminology II and passed the examination. Students see and treat patients in the fifth term.

Торіс

Students will be introduced to the most important topics of dentistry in Hungarian to help them with professional communication. Special emphasis is placed on communication. Grammar which has been acquired is practiced with dental vocabulary and in situations orally. *Vocabulary*: teeth (name and structure), dental equipment, dental history (drugs and diseases), dental care, dental examination, etc. The course consists of 56 hours (4 hours per week). Students receive 2 credit points for the course. Evaluation is based on two written tests and active participation in classes.

Textbooks

J. Kovács: A fogászati szaknyelv alapjai I. Gera: Doctor – Patient, Doctor – Assistant Communication, compiled by Prof. Dr. I. Gera, M. Putz: Magyar fogorvosi szaknyelv I. Supplementary Materials, compiled by staff members of the Centre for Languages and Communication.

Term 6 Hungarian Dental Terminology IV

Hungarian Dental Terminology IV is a course for students who completed the course Hungarian Dental Terminology III. The course concludes with a final examination at the end of the term.

Торіс

Students will be introduced to further dental topics and situations to help professional communication in practical classes. In addition, they prepare for their final examination. Special emphasis is placed on communication with patients. Grammar which has been acquired is practiced with dental vocabulary and in situations orally.

Vocabulary: dental treatment (dental caries, root canal treatment, gingivitis and tartar), prosthodontics (tooth extraction and tooth replacement), oral hygiene, tooth whitening and orthodontic treatment.

The course consists of 56 hours (4 hours per week). Students receive 2 credit points for the course.

Evaluation is based on two written tests and active participation in classes.

Textbooks

J. Kovács: A fogászati szaknyelv alapjai

I. Gera: Doctor - Patient, Doctor - Assistant Communication, compiled by Prof. Dr. I. Gera

M. Putz: Magyar fogorvosi szaknyelv I.

Supplementary Materials, compiled by staff members of the Centre for Languages and Communication

COMPULSORY SUMMER PRACTICE

MINIMUM 1-WEEK (30 hours) – MAXIMUM 4-WEEK PROGRAM IN DENTO-ALVEOLAR SURGERY

Practicing tooth extractions Practicing local anesthesia Assisting at minor oral surgical procedures Practicing post-surgical patients' management Carrying out surgical tooth extraction under supervision Carrying out minor dento-alveolar surgical procedures under supervision Students should work at the assigned hospital or dental clinic 6 hours a day, five days a week.

Important note: Document certifying the completion of the practice must be handed in at registration! Registration to the next year is not allowed without it!

CLINICAL MODULE

New curriculum to be introduced Please, follow the updated version on the home page



Faculty of Dentistry 4th year

STUDY PROGRAMME

CLINICAL MODULE

7th semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	General and Dental Radiology	C4L2P2	final#	Radiation protection Pathology, General and Oral Microbiology	
compulsory	Conservative Dentistry and Endodontics II.	C4L1P3	practice mark	Conservative Dentistry and Endodontics I., Prosthodontics I.	
compulsory	Internal Medicine II.	C3L2P1	semi-final	Internal Medicine I., Genetics and Genomics	
compulsory	Oral and Maxillofacial Surgery II.	C4L1P3	semi-final	Oral and Maxillofacial Surgery I., Oral Pathology Radiation protection	
compulsory	Periodontology I.	C2L1,5P0,5	semi-final	Oral Biology, Pathology, Oral Pathology	
compulsory	Pharmacology, Toxicology I.	C2L1,5P1,5	semi-final	Pathology, Biochemistry, Molecular and Cellbiology III.	
				Medical and Dental Physiology II.	
compulsory	Prosthodontics II.	C6L1P6	semi-final	Prosthodontics I., Conservative Dentistry and Endodontics I., Radiation protection	
obligatory elective	Neurorology	C1L1P0	semi-final	Internal Medicine I.	
obligatory elective	Psychiatry	C1L1P0	semi-final	Internal Medicine I.	
obligatory elective	Dental Ethics	C2L2P0	semi-final	Pathology	
compulsory	Gnathology	C3L1P2	final#	Prosthodontics I. Conservative Dentistry and Endodontics I., Oral Diagnostics	
obligatory elective	Public Health	C3L1,5P2	final#	General and Oral Microbiology	
compulsory	Emergency Dentistry I.	C0L0P1	signature	Oral Pathology	
obligatory elective	Pediatrics	C1L1P0.5	semi-final	Internal Medicine I. , Pathology	
	Total Credit	38			

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

P = Practice (hours/week)

8th semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Conservative Dentistry and Endodontics III.	C4L1P3	practice mark	Conservative Dentistry and Endodontics II., Prosthodontics II.	
compulsory	Orthodontics Pre-Clinical	C1L0P1	practice mark	Oral Biology, Pathology, Oral Pathology	
compulsory	Internal Medicine III.	C1L1P0	final#	Internal Medicine II.	
compulsory	Oral and Maxillofacial Surgery III.	C4L1P3	practice mark	Oral and Maxillofacial Surgery II. Pharmacology, Toxicology I.	
compulsory	Periodontology II.	C4L1P3	semi-final	Periodontology I., Internal Medicine II.	
compulsory	Pharmacology, Toxicology II.	C3L1,5P1,5	final#	Pharmacology, Toxicology I.	
compulsory	Prosthodontics III.	C4L1P4	practice mark	Prosthodontics II., Conservative Dentistry and Endodontics II., General and Dental Radiology I.	
obligatory elective	Surgery	C3L2P1	final#	Internal Medicine I., Pathology	
compulsory	Implantology I.	C1L1P0	semi-final	Oral and Maxillofacial Surgery II. Periodontology I.	
compulsory	Emergency Dentistry II.	C0L1P1,5	signature	Emergency Dentistry I.	
obligatory elective	Ophthalmology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.	
obligatory elective	Otorhinolaryngology	C1L1P0.5	final#	Pathology, Anatomy (Maxillofacial Anatomy) IV.	
compulsory	General Dentistry practice (summer, 4 weeks)	COLOP30	signature	prerequisite of registering to the 9th semester	
	Total Credit	26			
elective	Basic Restorative Digital Dentistry	C1L1P0	semi-final	-	

CLINICAL MODULE

Explanation

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

P = Practice (hours/week)

IMPORTANT NOTE: Signing up for Physical Education (PE) VI. in the 1st semester and for PE VIII. in the 2nd semester is compulsory.

LIST OF TEXTBOOKS (The list may change!)

- 1 Katzung, B.: Basic and Clinical Pharmacology. 8th ed. Lange Medical Books/McGraw-Hill, 2001.
- 2 Peter, E.S. Freund-Meredith B.McGuire.: Health, Illness and the Social Body. (A Critical Sociology.) Prentice Hall, Upper Saddle River, New Jersey.
- 3 Conrad Fischer–Caterina Oneto (2009): USMLE Medical Ethics: The 100 cases you are most likely to see on the exam (Second edition) New York: Kaplan Publishing ISBN: 9781419553141
- 4 Mumenthaler: Neurology. Georg Thieme Verlag 1990. ISBN 3 13 523 909 3
- 5 Kaplan&Sadock's Synopsis of Psychiatry. Tenth Edition. Eds: B.J. Sadock V.A. Sadock, Lippincott Williams, 2007
- 6 Fuller G.: Neurological Examination Made Easy. 3rd ed. Churchill Livingstone. 2004. ISBN 0443074208
- 7 Rajna Péter: Ideg- és elmegyógyászati szakkifejezések
- 8 Hoag, Pawlak: Essentials of Periodontics. Mosby. ISBN 80162228x.
- 9 Goaz, White: Oral Radiology. Mosby. ISBN 801618738.

- 10 T.G.Wilson-K.S.Kornman: Fundamentals of Periodontics Quintessence. 1996. ISBN 0-86715-303-2
- 11 The Washington Manual of Surgery. 3rd ed. 2002. Lippincott Williams & Wilkins. ISBN 0-7817-3389-8
- 12 Worthington-Lang-LaVelle: Osseointegration in Dentistry. An Introduction. Ouintessence, Chicago, 1994.
- 13 Sethi, A.-Kaus, Th: Practical implant dentistry. Quintessence, London, 2013.
- 14 Bricker, S.L.-Langlais, R.P.-Miller, C: Oral Diagnosis, Oral Medicine and Treatment planning. 2nd ed. 2002. B.C.Decker Inc. Hamilton London
- 15 Andreoli,T.E.-Bennett, J.C.-Carpenter, C.C.J.-Plum, F.: Cecil Essentials of Medicine. 4th ed. W.B. Saunders Co. 2000.
- 16 The New Public Health: An Introduction for the 21st Century. By: T.Tulchinsky, E.A.Varavikova. 2000. ISBN 0-12-703350-5
- 17 Gerry Humphris, Margaret S. Ling: Behavioural Sciences for Dentistry. Churchill Livingstone, London, 2005 Handouts for the lectures in Dentsoc will be accesible on the homepage of the Institute of behavioural Sciences: www.magtud.sote.hu.
- 18 McCracken's Removable Partial Prosthodontics (10/e) Glen P. McGivney-Alan B. Carr. Hardback, Mosby, 1999. ISBN 0323006787
- 19 Schillinburg et al.: Fundamentals of Fixed Prosthodontics. Quintessence 4th ed. 2012. ISBN 93 13 86 500
- 20 R.M.Basker-J.C.Davenport: Prosthetic Treatment of the Edentolous Patient. 5th ed. McMillan Press Ltd. ISBN 978-1405192613
- 21 Mohl, Zarb, Carlsson, Rugh. A Textbook of Occlusion. Quintessence. Chicago, 1988.
- 22 McNeill: Science and Practice of Occlusion. Quintessence. Chicago, 1997.
- 23 Niklaus P. Lang, Jan Lindhe (ed.): Clinical Periodontology and Implant Dentistry (Wiley Blackwell, 2015)
- 24 Proffit WR, Fields Jr Hw, Sarver DM: Contemporary Orthodontics 5th Edition, 2012; Elsevier Saunders, ISBN: 978032083171
- 25 Casamassiomo PS, Fields HW, McTigue DJ, Nowak AJ: Pediatric Dentistry, Infancy through Adolescence 5th Edition, 2012, Elsevier Saunders, ISBN: 9780323085465.
- 26. Sethi A., Kaus Th.Practical Implant Dentistry: The Science and Art, Second Edition Quintessence, London 2013

Recommended textbooks:

- 1 Bengel, Veltman, Loevy, Taschini: Differential Diagnosis of Diseases of the Oral Mucosa. Quintessence Publishing Co. Inc. Chicago, Illinois 1989.
- 2 Manfred Strassburg/Gerdt Knolle: Diseases of the Oral Mucosa A Color Atlas 2nd ed. Quintessence Publ. Co.Inc. Carol Stream Illinois 1994.
- 3 Coleman,G.C.-Nelson,J.F.: Principles of Oral Diagnosis. Mosby-Year Book, Inc.St.Louis, Missouri, USA 1993. "hand-outs" will be prepared and presented for the students by the lecturers
- 4 Forrai J.-Ballér P.: Chrestomathy on the History of Medicine. Bp. SOTE. 1992.
- 5 Behavioral dentistry. Mostofsky DI, Forgione AG, Giddon DB (eds.), Blackwell Munksgaard, 2006.
- 6 Behavior & Medicine. 4th Edition, Danny Wedding, Hogrefe & Huber Publishers, Seattle, 2006.
- 7 Fadem B: Behavioral Science, Lippincott Williams & Wilkins, 5th ed., 2008.
- 8 Sarafino E.P.: Health Psychology. Biopsychosocial interactions. 6 th ed., New York, Wiley, 2008.
- 9 Kopp M. Skrabski Á.: Behavioral Sciences Applied in a Changing Society, Corvina, 1996.
- 10 Alan Stoudemire: Human Behaviour: An Introduction for Medical Students. Lippincott Company, 1994. ISBN 0-397-51337-2.
- 11 Gatchel R.J., Baum A., Krantz D.S.: An Introduction of Health Psychology. McGraw-Hill 1989. ISBN 0-07-100729-6
- 12 Principles of Oral Diagnosis. Ed.: Coleman, G.C.-Nelson, J.F. Mosby-Year Book, Inc. St.Louis, Missouri. 1993. ISBN 0-8016-1005-2
- 13 Rose, L.F.-Kaye, D.:Internal Medicine for Dentistry. 2nd ed. Mosby. 1990.
- 14 Surgery Basic Science and Clinical Evidence. Ed. Norton, J.A. 1st ed. 2000. Springer. ISBN 0-387-9844-X
- 15 Baehr, M.M.D.- Frotscher, M.M.D:Duus's Topical Diagnosis in Neurology: Anatomy, Physiology, Signs, Symptoms. Thieme. Medical Publ. 2005. ISBN 3136128044
- 16 Lindsay K.-Bone I.-Callender R.: Neurology and Neurosurgery. Illustrated. 4th ed. Churchill Livingstone, 2004. ISBN 0443070563
- 17 Szirmai I.-Kamondi A.-Arányi Zs.-Kovács T: Neurological examination. Bp. Semmelweis Publ. 2006. ISBN 963 9656062
- 18 J. Okeson: Management of Temporomandibular Disorders and Occlusion, 7th ed. 2012, Mosby
- 19 Neil-Walter: Partial Dentures. ISBN 06 32 08 025 8, 1984.
- 20 Neil-Nairne: Complete Denture Prosthetics. Wright. ISBN 72 36 20 636
- 21. Ward Booth, Hausamen, Schendel: Maxillofacial Surgery, C.Livingston Elsevier, 2007
- 22. DDS, MS, PhD Radi Masri, DMD Carl F. Driscoll (szerk.): Clinical Applications of Digital Dental Technology (2015 John Wiley & Sons Inc, Print ISBN:9781118655795 |Online ISBN:9781119045564)
- 23. Alessandro Agnini, Andrea Agnini, Christian Coachman (szerk.): Digital Dental Revolution The Learning Curve (Quintessence Publishing, Italy, 2015, ISBN 978-88-7492-017-4)
- 24. Hermann Péter, Szentpétery András: Gnatológia (Semmelweis Kiadó, 2018)

PHARMACOLOGY, TOXICOLOGY I-II.

Department of Pharmacology and Pharmacotherapy

Obligatory

Credit: 4 (7th semester), 4 (8th semester) Lecturer: László Köles, MD, PhD, Associate Professor

Pharmacology deals with the effects, mechanisms of actions, adverse effects, interactions and clinical administration of drugs used in the clinical practice as well as with their fate in the body. It also specifies the rules of prescription writing. It is based on and synthesizes the knowledge of basic, pre-clinical and clinical subjects such as physiology, biochemistry, oral pathology and internal medicine.

Thematics

First Semester

- 1. Introduction to pharmacology. Pharmacodynamics I.
- 2. Pharmacokinetics. Pharmacodynamics II.-
- Basics of the neurotransmission of autonomic nervous system. Parasympathomimetics. Parasympatholytics.
- 4. Scheletal muscle relaxants. Sympathomimetics.
- 5. Sympatholytics. Pharmacology of the respiratory tract
- 6. Local anesthetics. General anesthetics.
- 7. Antidepressants and antimanic drugs. 1st midterm exam, prescription writing
- 8. Anxiolytics, sedative-hypnotics. Antiepileptics-
- 9. Antipsychotics. Drugs for neurodegenerative diseases, noot-ropic drugs.
- Basic principles of the antibiotic therapy. Penicillins. Carbapenems, monobactams.β-Lactamase inhibitors. Cephalosporins, glycopeptide antibiotics and other cell wall damaging antibiotics.
- Antibacterial drugs II. Protein synthesis inhibitors: 50S- Macrolides, ketolides, lincosamides, streptogramins, linezolid, chloramphenicol. 30S- Aminoglycosides, tetracyclines, glycylcyclines. Other antibiotics: metronidazol, nitrofurantoin
- 12. Antibacterial drugs III. DNA gyrase inhibitors, antifolates. Antiprotozoal drugs. 2nd midterm exam, prescription writing.
- Antituberculotics. Antifungal and antihelmintic drugs. Desinfectants and antiseptics
- 14. Antiviral drugs. Consultation, prescription writing.

2nd semester

- 1. Anticoagulants. Inhibitors of platelet aggregation, fibrinolytics, treatment of bleeding. Drugs acting on erythropoiesis.
- Diuretics. Antihyperlipidemic drugs. Drugs used in the treatment of peripheral vascular diseases. Local circulation improving drugs. Prescrition writing
- 3. Inhibitors of the renin-angiotensin-aldosterone system. Calcium channel blockers and other vasodilators. Antiarrhythmic drugs.
- Treatment strategy of ischemic heart disease, congestive heart failure and hypertension. Nitrates and positive inotropic drugs.
- Drugs acting on glucose homeostasis, parenteral antidiabetic preparations. 1st midterm exam. Prescrition writing.
- 6. Oral antidiabetics. Drugs influencing the thyroid function. Smooth muscles relaxants. Drugs influencing uterus function.
- 7. Drugs acting on bone homeostasis. Hypothalamic and pituitary hormones. Sexual hormones and contraceptives.

- 8. Gluco- and mineralocorticoids. Non-steroidal antiinflammatory drugs and further non-opioid analgesics. Drugs used in the treatment of gout.
- 9. Opioids. Drugs of abuse.
- 10. Drugs used in the treatment of peptic ulcer and reflux disease. Pharmacology of digestion, liver and biliary tract. Drugs used in diarrhea and constipation.
- 11. Histamines and antihistamines. Antiemetic agents. 2nd midterm. Prescrition writing.
- 12. Anticancer therapy. Cytotoxic agents. Cytostatic agents.
- 13. Immunopharmacology. Treatment of rheumatoid arthritis, inflammatory bowel disease (IBD). Drugs used in the treatment of migraine.
- 14. Toxicology in the dental practice. Consultation. Prescrition exam.

The attendance of a minimum of 75 % of lectures and practices is necessary for the end term signature of the semester (according to Examination and Studies Regulations). Replacement of classes is not offered by the department automatically. Nevertheless, if the number of absences exceeds the critical limit due to health problems (in this case medical certification is necessary), the student can ask for consultation once in a semester. If this request is accepted, this consultation can replace one not-attended regular class in a semester. The students exceptionally also can attend the classes of other seminar groups in the same week.

With the exception of ask for consultation in case of exceeding the critical number of absences (see above) no certification of the reason being absent from the practices and lectures is needed.

In case of not attending the exam we act according to the Examination and Studies Regulations.

Two midterm tests will be organized during both semesters. The results of the midterms may influence the final grade of the semifinal or final exam (\pm half grade). The participation is not obligatory, and so we do not offer the possibility to repeat or rewrite it. The students are informed about the detailed schedule and topics of the midterms at the beginning of the semester.

The attendance of a minimum of 75 % of lectures and practices is necessary for the end term signature.

The exam grade is determined by exam performance.

The oral semi-final exam is conducted by the lecturer of the practice. The final examination is conducted by leading instructors (Associate Professors and Professors), but the department chair may allow (by recommendation of the dean) the participation of senior lecturers. In both exams one question from each question list have to be drawn. A previous written prescription writing exam at the lecturer of the practice is the part of the final exam.

If the student fails at any parts of the exam, the evaluation (grade) of the whole exam is "failed".

Only in case of semi-final exam there is a possibility to offer the semifinal mark: (please, refer to The Study and Examination Policy Faculty of Medicine, Dentistry and Pharmacy (shortly Study Policy) Section 17 point 12): If the results of the first two midterms (written tests) reach minimum 80%, the student receives the possibility to take the third midterm (oral exam) during the last week of the study period. The topics of the third midterm cover the whole material of the semester. In case the result of this midterm is four or five the Head of Department may offer this mark as the acknowledgment of the student's performance during the semester.

Exam:

Oral **semi-final exam**, at the end of the 7^{th} university semester (from the topics of Pharmacology I.).

Oral **final exam** (from the topics of the whole subject – Pharmacology, Toxicology I-II) at the end of the 8th university semester. A previous written prescription writing exam at the lecturer of the practice is the part of the final exam.

Semi-final exam (7th semester): testing of the student in a subject of the 1st Pharmacology semester.

Final exam (8th semester): testing of the student in a subject of both semesters – the entire subject of Pharmacology, Toxicology I-II., including a previous written prescription writing exam.

Registration:

In the NEPTUN system.

Modifying:

In the NEPTUN system, according to the Examination and Studies Regulations.

A vizsgáról való távolmaradás igazolásának módja:

According to the Examination and Studies Regulations.

Textbook:

B. Katzung: Basic and Clinical Pharmacology, McGraw-Hill Education, 2018, ISBN: 978-1-259-64115-2

Further study material:

On the homepage of the department: http://semmelweis.hu/pharmacology/graduate-education/faculty-of-dentistry/

INTERNAL MEDICINE II.

1st Department of Internal Medicine

First Semester

Lectures (2 hours per week) Practices (1 hour per week)

Immunologic principles. Lymphocytic system. Immunoglobulins. Types of immunologic eactions. Polycythemia. Agranulocytosis. The leukemias. Hodgkin's disease and non-Hodgkin's lymphoma. Introduction to anemia and approach to patients with anemia. Iron deficiency anemia. Megaloblastic anemia. Aplastic anemia. Hemolytic anemias. Plasma cell disorders. Multiple myeloma. Waldenström's macroglobulinemia. Heavy-chain disease. Amyloidosis. Hemostatic disorders. Thrombocytopenia. Thrombocytosis. Vascular purpuras. Disorders of the coagulation mechanism. Autoimmunity. Systemic lupus erythematosus. Sjögren's syndrome. Atopic diseases. Allergic rhinitis. Asthma of allergic etiology. Urticaria and angioedema. Serum sickness. Drug allergy. Contact dermatitis. Immunodeficiency diseases.

Note: The maximum number of absences in a semester is 3 More than 3 absences invalidate the semester Semi-final examination Rheumatoid arthritis. Iuvenile rheumatoid arthritis. Reiter's syndrome. Bechet's syndrome. Systemic sclerosis. Polymyositis and dermatomyositis. Wegener's granulomatosis. Hypothalamic and pituitary disorders. Hyperpituitary syndromes. Anterior pituitary insufficiency. Diabetes insipidus. The adrenal cortex. Cushing's syndrome. Addison's disease. Diabetes mellitus. Diagnosis and classification of diabetes mellitus. Complication and treatment of diabetes mellitus. Gout. Diabetes mellitus. Diagnosis and classification of diabetes mellitus. Complication and treatment of diabetes mellitus. Gout. The thyroid gland. Hypothyroidism. Hyperthyroidism. Thyroiditis. Hypoparathyroidism. Hyperparathyroidism. Viral diseases. Herpes simplex. Varicella-zoster virus. Cytomegalovirus. Epstein-Barr virus. Influenza. AIDS. Bacterial disorders. Tuberculosis. Diseases caused by fungi. Salmonelloses. Shigellosis.

INTERNAL MEDICINE III.

3rd Department of Internal Medicine Tutor: **Dr. László Jakab**

Second Semester

Lectures (1 hour per week) Diseases of the kidney. Physical examination. Urine analysis. Primary glomerular disorders. Nephritic syndrome. Interstitial nephritis. Tubular disorders. Acute and chronic pyelonephritis. Nephrolithiasis. Acute and chronic renal failure. Disorders of the digestive system. History taking and physical examination. Special techniques for diagnosing disorders of the digestive system. Disorders of the esophagus. Peptic ulcer disease. Tumors of the stomach. Crohn' s disease. Chronic ulcerative colitis. The malabsorption syndrome. Colonic and rectal neoplasms. Acute abdomen. Mechanical obstruction and ileus. Disorders of the liver. Physical examination. Diagnostic procedures. Jaundice. Cirrhosis of the liver. Acute and chronic hepatitis. Disorders of the gall bladder and the biliary tract. Disorders of the pancreas.

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester Final examination

CONSERVATIVE DENTISTRY AND ENDODONTICS II.

Department of Conservative Dentistry

Head of Department: Dr. Zsuzsanna Tóth D.M.D., Ph.D.

First semester

Lectures (1 hour per week):

- 1. Preventive endodontics: significance of pulp protection
- 2. Endodontic microbiology
- 3. Endodontics: Access preparation and length determination
- 4. Endodontics: cleaning and shaping of root canals
- 5. Shaping of the Root Canal System: hand and rotary instrumentation techniques
- 6. Obturation techniques (cold and warm gutta-percha techniques)
- 7. Evaluation of Endontic Outcomes
- 8. Endodontic emergencies.
- 9. Endodontic management of traumatic dental injuries
- 10. Demonstration (Midterm)
- 11. Definitive restorations of root canal treated teeth, post and core build-up, single crowns
- 12. Surgical treatments related to Endodontics. Methods and indications.
- 13. Radiology in Conservative Dentistry
- 14. Planning of complex treatments

Clinical practice (3 hours per week).

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester a midterm exam must be passed and one documented clinical case must be presented to validate the semester by earning the signature. Practical grade: consists of midterm, "small tests", and evaluation of work and knowledge presented at clinical practice.

CONSERVATIVE DENTISTRY AND ENDODONTICS III.

Second semester

Lectures (1 hour per week):

- 1. Evidence based dentistry
- 2. Microscope in endodontic treatments
- 3. Special cavitiy preparations
- 4. Core build-up
- 5. Esthetic inlays
- 6. Dental CAD/CAM
- 7. Bleaching of teeth
- 8. Thesis defence
- 9. Esthetic veneers
- 10. Demonstration (midterm)
- 11. Surgical treatment of multiplex cervical lesions
- 12. Difficulties during root canal treatments and their solutions
- 13. Endodontic and Periodontal interrelationships
- 14. Surgical procedures in restorative dentistry

Clinical practice (3 hours per week).

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester a midterm exam must be passed and one documented clinical case must be presented to validate the semester by earning the signature. Practical grade: consists of midterm, "small tests", and evaluation of work and knowledge presented at clinical practice.

PROSTHODONTICS II.

First Semester

Topic of the lectures (weekly, numbered):

- 1. The reasons and the consequences of tooth loss
- 2. Infection controll in prosthodontic
- 3. Preparation for fixed restorations
- 4. Fixed temporary restorations
- 5. Impression for fix restorations
- 6. Minimal invasive prosthodontic treatment
- 7. Removable partial dentures
- 8. Major connectors of upper and lower RPD
- 9. Indirect and direct retainers of RPD
- 10. Gnatological aspect of fix and removable partial dentures
- 11. Clinical and laboratirial steps of fixed partial dentures
- 12. Fix appliances, types of crown and bridges
- 13. Prosthetic aspects of implantology
- 14. Consultation

PROSTHODONTICS III.

Second Semester

Topic of the lectures (weekly, numbered):

- 1. Diagnosis and treatment planning
- 2. Classification of the partially edentulous dental arches
- 3. Tooth sade determination
- 4. Treatment planning for the class 0. dental arche
- 5. Treatment planning for the class IA. and 1B. dental arches
- 6. Treatment planning for the class 2A. dental arches
- 7. Treatment planning for the class 2B. dental arches

- 8. Treatment planning for the class 2A/l. and 3. dental arches
- 9. Maxillo facial prosthetics
- 10. Implants in prosthodontics
- 11. Parodontologic aspects of Prosthodotic Treatments
- 12. Construction of Complex Dentures
- 13. Consultation

BASIC RESTORATIVE DIGITAL DENTISTRY

Second Semester

Department of Prosthodontics

Head of Department: **Prof. Dr. Péter Hermann** Lecturer: **Dr. Judit Borbély**

Lectures

- 1. Introduction to digital dentistry
- 2. Direct and indirect CAD CAM workflow
- 3. Standard Tessellation Language
- 4. Intraoral scanning systems with lab connection
- 5. Cad/Cam materials
- 6. Digital communication, shade selection
- 7. Virtual articulators

Practices

- 8. Intraoral scanning in vitro
- 9. Intraoral scanning in vivo
- 10. Prostho planning for navigated implant surgery
- 11. 3 D printing
- 12. Dental system Lab CAD fixed
- 13. Dental system Lab CAD removable
- 14. Summarizing Digital Course/Test

SURGERY

I. Department of Surgery Department Section of Surgery

Second Semester

Lectures (2 hours per week)	Practices (1 hour per week)
Surgery of the neck. Thyroid and parathyroid	Visiting patients' ward
Surgical treatment of the chest wall, breast, pleura, lung and mediastinum	Visiting operating theater
Oesophagal surgery (injuries, diverticula, malignant diseases)	Visiting patients' ward
Gastric and duodenal surgery (benign diseases)	Visiting patients' ward
Gastric and duodenal surgery (malignant diseases)	Visiting operating theater
Surgery of gall-bladder and extrahepatic biliary system	Visiting operating theater
Surgery of the small intestines and colorectum (benign and malignant diseases)	Visiting patients' ward
Appendicitis	Visiting patients' ward
Surgery of the liver, pancreas and spleen. (injuries, inflammatory diseases and tumors)	Visiting operating theater
Bowel obstructions	Visiting patients' ward
Hernias	Visiting patients' ward
Basic principles in vascular surgery	Visiting patients' ward
Shock. Cardiopulmonary resuscitation.	Visiting operating theater
General principles of traumatology. First aid.	Visiting operating theater
Traumatological management of catastrophes.	
Burned patients.	
Urology Consultation	Visiting patients' ward

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester Practical course grade Final examination

ORAL AND MAXILLOFACIAL SURGERY II.

Department of Oro-Maxillofacial Surgery and Stomatology

Tutor: Dr. Kinga Körmöczi

First Semester

Lectures (1 hour per week) Odontogenic inflammation I. Pathology, pathophysiology and microbiology of pyogenic inflammation Work safety protection training. Odontogenic inflammation II. Clincial features, diagnostics, therapy. The question of dental foci. Odontogenic inflammation III. Maxillofacial inflammation Odontogenic cysts I. Clinical classification of odontogenic cysts, the pathogenesis of their formation. Diagnosis, differential diagnosis Odontogenic cysts II. The surgery of odontogenic cysts. Cystectomy, cystostomy, decompression methods Endodontic surgery Indications and operative technique of apicectomy. Retrograde root filling. The hemisection of teeth Oral surgical aspects of the maxillary sinus I. (Pathology, diagnostics) Oral surgical aspects of the maxillary sinus II. (Sinus apertus) Written midterm The surgery of impacted teeth I. Disorders of the eruption of third molars. Clinical aspects of the prognosis of third molars. Diagnostics of mandibular third molars The surgery of impacted teeth II. Surgical technique of the removal of mandibular third molars. Post operative follow-up treatment of mandibular third molars, complications of their removal. Clinical features of maxillary third molars The surgery of impacted teeth III. Disorders of the eruption of upper canines. Prognosis, diagnosis and surgical treatment. Clinical features of other impacted and supernumerary teeth. Special need dentistry

Practices (3 hours per week) Practising minor oral surgery

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester three midterm examinations should be passed. Semi-final examination

ORAL AND MAXILLOFACIAL SURGERY III.

Department of Oro-Maxillofacial Surgery and Stomatology

Second Semester

Lectures (1 hour per week) Developmental anomalies I. Complex therapy of cleft lip and palate. Craniofacial malformations. Developmental anomalies II. Surgical management of dysgnathia. Dentoalveolar trauma. Injuries of neighbouring soft tissues, principles of management. Clinical aspects of tooth replantation: indication, technique, prognosis. Maxillofacial surgical aspects of peripheral nerve disorders. Diseases of the temporomandibular joint. (Diagnosis and management) Non-odontogenic cysts. Developmental cysts. Pseudocysts. Soft tissue cysts. Preprosthetic surgery I. Principles. Preprosthetic surgery II. Edentulous jaws. Osteoplasty. Corrections of soft tissues. Written midterm Facial pain. The origin of different facial pain. Diagnosis and differential diagnosis of facial pain. Neuralgia. Salivary gland diseases. Diagnostics and therapy Emergency medicine in dental surgery. Emergencies in the dental practice. Management of "high risk patients". Consultation

Practices (3 hours per week) Practising minor oral surgery

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester three midterm examinations should be passed Practical course grade

ORTHODONTICS PRE-CLINICAL

Department of Orthodontics and Pediatric Dentistry

Head of Department: *Dr. Noémi Katinka Rózsa D.M.D., Ph.D.* tel: (1)-4591500/ 59268 E-mail: noemirozsa65@gmail.com Tutor: *Dr. László Miklós Kaán D.M.D., PhD.* Phone: (1)-4591500 / 59270 E-mail: kaanm@dent.semmelweis-univ.hu

First semester

The aim of training

Preparing the dental students for the practical education of orthodontic health care, focusing primarily on the development of the manual skills.

Training form and time frame

Practical education: 1 hour/week Form of examination: practical mark based on the practical performance Comment: The practical education takes place in 7x2 hours. Training starts in the autumn semesters only.

The minimal conditions of participation

Successful final examination of oral biology subject

The used method

According to the detailed syllabus, presentation of the current appliance types on a sample, and/or with multimedia methods. The activation of the appliances, wire- and arch bending practiced individually. Individual practice of bracket bonding with the help of typodonts and phantoms. The students are working under the supervision and management of the instructor.

Detailed syllabus

- 1. The categorization of appliances, the basic principles of their functions, basics of the orthodontic biomechanics
- 2. The function of the discernible appliances, their activation, elements, wire bending practice
- 3. The characteristics of metallic alloys used in orthodontics, their usability, wire bending practice
- 4. The activation of the appliances, their elements, accessories, bracket bonding systems
- 5. The operation principle of the typodont, its application, the use of the ligatures
- 6. Arch bending on a model, using typodont
- 7. Friction-proof systems, loop bending methods

GENERAL AND DENTAL RADIOLOGY

Department of Prosthodontics

Final exam

Lecturer: Prof. Dr. Csaba Dobó Nagy

First Semester

<i>Lectures</i> (2 hours per week)	Practices (2 hours per week)
Radiation physics	Normal radiographic anatomy: Tooth anatomy (lecture)
Dental caries	Normal radiographic anatomy: Anatomic
Pulp cavity	landmarks of the maxilla (lectures)
Extraction of the teeth	Normal radiographic anatomy: Anatomic
	landmarks of the mandible (lecture)
Root canal therapy	Development of the teeth, Deciduous teeth (lect.)
	Recognition of the teeth, anatomic
	landmarks and caries
Periapical lesions	Development of the teeth, deciduous
	teeth, extraction of the teeth
Periodontal disease	Periapical lesions
	1 st midterm
Cysts of the jaws	Periodontal disease
	2 nd midterm
Hypercementosis	Cysts of the jaws
Excessive bone formation	3 rd midterm
Injuries to teeth	
Osteomyelitis	
Tumors	Hypercementosis
Apicoectomy	Excessivebone formation
	Injuries to teeth
	Osteomyelitis
Anomalies	Tumors, apicoectomy
Salivary gland diseases	Anomalies
Resorption of the teeth	
Radiation biology	Review
Health physics	
Long-cone paralleling technique	
Traditional extraoral radiographic	Review
examinations	
Panoramic technique I.	Viewing of the examination
	radiographs I.
Panoramic technique II.	Viewing of the examination
	radiographs II.
Note: The maximum number of ab	sences in a semester is 3.
More than 3 absences invalid	late the semester.
During the semester three mi	dterm examinations should be passed.

PSYCHIATRY

Tutor: *Dr. János Réthelyi* Department of Psychiatry and Psychotherapy

Lectures: 1/week

Examination: Semi-final

Textbook:

Kaplan&Sadock's Synopsis of Psychiatry. Tenth Edition. Eds: B.J. Sadock V.A. Sadock, Lippincott Williams, 2007

Schedule

- Subject of psychiatry, classification of disorders, diagnostic methods Case demonstration (psychiatric interview, signs and symptoms) Affective disorders Case demonstration (depression) Anxiety, anxiety disorders, somatoform disorders Case demonstration (anxiety disorder) Organic psychiatry Case demonstration (dementia) Substance related disorders Case demonstration (alcohol abuse) Schizophrenia and associated disorders Case demonstration (schizophrenia) Emergency in psychiatry, legal aspects Case demonstration, consultation
- **Note:** The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. Semi-final exam: written exam (multiple choice)

NEUROLOGY

Tutor: Dr. Sándor Ilniczky

First Semester

Classroom lectures:

Cranial nerves and the brainstem The motor system The sensory system, pain syndromes Altered consciousness. Emergency in neurology Diagnosis and treatment of cerebrovascular disorders Epilepsy and sudden loss of consciousness Movement disorders Inflammatory disorders and tumors of the nervous system

Bedside practice, patient demonstration

Recognition of neurological symptoms – examination of cranial nerves Examination of the motor system Evaluation of neurological symptoms Emergency in neurology Demonstration of cerebrovascular patients Diagnosis of epilepsies Special investigation of patients with movement disorders

Requirements:

Attendence of the lectures Participation on the patient demonstration (maximum 1 absence from 7 practices) Semifinal exam: the written exam consists of 50 simple choice questions, including the topics of the lectures and the basic literature listed below. For those who are not able to be present at the written exam, or fail, we provide a date for oral exam.

Basic reading:

1 Fuller G. Neurological Examination Made Easy (3rd edition) Churchill Livingstone, Published April 2004. ISBN 0443074208

Suggested reading:

1 Lindsay K., Bone I., Callender R.: Neurology and Neurosurgery Illustrated., 4th edition Churchill Livingstone – Published February 2004. ISBN 0443070563

PERIODONTOLOGY I, II.

Department of Periodontology

First Semester

Lectures (1.5 hours per week) Practices (0.5 hour per week) Credit 2

Exam: semi-final

Second Semester

Semi-final

<i>Lectures</i> (1 hour per week)	Practices (3 hours per we
Introduction to Periodontology	Clinical practice
The morphology of the periodontium,	Clinical practice
histology and embryology of the periodontium	Clinical practice
The dental plaque. Its origin and role in the periodontal	Clinical practice
diseases. Periodontal microbiology	
Oral immunobiology	Clinical practice
Oral immunopathology	
Drugs and chemicals used in the periodontology	Midterm Demonstration
Pathomechanism of the periodontal disease	Clinical practice
Clinical forms of periodontal diseases	Clinical practice
Acute necrotizing ulcerative gingivitis	Clinical practice
Pregnant gingitis, Periodontal diseases	
with endocrine background.	
Non-plaque related periodontal conditions	Clinical practice
Oral mucous membrane diseases located on	
the gingiva	
Periodontal diseases of the child and adolescents	Clinical practice
Epidemiology of the periodontal diseases	Clinical practice
Periodontal diseases and the patients' behavior	
Periodontitis as a behavioral disease	
Oral prophylaxis and prevention of periodontal diseases	Midterm Demonstration
Measures of individual and group education	
and motivation	
Periodontal charting, periodontal indices	Clinical practice
Medical and dental history of the	
periodontal patients	
General appraisal of the etiology of periodontal disease	Clinical practice
Rational for therapy.	
Consultation	Clinical practice
Note: The maximum number of absences in a semester is 3.	
More than 3 absences invalidate the semester.	

During the semester two midterm demonstrations should be passed.

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PUBLIC HEALTH

Tutor: Dr. András Terebessy

English Dental

<i>Lectures</i> (1,5 hours per week)	Practicals (2 hours per week)
Definition of Public Health; Past, present and future of Public Health	Introduction Basic demographical data
Demography: International and Hungarian situation	Public Health Program of EU
General epidemiology Analytical and intervention methods on field of chronic non-communicable diseases	Visit into the Central Kitchen of the University
Lifestyle: smoking, alcohol consumption, drug-abuse	Practical aspects of epidemiological investigations: study-planning and analysis
Epidemiology and prevention of non-communicable diseases I	Dentist's task on prevention of non-communicable diseases I.: smoking, alcohol consumption and drug-prevention
Epidemiology and prevention of non- communicable diseases II	Dentist's task on prevention of non-communicable diseases II: HBP-prevention
Epidemiology and prevention of Cancer	Dentist's task on prevention of non-communicable diseases III: cancer- prevention Screening-screening programs
Environmental health : water, soil, air	Dentist's task on environmental health problems
Occupational health	Dentist's task on occupation diseases prevention
Basics of healthy diet; Nutrition disorders	Assessment of nutritional status; nutritional disorders;
Mother-, child and youth health care	Basics of healthy diet; Computer planning and controlling diet in public catering
General Epidemiology of communicable diseases – International and Hungarian aspects	Family planning, Youth health
Nosocomial Infections Reemerging, emerging and deliberately emerging infections	General epidemiology of communicable diseases Immunization, Vaccination programs
Ethic of Public Health	Sterilization, disinfection Laboratory investigations in case of communicable diseases Nosocomial infections
Structure and financing of Health Care Systems	Food-hygiene; food-borne diseases

DENTAL ETHICS

First Semester

Bioethics

Course Syllabus.

Institute of Behavioral Sciences

Course Director: **Prof. Dr. József Kovács** (28 hours)

Course objectives:

- a. To enable students to recognize ethical issues when encountered in everyday clinical practice and research
- b. To provide students with a conceptual-logical system, which helps them to address ethical questions and to resolve ethical dilemmas in an efficient way
- c. To introduce students to a body of knowledge, which helps them to understand, respect and protect the rights of patient research subjects and fellow health care professionals
- d. To help the would be health care professional to understand the responsibility of the individual, of the health care system and of the society as a whole in maintaining health

Lectures

1. week

Basic concepts of ethics.

Descriptive ethics, normative ethics, metaethics. General ethics and applied ethics. Bioethics, medical ethics, health care ethics. Similarities and differences. The role of bioethics in a pluralistic society. The relationship between law and ethics. Reasoning in ethics. The most common mistakes.

2. week

Normative theories of ethics.

Deontological theories of ethics. (The Golden Rule, Kant and the categorical imperative, the principle of double effect, W.D. Ross and the prima facie duties,) Teleological theories of ethics. (Act and rule utilitarianism.) Theories of natural law.

Contractarian theories of ethics. (The theory of justice of John Rawls)

3. week

The basic principles of dental ethics.

The principle of respect for autonomy. The principle of non-maleficience. The principle of beneficience. The principle of justice. Arguments against "principalism".

4. week

The concept of health and disease.

Naturalistic definitions of health. The medical model of defining health. Normativist definitions of health. Some questions of psychiatric ethics.

5. week

Informed consent.

Simple consent and paternalism in medicine. The emergence of the doctrine of informed consent. Standards for information disclosure for patients. When is informed consent not necessary? Standards of competence and incompetence. The right to refuse medical treatment. Some psychological and communicational aspects of informed consent.

6. week

Information disclosure to terminally ill patients. Telling the truth to patients.

The history of information disclosure to terminally ill patients.

Pros and cons for lying to terminally ill patients.

The weaknesses of the arguments in favour of lying.

The dying process according to E. Kübler-Ross.

How to communicate the bad news to terminally ill patients.

The physician's relationship with the relatives of the deceased patient.

7. week

Justice in Health Care I. Ethical questions of macroallocation.

Higher and lower level macroallocational problems.

The role of personal responsibility in maintaining health.

The principles and practice of rationing in contemporary health care systems. (Soft and hard rationing.)

Medical ethics and medical economics. Ethical questions of cost-benefit and cost effectiveness analysis. The QALY.

The problem of right to health care. (The libertarian, the liberal and the socialist views about the right to health care.)

The role of the market and that of the state in the health care system.

Ethical problems of financing health care. (Fee-for-service, capitation, fixed salary, DRG-system, etc.)

Setting health care priorities in Oregon.

Attempts to define a just health care system.

8. week

Ethical questions of reproductive medicine.

Abortion.

Artificial insemination from donor.

In vitro fertilization, surrogate motherhood.

Ethical questions of genetic counseling.

Ethical questions of embryo experimentation.

9. week

Justice in Health Care II. Ethical questions of microallocation. Moral dilemmas in the allocation of scarce medical resources.

The concept of microallocation.

Ethical analysis of various selection criteria. (Medical benefit, psychological ability, supportive environment, social value criterion, resources required criterion, age, ability to pay, random selection, personal responsibility for the illness, etc.)

1O. week

Ethical questions of animal experimentation.

History of the thinking about the moral status of animals.

The philosophical significance of the Darwinian conception of nature.

The views of Peter Singer: antispeciesism.

The views of Tom Regan: animal rights.

Ethical questions of experimentation on animals on the basis of a moderate animal protectionist's view.

Critical anthropomorphism.

Alternatives to animal experimentation.

11. week

Euthanasia and the withholding of life-sustaining treatment

Definitions.

The sanctity of life versus the quality of life doctrine.

Is there any difference between active and passive euthanasia?

The practice of active euthanasia in the Netherlands. The Remmelink Report.

Refusal of life sustaining treatment by competent and incompetent patients.

Possibilities to extend the autonomy of patients: living will, durable power of attorney, substituted judgement, etc.

The concept of medically futile treatment.

Ethical problems of the treatment of handicapped newborns. (The debate about the treatment of spina bifida babies, the Baby Doe case, the legal situation, etc.)

12. week

Ethical questions of human experimentation.

Possible forms of experimentation on humans.

Contradiction between the two roles of the physician. (Healer and scientist.)

The ethics of Randomized Controlled Clinical Trials. (RCT)

Randomization and prerandomization.

13. week

Ethical questions of organ- and tissue transplantation.

Some problems of justice concerning kidney transplantation and chronic haemodialyisis.

Ethical questions of transplantation from living kidney donors.

The concept of death.

Ethical questions of organ harvesting from the dead.

The debate about the market of organs.

Ethical questions of using embryo- or foetal tissue in human therapy.

Ethical problems of using anencephal newborns as organ donors.

14. week

The rights of patients.

The role of patient's rights in the transformation of the paternalistic physician-patient relationship.

Moral versus legal rights.

A list of basic rights of patients.

Mechanisms to ensure the realizations of patient's rights. (Patient's rights advocates, ombudsman, hospital ethics committees, institutional review boards, arbitration, etc.

Course Faculty:

Prof. József Kovács, MD, PhD, (Head of the Department of Bioethics), 210-2930/56350; e-mail: kovjozs@net.sote.hu Ágnes Dósa, MD, JD, PhD e-mail: dosaagi@yahoo.com Imre Szebik, MD, PhD e-mail: szebimre@net.sote.hu Jeno Lorincz, MD, JD e-mail: lorjen@net.sote.hu

Department: Institute of Behavioral Sciences Department of Bioethics

NET Budilding, 19th, 20th floor 1089. Budapest, Nagyvárad tér 4. Tel: 210-2953 Secretary: NET Building, 20th floor, Room-2005

List of questions

- 1. Deontological theories of ethics.
- 2. Utilitarian theories of ethics.
- 3. The principles of dental ethics
- 4. Justice and dental ethics: the allocation of scarce medical resources.
- 5. Paternalism in dental practice
- 6. Informed consent
- 7. Information disclosure for terminally ill patients
- 8. Advance Directives
- 9. Experimentation on human subjects
- 10. Objection to Transplantation of Organs and Counterarguments
- 11. Ethical problems of live organ donation
- 12. Organ donation from brain-dead donors: the system of donor cards.
- 13. Organ donation form brain-dead donors: presumed consent
- 14. Active and Passive Euthanasia
- 15. Withdrawing and withholding life sustaining treatment.
- 16. Models of the dentist-patient relationship
- 17. Ethical issues related to treating patients with partially compromised capacity
- 18. Professional norms and bad outcomes
- 19. Ethical questions raised by HIV and AIDS in dental practice
- 20. Confidentiality issues in dental practice
- 21. Moral issues related to the HIV positive dentist
- 22. Possible criteria for distributing the society's resources
- 23. Social justice the free market view of justice
- 24. Ethical issues in advertising dental services
- 25. Professional obligations in dentistry

Textbook:

Conrad Fischer—Caterina Oneto (2009): USMLE Medical Ethics: The 100 cases you are most likely to see on the exam (Second edition) New York: Kaplan Publishing ISBN: 9781419553141

Important:

To participate on at least 75% of the total number of lessons is a prerequisite of getting the signature. Doctor's certificate is required to justify absence from the lessons and the exam.

Exam type: semi-final

Sign up for the exam: through the Neptun system.

GNATHOLOGY – lectures and practices

Department of Prosthodontics

Lecturer: Prof. Dr. Péter Hermann

First Semester

Lecture (1 hour/week) Practice (2 hours/week)

Topic of the lectures (weekly, numbered):

- 1. Introduction To The Physiology Of The Stomatognathic System
- 2. Morphology Of The Stomatognathic System
- 3. Jaw Positions
- 4. Intercuspal Position, Retruded Contact Position, Occlusal Alterations
- 5. Mandibular Movements
- 6. Occlusal Concepts
- 7. Articulators
- 8. Face-bow Transfer. Mounting Of Articulators
- 9. Periodontal Considerations Of Occlusion. Occlusal Trauma
- 10. Gothic Arch Tracing. Ultrasonic Registration And Examination Of The TMJ
- 11. Examinations And Differential Diagnosis Of Occlusal Problems
- 12. Role Of Occlusion In The Clinical Practice. Parafunctions
- 13. Temporomandibular Disorders
- 14. Test

IMPLANTOLOGY I. – lecture

Department of Oro-Maxillofacial Surgery and Stomatology

Lecture: 1 hour/week

Course Syllabus:

History of oral implantology. Different types of implants. Indications, contraindications of implant rehabilitations. Preoperative diagnosis. Surgical placement of implants. The biology and morphology of osseointegration and mucosal seal. Implant biomechanics. Treatment plans, bone grafting methods. Parodontological and esthetic aspects of implant rehabilitation. Implant prosthodontics. Different dental implant systems. Case presentations, planning and completing implant treatments in different edentulous situations. Failures and complications.

Practice: 1 hour/week

Practice of Implantology complements and deepens the knowledge obtained during the theoretical course

- Diagnostics X-ray diagnostics, CBCT analysis, introduction of X-ray and surgical template
- Introduction of the Straumann system emphasize on the unique properties of the system (surface, comparison of 1-stage / 2-stage surgical method, Implant Surgery overview through the system
- Introduction of the SIC system emphasize on the unique properties of the system, Prothetics of the SIC system. Practicing the steps of
 the prostethics on a model, cad-cam based prosthetic abutment, safe on four concept, platform switching, Balance healing screws and
 and abutments
- Guided bone regeneration through the products of Geisthich company inroduction of the metods of bone augmentation techniques, sinus-liftig, lateral bone augmentation practicing on models
- Smart Guide System overview emphasize on the unique properties of the system, irtoduction of the guided implant surgery
- Osstem system overview emphasize nt he unique properties of the system, itroducion of the failures of implantotolgy and their solutions, practicing on models

Semi-final examination

COMMUNITY DENTISTRY

Department of Community Dentistry

Head of department and supervisor of the subject: *Dr. Péter Kivovics* Tutor: *Dr. Orsolya Németh*

1st semester: only practice 2nd semester: lecture and practice

Time: 14 × 1,5 hours

The purpose of the subject is that the dental student would be able to recognize and cope with the possible daily emergency cases at the dental practice.

In the 21st century dental emergency does not mean extractions. It also includes Conservative Dentistry, Prosthetics, Pedodontics, Orthodontics as well as Peridodontics aspects.

The curriculum of the Community Dentistry is an integral part of the other subjects.

It is necessary to teach this special field of dentistry separately. Introduction of individual cases in community dentistry helps with understanding other fields of dentistry as well.

This subject is especially important for graduates as they do not posses enough theoretical and practical knowledge yet. It would make them capable to solve any emergency case with ease.

Department of Community Dentistry is responsible for all Budapest and Pest region dental care, therefore is able to provide sufficient number of patients for practical education.

COMPULSORY SUMMER PRACTICE

4-weeks (120 hours) at a Dental Office (Conservative Dentistry of Periodontology)

The student has to practice whole-scale comprehensive dental treatment including: Oral Prophylaxis, Restorations, Root Canal Therapy and Minor Prosthodontics as well as Er. Management.

Important note: Document certifying the completion of the practice must be handed in at registration! Registration to the next year is not allowed without it!

NOTE

CLINICAL MODULE

New curriculum to be introduced Please, follow the updated version on the home page



Faculty of Dentistry 5th year

STUDY PROGRAMME

CLINICAL MODULE

9th semester					
subjects code	subjects	credit code	examination	prerequisites	
compulsory	Clinical Dentistry I.*	C2L0P6	practice mark	Conservative Dentistry and Endodontics III. Prosthodontics III.	
compulsory	Conservative Dentistry and Endodontics IV	C3L0P3	practice mark	Conservative Dentistry and Endodontics III., Prosthodontics III.	
obligatory elective	Forensic Dentistry	C1L1P0	semi-final	Pharmacology, Toxicology II.	
compulsory	Oral and Maxillofacial Surgery IV.	C5L1P5	practice mark	Oral and Maxillofacial Surgery III.	
compulsory	Implantology II.	C2L1P1	final#	Implantology I. Oral and Maxillofacial Surgery III.	
compulsory	Orthodontics I.	C5L1P4	practice mark	Conservative Dentistry and Endodontics III.	
compulsory	Pedodontics I.	C5L1P4	practice mark	Conservative Dentistry and Endodontics III.	
compulsory	Periodontology III.	C3L1P2	practice mark	Periodontology II.	
obligatory elective	Prehospital Emergency Medicine	C1L1P0	semi-final	Internal Medicine III., First Aid	
compulsory	Prosthodontics IV.	C3L0P3	practice mark	Prosthodontics III., Conservative Dentistry and Endodontics III.	
compulsory	Oral Diagnostics II.	C1L0P1	semi-final	Oral Diagnostics I.	
compulsory	Oral Medicine	C1L1P0	semi-final	Pharmacology and Toxicology II.	
	Total Credit	32			

*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry

#The grade influences the qualification of the diploma. 15 credits should be gained from the elective subjects during th 5-year studies.

C = Credit point

L = Lecture (hours/week)

P = Practice (hours/week)
10th semester credit prerequisites subjects code subjects prerequisites code code compulsory Clinical Dentistry II. * C3L0P6 practice mark Clinical Dentistry I. compulsory Conservative Dentistry and Endodontics V C3L0P3 Conservative Dentistry and Endodontics IV., Prosthodontics IV. final# obligatory elctive Dermatology C1L1P0.5 final# Pharmacology, Toxicology II. Internal Medicine III., obligatory elctive Obstetrics and Family Planning semi-final C1L1P0 First Aid compulsory Oral and Maxillofacial Surgery V. C4L1P3 final# Oral and Maxillofacial Surgery IV. compulsory Orthodontics II C6L1P5 final# Orthodontics I. Pedodontics II C6L1P5 final# Pedodontics I. compulsory compulsory Periodontology IV. final# Periodontology III. C3L1.5P2 compulsory Prosthodontics V. C3L0P3 final# Prosthodontics IV., Conservative Dentistry and Endodontics IV. **Total Credit** 30 Diploma work C20

Important note: Signing up for Physical Education (PE) IX. in the 1st semester and for PE X. in the 2nd semester is compulsory.

Explanation

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

P = Practice (hours/week)

CLINICAL MODULE

LIST OF TEXTBOOKS (The list may change!)

- 1 Becker W.-Naumann H.- Pfaltz R.: Ear, Nose and Throat Diseases. Thieme. Stuttgart, 1994. ISBN 3-13671202-1.
- Répássy, G.: Otolaryngology. Eger, Radó Ny. 2000. 2
- 3 Current Pediatric Diagnosis and Treatment. 13th ed. W.E.Hathaway, W.W.Hay. Appleton and Lange Medical Book. ISBN 0838514006, ISSN 0093-8556
- 4 Lecture Notes of Forensic Medicine (Bp.) 1994.
- Gerhard K. Lang: Ophthalmology / a Pocket Textbook Atlas. Thieme / 2000. ISBN 3-13-126161-7 (GTV) ISBN 0-86577-936-8 (TNY) 1 2 5 345
- 6 Dénes J.-Gábris K.-Hidasi Gy.-Tarján I.: Pedodontics. Bp. SOTE 1995.
- 7 Andlaw, R.I.-Rock, W.P.: A Manual of Pediatric Dentistry. 1998. ISBN 0443053723
- 8 T.G.Wilson-K.S.Kornman: Fundamentals of Periodontics Quintessence. 1996. ISBN 0-86715-303-2
- 9 R.A.Cawson-E.W.Odell: Essentials of Oral Pathology and Oral Medicine. Churchill Livingstone, 1998. ISBN 0-443-06121-1
- 10 Szabó Gy.: Oral and Maxillofacial Surgery. Bp. Semmelweis Publ. 2001.
- 11 Bricker, S.L.-Langlais, R.P.-Miller, C: Oral Diagnosis, Oral Medicine and Treatment planning. 2nd ed. 2002. B.C.Decker Inc. Hamilton London 2002.
- 12 McCracken's Removable Partial Prosthodontics (10/e) Glen P. McGivney-Alan B. Carr. Hardback, Mosby, 1999. ISBN 0323006787
- 13 Schillinburg et al.: Fundamentals of Fixed Prosthodontics. Quintessence 4th ed. 2012. ISBN 93-13
- 14 R.M. Basker-I.C. Davenport: Prosthetic Treatment of the Edentolous Patient, 5th ed. McMillan Press Ltd. ISBN 978-1405192613, 2011.
- 15 C.M.Sturdevant: Operative Dentistry. Mosby. ISBN 0-80166366-0
- 16 Walton: Principles and Practice of Endodontics.
- 17 Niklaus P. Lang, Jan Lindhe (ed.): Clinical Periodontology and Implant Dentistry (Wiley Blackwell, 2015)
- 18. Proffit, WR, Fields, DW, Larson, B, Sarver, DM.: Contemporary Orthodontics 6 th ed., Mosby, 2018.
- 19. Mitchell, L.: An introduction to orthodontics, Oxford Publishing, 2011.

Recommended textbooks:

- 1 J Hunter, J Savin, M Dahl: Clinical Dermatology, 4th ed. Blackwell Publishing, 2007, Paperback, ISBN 9781405146630
- 2 | Bolognia, | Jorizzo, R Rapini: Dermatology, 2nd ed. Elsevier, 2007. Hardback, ISBN 9781416029991
- DJ Gawkrodger: Dermatology. An illustrated colour text, 4th ed. Churchill Livingstone Elsevier, 2007, Paperback, ISBN 9780443104213 3
- 4 JE Fitzpatrick et al: Dermatology Secrets in Color with Student Consult Access. 3rd ed. Hanley & Belfus, 2006. ISBN 1560536160
- R. Graham-Brown, J Bourke: Mosby's Color Atlas and Text of Dermatology. 2nd ed. Elsevier Mosby, 2006. ISBN 072343364X 5
- 6 M Lebwohl et al: Treatment of Skin Disease, 2nd ed. Elsevier Mosby, 2005, ISBN 0-32-3036031
- M Lebwohl, W Heymann, I Berth-Iones, I Coulson: Treatment of Skin Disease, Comprehensive Therapeutic Strategies, Expert Consult Online and Print Hardbound, 2009, ISBN: 0702031216
- 8 Online: www.lib.sote.hu Adatbázisok, adattárak OVID Books@OVID Dermatology Fitzpatrick's Dermatology in General Medicine
- Burkit's Oral Medicine: Lynch, A.M.& Malcom, A. Lippincott. 1996. ISBN 0-397-51242-2 9
- 10 European federation of Preiodontology efp.org International Team for Implantology -iti.org ITI Treatment Guide – iti.org/ITI-Treatment-Guide
- McDonald, F.-Ireland, A.J.: Diagnosis of the Orthodontic Patient. Oxford Univ. Press. 1998. ISBN 0-19-262889-5 11
- 12 Graber, T.M.-Vanarsdall, R.L.: Orthodontics. Current Principles and Technics. Mosby Year Book, Inc. 1994. 2nd ed. ISBN 0-8016-6590-6
- 13
- D.Hull-D.Johnston: Essential Paediatrics. 3rd ed. Churchill Livingstone. 1994. ISBN 0-443-04782-0. Hollwich, F: Pocket Atlas of Ophthalmology. Thieme Verl. 2nd Rev. Ed. Stuttgart, 1986. ISBN 0-86577 244 4 14
- Knight's Forensic Pathology. 3rd ed. 2004. Arnold. 15
- 16 Manual of Emergency Medicine. 5th ed. By Jon L.Jenkins, G.R.Braen. 2004 Lippincott Williams and Wilkins. Product nr. 479531-1019
- Neil-Walter: Partial Dentures. ISBN 06 32 08 025 8, 1986. 17
- 18 Neil-Nairne: Complete Denture Prosthetics. Wright. ISBN 72 36 20 636
- 19 Nikiforuk: Understanding Dental Caries.(1-2) Karger.
- 20 Hermann Péter, Szentpétery András: Gnatológia (Semmelweis Kiadó, 2018)

CLINICAL DENTISTRY I.-II.

The aim of the practice is to teach the sequence of the dental treatment like operative dentistry and endodontics, prosthodontics in the same patient. To teach the theoretical background and practical knowledge of operativ dentistry and endodontics, prosthodontics. To teach how to integrate these two disciplines in treating one patient. No lectures

OTORHINOLARYNGOLOGY AND HEAD AND NECK SURGERY

Lecturer: **Prof. Dr. László Tamás** Tutor: **Dr. Beáta Bencsik**

First Semester

<i>Lectur es</i> (1 hour per week)	Practices (0,5 hour week)
The role of otorhinolaryngology in dentistry and medicine. Clinical anatomy of the ear. Diseases of the external ear.	Routine clinical examinations in practice.
Acute and chronic otitis media. Etiology, diagnosis, complications and therapy.	Evaluation of different types of perforations of the tympanic mem- brane. Cadaver bona practice. Paracentisis on moulage.
Types of hearing losses. Fundamental audiological diagnostic methods. Surgical management of hearing losses. Otosclerosis and cochlear implant.	Routine audiology. Operating theater. Video demonstration.
Clinical anatomy and physiology of the nose and $\;$ paranasal sinuses. Nasal obstruction. Epistaxis.	Anterior and posterior rhinoscopy. X-ray photos of the paranasal sinuses. Clinical management of epistaxis.
Infections and tumors of the nose and paranasal sinuses. Therapeutical possibilities. Borderlines and related aspects between the oral surgery and ENT. Fundamental aspects of maxillofacial traumatology.	Operating theatre. Luc. Caldwell operation. Functional endonasal sur- gery. Endoscopic examination of the paranasal sinuses.
Clinical aspects of diseases of the mouth and pharynx. Diseases of the labial, oral and laryngeal mucosa.	Peritonsillar abscess. Indications and dangers of the tonsillectomy. Aden- otomy. Basis of conservative of the mouth and pharynx treatment of disease.
Anatomy and physiology of the larynx. Disorders of the voice. Infections and tumors of the larynx and their management.	Direct and indirect laryngoscopy. Videostroboscopy and fiberoscopy.
Diseases of the salivary glands. Emergency management of suffocation. Conicotomy and tracheotomy. Foreign bodies in the trachea and oesopha gus	

PEDIATRICS

2nd Department of Pediatrics Tutor: *Dr. Judit Müller*

First Semester

Lectures (1 hour per week)Practices (0,5 hour week)

Development and Growth Childhood Nutrition and its Disorders Fluid and Electrolyte Disorders Newborn Infant: Diseases and Disorders Genetic Disorders Congenital Heart Diseases Respiratory Diseases Neurologic and Muscular Disorders Endocrine Disorders Infectious Diseases, Immunization Gastrointestinal Tract Disorders Hematologic Disorders Halignant Diseases in Childhood Kidney and Urinary Tract Diseases Allergic Diseases

PROSTHODONTICS IV-V.

First Semester

Clinical practices, Integrated practices Treatment of partial edentoulossness, fixed and removable dentures. No lectures.

Second Semester

Clinical practices integrated with the conservative dentistry. Complex treatment of different cases. No lectures.

CONSERVATIVE DENTISTRY AND ENDODONTICS IV.

First semester

No lectures, Clinical practice (3 hours per week), Clinical dentistry (6 hours per week):

Practice of thorough patient examination, taking medical and dental history, stomatooncologic screening. Preparing a treatment plan for complete rehabilitation of the oral cavity. Rehabilitation of oral hygiene and scaling.

Restoring carious teeth with fillings and if needed root canal treatment. Simple and complex cavity preparation for fillings and inlays/onlays. Using different isolation techniques.

Root canal treatment of single or multi rooted teeth, their definitive restoration with onlay or solo crown. Revision of root canal fillings.

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester a midterm exam must be passed and one documented clinical case must be presented to validate the semester by earning the signature. Practical grade: consists of midterm, "small tests", and evaluation of work and knowledge presented at clinical practice.

CONSERVATIVE DENTISTRY AND ENDODONTICS V.

Second semester

No lectures, Clinical practice (3 hours per week), Clinical dentistry (6 hours per week):

Practice of thorough patient examination, taking medical and dental history, stomatooncologic screening. Preparing a treatment plan for complete rehabilitation of the oral cavity. Rehabilitation of oral hygiene and scaling.

Restoring carious teeth with fillings and if needed root canal treatment. Simple and complex cavity preparation for fillings and inlays/onlays. Using different isolation techniques.

Root canal treatment of single or multi rooted teeth, their definitive restoration with onlay or solo crown. Revision of root canal fillings.

List of textbooks:

- 1 Sturdevant's Art And Science Of Operative Dentistry. Edited by T. Roberson, H. Heymann and E. Swift. Mosby, St Louis, 2006. ISBN 978-0-323-03009-0
- 2 Walton R.E., Torabinejad M. ed.: Principles and Practice of Endodontics. W.B. Saunders Co. Philadelphia, 2002.
- 3 Newbrun A.: Cariology Quintessence. ISBN 0867152052

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester a midterm exam must be passed and one documented clinical case must be presented to validate the semester by earning the signature. Practical grade: consists of midterm, "small tests", and evaluation of work and knowledge presented at clinical practice. **Final oral exam:** students (A) must present the best three well-documented clinical cases validated by the practice teacher done at conservative or clinical practice during the entire time of their gradual course, (B) choose one-one question from three topic groups (dental materials, conservative dentistry, endodon-tics) and (C) receive an intraoral X-ray from which they must recognize the teeth, set up diagnosis and suggest a therapy.

ORAL AND MAXILLOFACIAL SURGERY IV.

Tutor: Dr. Kinga Körmöczi

First Semester

Lectures (1 hour / week) Precanceroses. Practicing minor oral surgery Benign tumors of the soft tissues in the head and neck region. Practicing minor oral surgery Benign tumors of the bone tissues in the head and neck region. Practicing minor oral surgery Malignant tumors of the head and neck region. I. Practicing minor oral surgery (Diagnostics, pathology, epidemiology) Malignant tumors of the head and neck region. II. Practicing minor oral surgery (Surgical therapy) Malignant tumors of the head and neck region. III. Practicing minor oral surgery (Complex therapy) Secondary treatment of cleft lip and palate. Orthognatic Surgery Practicing minor oral surgery Biomaterials. Practicing minor oral surgery Esthetical consideration in maxillofacial surgery Practicing minor oral surgery Risk patient treatment in oral surgely I. Practicing minor oral surgery (internal diseases, fainting, antifebrile and painkiller treatment) Arnbulantory narcosis in head and neck surgery, Practicing minor oral surgery coagulopathies, anticoagulant treatment. Sinus lifting. Practicing minor oral surgery Dentoalveolar deformities. Midterm Demonstration Guest speaker Practicing minor oral surgery Consultation Practicing minor oral surgery

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester three midterm examinations should be passed. Practical course grade

Practices (5 hours / week)

580

ORAL AND MAXILLOFACIAL SURGERY V.

Second Semester

Lectures (1 hour / week) Practices (3 hours / week) Diseases of the temporomandibular joint Part I. (Pathology, diagnostics) Diseases of the temporomandibular joint Part II. (Therapy) Peripherial nerve disorders in the head and neck region. Rehabilitation after the paresis of the Facial nerve Antibiotic treatment in dental surgery Maxillofacial reconstructive surgery Part I. (Reconstruction of soft tissues and bone by local flaps) (Reconstruction by microvascular grafts) Modern diagnostic methods in oral and maxillofacial surgery Systematic diseases in the head and neck region The promotion of the osteogenesis by distraction methods Biomaterials in the maxillofacial surgery Guest speaker Consultation

Practice

Two weeks' clinical practice at the in-patient ward of the clinic (1st week in the morning, 2nd week in the afternoon hours, every day) Practical course grade and **final** examination

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester three midterm examinations should be passed.

PEDODONTICS I.

Department of Orthodontics and Pediatric Dentistry

Head of Department: *Dr. Noémi Katinka Rózsa* D.M.D., Ph.D. Phone: (1)-4591500/ 59268 E-mail: noemirozsa65@gmail.com **Tutor:** *Dr. László Miklós Kaán* D.M.D., PhD. Phone: (1)-4591500 / 59270 E-mail: kaanm@dent.semmelweis-univ.hu

First Semester

Lectures (1 hour/week)

- 1. The subject, signification and interactions of paediatric dentistry
- 2. Tooth development, anatomy and dentition of primary teeth
- 3. Developmental disturbances of permanent and primary teeth
- 4. Caries of primary teeth. Treatment possibilities
- 5. Consecutive illnesses of caries in primary dentition
- 6. Mechanism of second dentition. Physiological and pathological significance
- 7. Caries and treatment of permanent teeth
- 8. Consecutive illnesses of caries in permanent dentition
- 9. Psychological aspects of dental treatment during childhood
- 10. Filling materials in Paediatric Dentistry
- 11. Dental radiology in Paediatric dentistry
- 12. Dental anomalies in syndromes
- 13. Root-canal treatment of immature teeth, apexogenesis, apexification
- 14. Special aspects of prevention in paediatric dentistry and orthodontics

Practice (4 hours/week)

Treatment of patients.

Type of evaluation: Practical grade (1-5 grading system)

PEDODONTICS II.

Second Semester

Week Lectures (1 hour/week)

- 1. Pain control and anaesthesia during childhood
- 2. Traumatic injuries of primary teeth
- 3. Traumatic injuries of permanent teeth, complex therapy solutions
- 4. Non- and minimally invasive dentistry
- 5. Prosthetics in Paediatric dentistry
- 6. Periodontology and oral diseases during childhood
- 7. Dental attendance of children suffering from general diseases
- 8. The management of children with special needs
- 9. Aetiology and treatment methods of hard tissue discoloration
- 10. Administration of medicine in pedodontics
- 11. Oral surgery during childhood
- 12. Non- and minimal invasive interventions in paediatric dentistry
- 13. Molar-Incisor-Hypomineralisation Syndrom (MIH)
- 14. Consultation Courses (obligatory and elective) which in part or entirely overlap

Practice (5 hours/week)

Treatment of patients.

Types of evaluation:

Practical grade (1-5 grading system)

Final examination. Evaluation of the whole subject matter.

(1-5 grading system).

ORTHODONTICS I.

Department of Orthodontics and Pediatric Dentistry

Head of Department: *Dr. Noémi Katinka Rózsa* D.M.D., Ph.D. tel: (1)-4591500/ 59268 E-mail: noemirozsa65@gmail.com **Tutor:** *Dr. László Miklós Kaán* D.M.D., PhD. Phone: (1)-4591500 / 59270 E-mail: kaanm@dent.semmelweis-univ.hu

First Semester

Lectures (1 hour/week)

- 1. The subject, significance of orthodontics, its relation to caries and periodontal diseases
- 2. Historical survey of orthodontics. Classification and terminology of malocclusion
- 3. Diagnosis of malocclusions I.
- 4. Diagnosis of malocclusions II. X-ray diagnosis
- 5. Aetiology; hereditary and acquired anomalies. Functional anomalies.
- 6. The timing of the orthodontic treatment
- 7. Biomechanical principles of orthodontics. Possibilities of tooth movement.
- 8. Removable appliances I. Simple orthodontic appliances.
- 9. Removable appliances II. Functional appliances
- 10. Space gaining in orthodontics. Arch expansion and molar distalization
- 11. Elements of multiband/multibond appliances. Multibond technics I.
- 12. Multibond techniques II. Orthodontic wires and the phases of orthodontic treatment
- 13. Modern techniques in orthodontics: splint appliances 1
- 14. Aesthetics in orthodontics

Practice (4 hours/week)

Treatment of patients.

Type of evaluation: Practical grade (1-5 grading system)

ORTHODONTICS II.

Second Semester

Week *Lectures* (1 hour/week)

- 1. Possibilities of orthodontic prevention. Early treatment in orthodontics.
- 2. Normooclusion. Local and general anomalies.
- 3. Treatment of distoocclusion.
- 4. Treatment of mesioocclusion
- 5. Extraction in orthodontics.
- 6. Complex treatment of orthodontic anomalies combined with missing teeth
- 7. Surgical-orthodontic treatments
- 8. Complex therapy of cleft lip and palate
- 9. Retention and relapse.
- 10. Side effects and complications of orthodontic treatment.
- 11. Adult orthodontic treatment.
- 12. Interdisciplinary aspects of orthodontic treatment.
- 13. Digital techniques and workflow in orthodontics
- 14. Consultation

Practice (5 hours/week)

Treatment of patients.

Types of evaluation:

Practical grade (1-5 grading system)

Final examination. Evaluation of the whole subject matter (1-5 grading system).

PERIODONTOLOGY III.

Department of Periodontology

Practical course grade

First Semester

Lectures (1 hour/week)

Introduction: What is the clinical periodontology is? The rational of periodontal cause related therapy Clinical and radiological periodontal diagnostics Oral hygienic, Gingival and Periodontal indices The treatment of periodontal emergency cases The stages of the comprehensive periodontal treatment I. The stages of the comprehensive periodontal treatment II. Professional oral hygiene I. Supragingival scaling Professional oral hygiene II. Supragingival scaling Professional oral hygiene III. Correcting plaque retention factors Oral hygienic education, tooth brushing The instruments of the individual oral hygiene Reevaluation of the patients. Antibiotics. Rational of periodontal surgery Cause related periodontal surgery I. Gingivectomy Cause related periodontal surgery II. Modified Widman Flap operations The maximum number of absences in a semester is 3. Note: More than 3 absences invalidate the semester. During the semester two midterm demonstrations should be passed.

Practices (2 hours/week)

Clinical practice Clinical practice Clinical practice Clinical practice Clinical practice **Midterm Demonstration** Clinical practice Clinical practice Clinical practice Clinical practice Clinical practice Clinical practice Midterm Demonstration

Clinical practice Clinical practice

PERIODONTOLOGY IV.

Second Semester

Lectures (1,5 hours / week)

Week	<i>Lectures</i> (Part One)	Seminar (2 hours/week)
1	Reevaluation II. Correcting phase in periodontal surgery	Literature review
2	Correcting periodontal Surgery -Mucogingival surgery I.	Clinical case conference
3	Mucogingival Surgery Gingival esthetics II.	Literature review
4	Periodontal regeneration	Clinical case conference
5	Periodontal regenerative processes – biological barrier membranes	Literature review
6	Periodontal regenerative processes – growths factors and other biochemical means	Midterm Demonstration
7	Prosthodontic rehabilitation I.	Clinical case conference
8	Prosthodontic rehabilitation II. The white esthetics	Clinical case conference
9	Periodontal follow-up – periodontal maintenance	Literature review
10	Perio – endodontic relationship	Literature review
11	The evaluation of the success of the comprehensive periodontal treatment	Differential diagnosis
12	The occlusion and the periodontium	Consultation
13	Consultation	
14	Written final exam – periodontal diagnostics	
Note:	The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester two midterm demonstrations should Practical course grade and final exam	be passed.
	Fractical course grade and mar chain	

ORAL MEDICINE

Department of Oral Diagnostics

Address: Bp. VIII., Szentkirályi u. 47. 1088 Phone: 459-1500/59161, 317-1044 Tutor: *Prof. Dr. Csaba Dobó Nagy* E-mail: oral@fok.usn.hu

Lecturer: Dr. Csaba Dombi

First Semester

Lectures (1 hour/week)

Week Lectures

- 1. Vesiculo-bullous oral diseases
- 2. Oral signs and symptoms of benign tumors
- 3. Precancerous conditions in the oral cavity
- 4. Leukoplakia
- 5. Malignant tumors of the oral mucous membrane
- 6. Oral signs and symptoms of hematological diseases
- 7. Clinical differential diagnosis of gingival enlargements
- 8. Lichen oris
- 9. The diseases of the lip
- 10. The diseases of the tongue
- 11. The diseases of the salivary glands
- 12. The oral considerations of HIV infection and viral hepatitis
- 13. The role of the vitamins in the etiology of oral mucosal disorders
- 14. Written final exam
- **Note:** The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester two midterm demonstrations should be passed. Practical course grade and **semi-final** exam

IMPLANTOLOGY II.

Department of Oro-Maxillofacial Surgery and Stomatology

Lecturer: Dr. Árpád Joób-Fancsaly

Lectures (1 hour/week) Practices (1 hour/week)

Course Syllabus:

History of oral implantology. Different types of implants. Indications, contraindications of implant rehabilitations. Preoperative diagnosis. Surgical placement of implants. The biology and morphology of osseointegration and mucosal seal. Implant biomechanics. Treatment plans, bone grafting methods. Parodontological and esthetic aspects of implant rehabilitation. Implant prosthodontics. Different dental implant systems. Case presentations, planning and completing implant treatments in different edentulous situations. Failures and completions.

Practice: 1 hour/week

Practice of Implantology complements and deepens the knowledge obtained during the theoretical course

- Diagnostics X-ray diagnostics, CBCT analysis, introduction of X-ray and surgical template
- Introduction of the Straumann system emphasize on the unique properties of the system (surface, comparison of 1-stage / 2-stage surgical method, Implant Surgery overview through the system
- Introduction of the SIC system emphasize on the unique properties of the system, Prothetics of the SIC system. Practicing the steps of the prostethics on a model, cad-cam based prosthetic abutment, safe on four concept, platform switching, Balance healing screws and and abutments
- Guided bone regeneration through the products of Geisthich company inroduction of the metods of bone augmentation techniques, sinus-liftig, lateral bone augmentation practicing on models
- Smart Guide System overview emphasize on the unique properties of the system, irtoduction of the guided implant surgery
- Osstem system overview emphasize nt he unique properties of the system, itroducion of the failures of implantotolgy and their solutions, practicing on models

ORAL DIAGNOSTICS II.

Department of Oral Diagnostics

Address: Bp. VIII., Szentkirályi u. 47. 1088 Phone: 459-1500/59161, 317-1044 Tutor: *Prof. Dr. Csaba Dobó Nagy* E-mail: oral@fok.usn.hu

Fifth year 1st semester

Lecture -0 Practice (1 hour/week)

Rules of practices

Activity of the students:

- 1. Clinical evaluation and registration of medical and dental conditions, extraoral and intraoral examination of the patients, stomato-oncological cheque-up. Registration of medical and dental history.
- 2. Documentation of the above, taking oral photos, and preparing diagnostic casts.
- 3. Making decisions about additional diagnostic methods, X-ray examinations, referrals and consultations.
- 4. Making diagnosis and complete preliminary treatment planning.
- 5. Preparing written case-demonstrations including history, clinical finding, diagnosis, preliminary treatment plan and conclusions.
- 6. Written case demonstrations should be made at home, with the use of the students notes in the practice. Students are responsible for and should take great care about the patients personal rights. No personal data, medical certificate, x-ray pictures or other relevant findings can be brought home, for preparation of the case demonstrations! (only the notes made by the student during the practice, containing no personal data, no offi cial documentation.)
- 7. Written theoretical evaluation will be organized in one of the practices in this semester.

Exam: Practical hours should be visited during 2 days. The time of practices is between 8.00 a.m - 1.00 p.m.

Semifinal exam will be organized at the end of fifth year, first semester.

Minimal expectations : reaching the minimum level of the written theoretical evaluation (mark 2) presentation of three written case-demonstrations reaching the minimum quality level (mark 2) Non-performance of the minimal expectations invalidate the semester!

Textbook:

1 Bricker, Langlais, Miller: Oral Diagnosis, Oral Medicine and Treatment Planning (second edition) 2 BC Decker Inc Hamilton London 2002

Recommended books :

- 1 Bengel, Veltman, Loevy, Taschini: Diff erential Diagnosis of Diseases of the Oral Mucosa Quintessence Publishing Co. Inc. Chicago, Illinois 1989
- 2 Manfred Strassburg/Gerdt Knolle : Diseases of the Oral Mucosa A Color Atlas (Second Edition) Quintessence Publishing Co. Inc. Carol Stream Illinois 1994 3 "hand-outs" will be prepared and presented for the students by the lecturers

PREHOSPITAL EMERGENCY MEDICINE

National Ambulance Service

Program Director: **Dr. Gábor Gőbl** Tutor: **Dr. László Gorove**

First Semester

Topics

The principles of emergency medicine. The field assessment. Patient assessment. Transportation trauma BLS - AED, ACLS Prehospital care of the injured patient Analgesia, anesthesia in the emergency care Unconsciousness, confused states Acute chest syndromes. ACS Acute cardiac failure. Arrhythmias in the emergency care The shock process. Evaluation and in field management of shock conditions. Stroke syndromes. Hypertensive emergencies. Acute dyspnea. Artificial ventilation on the spot Acute abdominal syndromes Toxicology in the emergency care Pediatric oxyology Obstetrical first aid CPR revision

Note: participation at 75% of lessons is necessary. Compensation is possible using the notes of the lectures and the recommended book. Mode of certifying absences: Oral in case of absence from lectures, written in case of absence from semi-final examination within 3 working days. Requirement of the semester signature in the lecture book: Participation at the lectures in 75% of cases. Type of the examination: semi-final It will be tested, whether the student is able to recognize and manage emergencies.

DERMATOLOGY

Lecturer: **Dr. Bernadett Hídvégi** Tutor: **Dr. Bernadett Hídvégi**

Department of Dermatology, Venerology and Dermatooncology

Second Semester

Lectures (1 hour per week) Practices (0,5 hour week)

Lecture

Introduction to Dermatology. Diagnostic procedures, anatomy, functions of skin comparing to oral mucosa. Elementary lesions. Autoimmune bullous diseases. Sexually transmitted diseases (syphilis, gonorrhoea, NGU, HPV). AIDS, herpes virus infections. Skin tumors. Malignant melanoma, basal cell carcinoma, squamous cell carcinoma. Benign tumors, paraneoplastic syndromes. Allergic skin diseases, drug allergy. Dermatitis, eczema, implication for dentists. Atopic dermatitis, urticaria, psoriasis. Bacterial skin diseases. Cutaneous and mucosal diseases caused by fungi. Treatment modalities. Dermatological treatment. Seborrheic dermatitis, acne. Cutaneous and oral manifestations of internal diseases.

Final examination

OBSTETRICS AND FAMILY PLANNING

Dept. of Obstetrics and Gynecology

Head of Department: Prof. Dr. Nándor Ács

Second Semester

Lectures (1 hour/week)

Anatomy and physiology of the genital organs. The menstrual cycle. Conception. Prenatal care, diagnosis of pregnancy. Normal pregnancy and development of the fetus. Changes in maternal anatomy and physiology during pregnancy. Spontaneous abortion. Ectopic pregnancy. EPHgestosis. Hyperemesis. Medical complications during pregnancy. Gestational diabetes. Infections in obstetrics and gynecology. Normal labour and delivery. Abnormalities of labour and delivery. Normal and abnormal puerperium. Neonatology. Gyn. endocrinology. Family planning. Sterility, infertility. Genetic counseling, fetal anomalies.

Semi-final examination

OPHTHALMOLOGY

Dept. of Ophthalmology

Program director: **Dr. Zsuzsa Récsán** Tutor: **Dr. Zsófia Hargitai**

First Semester

Lectures (1 hour/week)

Introduction. History of ophthalmology. Conjunctivitis ("red eye"). Keratitis ("red eye"). Uveitis ("red eye"). Differential diagnostic approach of the "red eye". Basics of optics. Diseases of the crystalline lens. Cataract surgery. Diseases of the retina. Intraocular tumours. Glaucoma (pathomechanismus). Glaucoma (conservative and surgical treatment). Diseases of the evelids. Ocular injuries. Sudden visual loss. First aid in ophthalmology.

Practical guide (0,5 hour/week)

Anatomy of the eye. Patient's history. Objective and subjective symptoms of eye-diseases. Eyelids and lacrimal system. Examination of the anterior segment of the eye (focal light, slit lamp). Refractive errors. Checking of visual acuity. Basics of orthoptics. Examination of the refractive media and retina. (Ophthalmoscope) Diagnosis of glaucoma (perimetry, checking of intraocular pressure, gonioscopy. Treatment of glaucoma. First aid in cases of ocular injuries. First aid in sudden visual loss. Differential diagnostic approach of the "red eye". Differential diagnostic approach of the "painful" eye. Consultation.

Semi-final examination

FORENSIC DENTISTRY

Department of Forensic Medicine

Tutor: Dr. Zoltán Szőlősi

First Semester

Lectures (1 hour/week)

The discipline of forensic medicine, relation to law, the legal aspects of dentistry Injuries Asphyxia Identification Toxicology I. Toxicology II. Alcohol and narcotics The legal aspects of clinical medicine I. The legal aspects of clinical medicine II. Facial and cranial injuries Sudden death, SIDS Risk and malpractice in dentistry Forensic psychiatry Autopsy demonstration Autopsy demonstration

Semi-final examination

ELECTIVE SUBJECTS FOR Dentistry 3rd, 4th and 5th year

PREVENTION AND CLINICAL SCREENING OF ORAL MALIGNANCIES

Department of Oral Diagnostics

(Orális Diagnoszitikai Osztály, Bp. VIII., Szentkirályi u. 40. 1088 Phone: 317-6600; 317-0951; fax: 317-9199) Tutor: **Prof. Dr. Gábor Nagy D.M.D., Ph.D**

I. Theoritical background

Incidence of intraoral tumours is very high, and Hungary has a leading psotion in Europe. Among men this is the third in ranking the causes of death, and regarding the whole population it has the seventh place.

The two main risk factors are smoking and alcohol consumption, the combination of these multiple the risk rate. Nowadays it is noteworthy that the frequency of oral cancers is increasing in younger age groups and among women lacking the before mentioned risk factors.

II. Methods of oral cancer screening

- 1. Population based methods large number of people invited to take part in a cancer screening, which could be combined with a general dental health assessment.
- 2. Oppurtunistic screening

This mean the comprehensive dental examination of a particular patient attending a dental service. This screening is not only concentrating on detection of oral premaligmacies oral malignancies, but also other developmental and inflammatory lesions.

Basic investegative methods of head and neck region detailed case history (with special aspects on tumors, life syle, persistant, non-healing lesions) Precise extra- and intraoral physical examination Novel visual examination procedures (e.g. Velscope)

Conclusion

Screening for oral malignancies is a very important part of dental examination. Lesions, persisting two weeks after eliminating any irritating factor a special clinical examination including histology is needed. In this way the survival possibilities of oral cancer patienst could be inhanced largely.

This shows the extreme importance of this subject in dental and medical education as well.

THEMATICS

Contemporary diagnostics of oral premalignancies and cancers

- 1. Importance of oral malignancies Epidemiology, morbidites and mortality data
- Etiological factor and pathomechanismus of oral tumors
- 3. Rate and efficacy of different screening methods (screen or not to screen)
- 4. Basic clinical signs and symptoms of oral malignancies and premalignancies I.
- 5. Basic clinical signs and symptoms of oral malignancies and premalignancies II.
- 6. Consultation
- 7. Possibilities of early detection and prevention
- 8. Diagnostic process of oral malignancies I. Traditional physical examination
- 9. Diagnostic process of oral malignancies II. Traditional physical examination
- 10. Diagnostic process of oral malignancies novel Procedures (e.g. lightningdevices)
- 11. Contemporary diagnostical possibilities and a multidisciplinary cooperation
- 12. Social and dental rehabilitation after the treatment of oral cancer
- 13. Consultation /Examination

PEDODONTIC AND ORTHDONTIC PREVENTION - for the 4th year, 7th semester

ORTHODONTIC DIAGNOSIS I-II. – both for the 4th year, 7th and 8th semester

Department of Pedodontics and Orthodontics

1 lecture / week 1 credit point

DIGITAL ORTHODONTICS - for the 5th year, 9th semester

Department of Pedodontics and Orthodontics

1 lecture / week 1 credit point

PEDODONTIC AND ORTHDONTIC PREVENTION

ORTHODONTIC DIAGNOSIS I-II. – both for the 5th year

Department of Pedodontics and Orthodontics

1 lecture / week 1 credit point

DIRECT AESTHETIC DENTISTRY 4th year

Department of Conservative Dentistry

Head of the Department: **Dr. Zsuzsanna Tóth** Tutor: **Dr. Kamil Al-Katib, Dr. Zsolt Döbrentey**

Durations: 1 lecture and 3 practice Every class : 3h (4x45 min) Credit value: 1 credit point Maximum group size: 50

Direct Aesthetic Dentistry I. (basic course) - 1st semester (autumn)

This elective course is for dental students having finished successfully Conservative Dentistry III.

1st week: theory

Advanced caries diagnostic and adequate treatment alternatives. The development of adhesive technology, and its potential in the light of direct restorations. Material science of composites. Stratification techniques, polymerization stress reduction. Minimally invasive and advanced preparation methods (tunnel-, sandwich- technique). Isolation techniques. Using photopolymerization devices. Practical possibilities in recontouring of tooth shapes. Theory and practice of anatomical layering technique Tooth anatomy and basic skills of Gnathology. Tooth color: hue, value, chroma, translucency, fluorescence, metamerism, opalescence, intensives. Dental photography.

2nd week: practice

Anterior wax-up. Proper design of cervico - oro – vestibular - incisal dimensions. Perikymata, grooves, character lines, and its effect on the visual dimension of the tooth.

3rd week: practice

Restorations in the front region. Preparation of a standardized full composite first incisor using the anatomical stratification technique.

4th week: practice

Medium size restoration in the molar region. Creation of appropriate cusps-fissure relation.

Direct Aesthetic Dentistry II. (advanced course) - 2nd semester (spring)

This elective course is for dental students having finished successfully Direct Aesthetic Dentistry I.

1st week: theory

Diagnostic criteria of aesthetic dentistry. The division between direct and indirect techniques. Color theory in the light of different composite materials. Physical, chemical properties and biocompatibility of materials used. Anatomical layering technique on complex and difficult cases: fluorotic spots, transparency, halo effect, discolored cracks, fissure staining. Advanced tooth anatomy: macro and micro-morphology. Smile design. Connection between aesthetics, function and durability. The adhesive technology frontier areas. Based on the use of composite Biomimetic principles. Special instruments. Documentation, dental photography and basics of presentation.

2nd time: practice

Direct veneer for randomized middle-aged "patients

3rd time: practice

Rebuilding the veneer for elderly patient.

4th time: practice

Large restoration in the molar region. Creation of appropriate cusp- fissure relation, using stain technique for making the restoration more life-like.

POSTGRADUATE COURSES

Head of Secretariat: Dr. János Gerle

Address: Budapest, district 8., Szentkirályi u. 47. (7th floor., room no. 751.) E-mail: szkepz@dent.semmelweis-univ.hu E-mail: gerle.janos@dent.semmelweis-univ.hu Phone: 266-7006 Fax: 266-4715

Administrators:

Ms. Erika Sviderszky Blahó

Office hours: Monday, Tuesday 13.30-15.30, Wednesday, Thursday 9.00-12.00 Phone: 266-7006, fax: 266-4715, e-mail: szkepz@dent.semmelweis-univ.hu

Ms. Veronika Gecse

Office hours: Monday, Tuesday 13.30-15.30, Wednesday, Thursday 9.00-12.00 Phone: 266-7006, fax: 266-4715, e-mail: szkepz@dent.semmelweis-univ.hu

Postgraduate courses are available at the Faculty of Dentisty at Semmelweis University, ending with a specialty exam in the following fields:

- 1. Pedodontics
- 2. Orthodontics
- 3. Periodontology
- 4. Dentoalveolar Surgery
- 5. Prosthetic Dentistry
- 6. Endodontics

The language of the postgraduate courses and the specialty exams is Hungarian. The courses convey theoretical knowledge and practical skills.

If you wish to take a specialty exam you must meet the following requirements:

you can take a specialty exam after 36 months of professional practice fulfilled as an employee, according to Hungarian law. To complete this practice, therefore, you must obtain a work permission.

professional practice includes theory and treating patients. You will need a good command of the Hungarian language to understand theory, and be able to communicate with patients

Non-European citizens must have their degree nostrificated

NOTE

FACULTY OF PHARMACEUTICAL SCIENCES



Pharmaceutical Sciences 1st year Important: New curriculum is to be introduced in all years from the 2020-2021 academic year. Please, follow the updated curricula on the home page.

STUDY PROGRAMME

First Year

1 st semester					
Subjects	Lectures	Practices	Credit Points	Prerequisites	Examination
General and Inorganic Chemistry I. Practice GYASKASKG1A	-	5	5	-	practical course grade
General and Inorganic Chemistry I. GYASKASKE1A	4+1	-	5	-	semi-final
Introduction to Health Informatics I. Practice GYINFBEIG1A	-	1	-	-	signature
Introduction to Health Informatics I. GYINFBEIE1A	1	-	2	-	semi-final
Biophysics I. Practice GYFIZBIFG1A	-	3	2	-	practical course grade
Biophysics I. GYFIZBIFE1A	2	-	3	-	semi-final
Biology I. Practice GYGENBILG1A	-	2	2	-	practical course grade
Biology I. GYGENBILE1A	2	-	2	-	semi-final
Medical Terminology** GYLEKOTRG1A	-	2	2	-	practical course grade
Mathematics I. Practice GYEGYMATG1A	-	2	2	-	practical course grade
Mathematics I. GYEGYMATE1A	2	-	2	-	semi-final
Physical Education I. GYTSITSNG1A	-	1	0	-	signature
History of Sciences, Propedeutics GYEGYTTPE1A	2	-	2	-	semi-final
Hungarian Medical Terminology I. * GYLEKMSZG1A	-	4	4	-	practical course grade
Total Credit			33		

2nd semester						
Subjects	Lectures	Practices	Credit Points	Prerequisites		Examination
General and Inorganic Chemistry II. GYASKASKE2A	3	-	3	GYASKASKE1A	General and Inorganic Chemistry I.	final #
Analytical Chemistry I. (qualitative) GYASKANKG1A	2	5	5	GYASKASKE1A	General and Inorganic Chemistry I.	practical course grade
Anatomy GYANTANAE1A	2	-	4	GYGENBILE1A	Biology I.	semi-final
Anatomy Practice GYANTANAG1A	-	2	-	GYGENBILE1A	Biology I.	signature
Introduction to Health Informatics II. Practice GYINFBEIG2A	-	1	-	GYINFBEIE1A	Introduction to Health Informatics I.	signature
Introduction to Health Informatics II. GYINFBEIE2A	1	-	2	GYINFBEIE1A	Introduction to Health Informatics I.	semi-final
Biophysics II. Practice GYFIZBIFG2A	-	2	2	GYFIZBIFE1A	Biophysics I.	practical course grade
Biophysics II. GYFIZBIFE2A	2	-	3	GYFIZBIFE1A	Biophysics I.	final #
Biology II. Practice GYGENBILG2A	-	2	1	GYGENBILE1A	Biology I.	practical course grade
Biology II. GYGENBILE2A	2	-	2	GYGENBILE1A	Biology I.	final #
Pharmaceutical Botany I. GYNOVGYNG1A	1	2	3	GYGENBILE1A	Biology I.	practical course grade
Mathematics II. Practice GYEGYMATG2A	-	1	1	GYEGYMATE1A GYINFBEIE1A	Mathematics I. Introduction to Health Informatics I.	practical course grade
Mathematics II. GYEGYMATE2A	2	-	2	GYEGYMATE1A GYINFBEIE1A	Mathematics I. Introduction to Health Informatics I.	semi-final
Physical Education II. GYTSITSNG2A	-	1	0			signature
First Aid GYTRAELSE1A	1	-	0			signature
Hungarian Medical Terminology II. * GYLEKMSZG2A	-	4	2	GYLEKMSZG1A	Hungarian Medical Terminology I.	practical course grade
Total Credit			30			

The grade influences the qualification of the diploma
* Obligatory courses
** Obligatory elective courses: (2 credit points).

LIST OF TEXTBOOKS (The list may change!)

- 1 Alberts Essential Cell Biology (4th edition) Garland Science, ISBN-13: 978-0815344544; ISBN-10: 0815344546
- 2 Genetics and Genomics (e-book)
- 3 Faller, Schuenke: The Human Body: An Introduction to Structure and Function (Flexibook) Paperback 2004. Thieme
- 4 Damjanovich Fidy Szöllősi (eds) Medical Biophysics, Medicine, Budapest, 2009. ISBN 978 963 226 127 0
- 5 Miklós Kellermayer: Medical Biophysics Practices (Semmelweis Publishers, Budapest, 2015) ISBN 978-963-331-349-7
- 6 Rost et al.: Botany, a brief introduction to plant biology. Wiley.
- 7 Mihalik: Botany for Students of Pharmacy. (Szeged)
- 8 Lásztity-Noszál: Practical Inorganic and General Chemistry. Bp. (SOTE)
- 9 Lásztity-Gyimesi: Qualitative Inorganic Analysis. Bp. (SOTE)
- 10 Kőrös: General Chemistry. Bp. (SOTE)
- 11 Kőrös: Inorganic Chemistry. (Szeged)
- 12 Masterton-Hurley: Chemistry. Principles and Reactions. Saunders College Publishing, 1998.
- 13 1st semester: Gyöngyösi L. & Hetesy B., 2012. Jó reggelt! Bp. Semmelweis Egyetem Egészségtudományi Kar (available at Vas u. 17. Bookshop)
- 14 2nd-3rd semesters: Gyöngyösi L. & Hetesy B., 2011. Jó napot kívánok! Bp. Semmelweis Egyetem Egészségtudományi Kar (available at Vas u. 17. Bookshop)
- 15 Bakó, A. 2017. Medical Terminology for students of pharmacy. Manuscript. Semmelweis University.

Recommended textbooks:

- 1 Bland M.: An Introduction to Medical Statistics. (Oxford medical publication)
- 2 Batschelet, E.: Introduction to Mathematics for Life Scientists
- 3 Maróti-Berkes-Tölgyesi: Biophysics Problems. A Textbook with Answers. Bp. Akadémiai K. 1998. ISBN 963 05 7526 4
- 4 Alberts et al.: Molecular Biology of the Cell. Garland Science/Taylor & Francis Group Publ. (4th ot 5th edition)
- 5 Belák E. Medical Terminology for Beginners (earlier title: Medical Latin), Bp. Semmelweis Kiadó
- 6 Berg-Tymoczko-Stryer: Biochemistry 7th edition

MATHEMATICS

University Pharmacy, Department of Pharmacy Administration

Tutor: Dr. Andrea Meskó

In the first year of the curriculum two hours of lectures are given to pharmacist students under the title above. The lectures are accompanied by practicals to help a better understanding and to get experienced in solving problems and exercises.

The title covers two, more or less independent, subjects. The majority of the lectures (over 60 per cent) is devoted to (classical) mathematics, the smaller part, however, in which biostatistics are given, is not of less importance.

The aim of learning classical mathematics is to understand biological, chemical, and physical processes dealt with in the subjects mentioned. The most appropriate mathematical model for the processes in nature are functions of one or more variables. To obtain the proper function for a particular process a differential equation is to be solved. The notion and the way of solution of differential equations is the central point of the course. The others namely limits, differential and integral calculus, discussion of functions, series etc. are, however, necessary preparatory steps for getting acquainted with differential equations.

Biostatistics, the other subject under this title, is a more recent branch of sciences. Its importance is permanently increasing in each field where data are present, i.e. quite everywhere in scientific work. Pharmacological investigations, clinical trials, epidemiological studies (etc, etc.) cannot be carried on without the statistical analysis of the data obtained. The results of the above mentioned studies are always derived by statistical inference. Statistics is an indispensable part of any research from planning the experiment to interpretation of the results. Statistical methods are essential even for students in their laboratory work.

MATHEMATICS I.

University Pharmacy, Department of Pharmacy Administration Tutor: *Dr. Andrea Meskó*

First Semester

Lectures: 2 hours per week Practicals: 2 hours per week Differential and differential coefficient. Rules for derivations of functions. The derivative of the power function. Derivation of composite and inverse functions. Differentiability of the elementary functions. Higher order derivatives. Application of differentiation for calculation of limits of fractions. An iterative method to solve equations (Newton-method). Expansion of differentiable functions to power series. The Taylor series of $\exp x$, $\sin x$, $\cos x$, $\ln x$ and other functions. Qualitative examination of functions. Roots, extremes and inflexion points. The multiplicity of a root. The complete discussion of elementary functions. Integration as the inverse operation of derivation. The indefinite integral. Integration of power functions. Integration of simple elementary functions. Integration of products (the rule of "partial integration"). Integration of composite functions. Integration of rational fractions. Area under a curve: the definite integral. Improprious integrals. The concept of a differential equation. Differential equations arising in physics, chemistry, biology, botanics and other fields. The homogeneous linear differential equation with constant coefficients: solution and proof of unicity. Separation of variables as the method of solution. General and particular solutions. Introduction of new variables. Nonlinear differential equations of the first order. Differential equations of the chemical reactions of 0th, 1st and 2nd order. Functions of several variables. Partial derivatives of first and second order. Differentiability and exact differential. Application of exact differential in error calculations. Maxima and minima of two-variable functions. Different kinds of integration of functions of several variables. Integration along a line. Point functions and independence of the integral of the path. Calculation of the integral along different curves.

MATHEMATICS II.

University Pharmacy, Department of Pharmacy Administration Tutor: *Dr. Andrea Meskó*

Second Semester

Lectures:2 hours per weekPracticals:1 hour per week

Introduction and information. The most common calculations in laboratory. Some hints for numerical calculations.

Biometrics and/or biostatistics. Statistical inference. Frequency distributions. Theoretical distribution and probability. The normal distribution.

Measures of central tendency (mode, median, mean etc.) Applications of the weighted mean. Measures of dispersion.

Standard deviation and variance. The coefficient of variation. Error bounds. The standard error of the mean.

The concept of "regression line". The linear regression: coefficients, interpretation, application.

The correlation coefficient: formula and interpretation. Uses and misuses of correlation coefficient. Lack of correlation vs. independence. Spurious correlations. Coefficient of determination.

Sampling distributions. Important distributions derived from the normal one: t F, and chis-quared distributions. The use of statistical tables. Theoretical background of statistical inference. Qualitative and quantitative conclusions. Estimation; confidence interval for the expected value.

Testing hypotheses. The concept of "significance". Errors of the first and of the second kind. The t-tests.

Analysis of variance. The Ftest. Discrete and dichotomous distributions; variables on a nominal scale. The Poisson distribution.

Analysis of qualitative data. Counting tables. Measures of association and statistical tests in fourfold tables.

Sets (finite and infinite). Natural, integral, rational, real and complex numbers.

Definition of a function.

General attributes of the functions. Classification of elementary functions.

Rational and irrational functions.

Transcendent functions: exponential, logarithmic, trigonometric and cyclometric functions.

Limits of functions. Continuous functions.

Sequences and series. Series of functions. Power series.

Radius of convergency.

BIOLOGY I.

Department of Genetics, Cell- and Immunobiology

Course director: *Prof. Dr. Edit Buzás* Course coordinator: *Dr. Orsolya Láng* Subject code: GYGENBILG 1A (practice) GYGENBILE1A (lecture) **Credit:4**

1st Semester

Lectures: 2 hours per week Practice: 2 hours per week

Week	Lecture	Practice
1.	The cell membrane: structure and function	The light microscope in use
2.	Structure and function of the nucleus I	General view of the cell. Light and electron microscopic microtechnique.
3.	Structure and function of the nucleus II	Cell nucleus. Cyto(histo)chemistry
4.	Endoplasmic reticulum and the ribosomes	Endoplasmic reticulum
5.	Golgi complex, secretion and protein transport	Golgi complex
6.	Lysosomes, endocytosis, vesicular transport	Midterm (written)
7.	Structure and function of mitochondria and peroxisomes	Secretion. Immunohistochemistry
8.	The cytoskeleton,	Endocytosis. Cellular digestion. Enzyme-histochemistry
9.	Cellular movement	Cell and tissue culture
10.	Cell adhesion, cell junctions	Store and supply of energy. Mitochondria. Peroxisome.
11.	Extracellular regulation of cells, signal transduction I	Cytoskeleton and cellular movement
12.	The cell cycle and its regulation I	Cell surface differentiation, ultrastructure of cellular junctions
13.	The cell cycle and its regulation II	Midterm (written)
14.	Cellular aging and programmed cell death (apoptosis)	Cell death (necrosis and apoptosis)

Important notes:

Students must visit at least 75% of the lessons. More than three absences from the

practice or more than three absences from the lecture invalidate the semester, no signature

is given. There are no extra practices.

There are two midterms during the semester. To get practice grade and signature the average of the midterms have to be 2.0. Missed or failed midterms might be repeated two times. No improvement of midterm grade.

Requirement of lecture signature is: practice grade and not more than three absences from the lectures.

Students having lecture and practice signature may give the exam. Exam is a written test (multiple choice, essay, drawing etc. similar to midterms) covering practice and lecture parts.

BIOLOGY II.

Department of Genetics, Cell- and Immunobiology

Course director: *Prof. Dr. Edit Buzás* Course coordinator: *Dr. Orsolya Láng* Subject code: GYGENBILG_2A (practice) GYGENBILE_2A (lecture) Prerequsite: Biology I. Credit: 3 Lectures: 2 hours per week Practices: 2 hours per week

Second Semester

Week	Lectures	Practices
1.	Meiosis	Typical and atypical mitosis
2.	Introduction to human genetics; human genom	Meiosis and gametogenesis
3.	Mutations and polymorphisms I.	Cytogenetics I.
4.	Mutations and polymorphisms II.	Cytogenetics II.
5.	Epigenetics	Introduction to humangenetics; special methods of humangenetics
6.	Cytogenetics I.	Molecular genetics I.
7.	Cytogenetics II.	Midterm I (written)
8.	Autosomal inheritance I.	Molecular genetics II.
9.	Autosomal inheritance II.	Molecular genetics III.
10.	Role of sex in inheritance	Application of genetic methods in the study monogenic inheritance I.
11.	Genetics of sex	Application of genetic methods in the study monogenic inheritance II.
12.	Relationship of genom and environment. Complex inheritance	Complex inheritance
13.	Pharmacogenetics, -genomics	Midterm II.
14.	Gene and genom manipulation	Consultation

Important notes: see at Biology I.

Students having lecture and practice signature may give the final exam. Final exam is a written test (multiple choice, essay, drawing etc. similar to midterms) covering practice and lecture parts of Biology I and II.

BIOPHYSICS I.

Tutor: Dr. István Voszka

Lectures (2 hours per week)

First Semester

Introduction: structure of matter: interactions	Laboratory cafety rules
Cases, crystals, liquids, Boltzmann distribution	Data processing
Broportios of condensed matter	
Liquid crystals, membranes	Spectrophotometry
Church suggesting and sug	Spectrophotometry
Structural organization of	Optical lenses; light mic
macromolecular systems	
Radiations, light, optics	Detection of nuclear rac
Wave and corpuscular nature of light	Polarimetry
Light absorption and emission,	X-ray measurement
light scattering, vision	
Electromagnetic radiations, thermal radiation	Special light microscope
Luminescence	Gamma energy determi
Lasers	Coulter counter
X-radiation	Determination of skin-ir
Ionizing radiations, radioactive decay	Concentration determin
	refractometer
Dosimetry	Isotope diagnostics
Sound, ultrasound, hearing	Repetition, consultation

Laboratory (3 hours per week)

ety rules g roscopy. Light sources netry light microscope uclear radiations ment icroscopes determination of skin-impedance determination with
BIOPHYSICS II.

Second Semester

Lecture (2 hours per week)

Transport phenomena, flow of fluids and gases Diffusion, osmosis Thermodynamic aspects of transport processess Laws of thermodynamics Membrane potential Signals as information carriers, signal processing Detectors, transducers, displays Basic electronic units and circuits Physical methods for structural analysis I Physical methods for structural analysis II Regulatory system in technics and b Some diagnostic methods, endoscopy, thermography, ultrasound echo, Doppler, X-ray Isotope diagnostics Magnetic resonance imaging Some therapeutic methods, laser surgery, radiation therapy Research fields in the Department of **Biophysics and Radiation Biology**

Laboratory (2 hours per week)

Resonance Dosimetry Amplifier The attenuation of gamma-radiation Pulse generators Ultrasound Audiometry Densitography (CT) Calculations Flow of fluids. system Electrocardiography Diffusion

Diffusion Sensory function Optics of the eye

Repetition

GENERAL AND INORGANIC CHEMISTRY I.

Lecturers: Dr. Béla Noszál, Dr. István Szalai Practical: Dr. Norbert Szoboszlai Tutor: Dr. Krisztina Kurin-Csörgei

First Semester

Elementary particles: guarks, leptons, gauge particles, electron, proton, neutron. The Bohr model of the atom. Properties of the electron. Heisenberg's uncertainty principle. Schrödinger's equation and the quantum numbers. Pauli's exclusion principle and Hund's rule. Periodic table and periodic properties. Ionic bond and the types of ions. Covalent bond and its representation in Lewis structures. Hybridization of orbitals. The valence bond theory. Molecular geometry, the VSEPR theory. The formation of molecular orbitals. Bond polarity and moleculepolarity. Single and multiple bonds. Electronegativity and its determination. The ionic character of covalent bonds. Covalent radius, bonding energy, network covalent bonds. Metallic bonding. Weak bonding forces. Dispersion, dipole forces and hydrogen bonding. Multicentered bonds. Chemical equilibria, the law of mass action. Kp and Kc. The Le Chatelier principle. The temperature and pressure dependence of the equilibrium constant. Acid/base equilibria. Conjugated acid-base pairs and their strengths. The acid/base equilibria of water. The pH and its calculation. Strength of acids and bases. Hydrolysis. Buffer systems. Complex formation equilibria. Types of ligands. Mass balance equations, calculation of complex equilibria. Heterogeneous equilibria, the solubility product constant, solubility. Chemical kinetics. Reaction order and molecularity. First order reactions. Age determinations based upon radioactive decompositions. Second order, pseudofirst order and zero order reactions. Reaction mechanisms. The temperature dependence of the reaction rate, collision theory. Catalysis. catalysts. Autocatalytic reactions. Enzyme catalysed, induced and oscillatory reactions. Thermochemistry. Hess's law. Internal energy and enthalpy changes of reactions. Entropy. Spontaneity of chemical reactions, the free energy. Coupled reactions and their spontaneity. Photochemistry and radiation chemistry. States of matter. Properties and kinetic theory of gases. Properties of liquids. The surface tension. Freezing, boiling. The phase diagram of water. Crystal structures, unit cell. The rate of crystallization. Sublimation. The mechanism of dissolution. Types of concentrations. Rules of dilute solutions. Determination of MM by colligative properties.

PRACTICAL GENERAL AND INORGANIC CHEMISTRY

First Semester

Lectures (4+1 hours per week)	Practicals (5 hours per week)
Methods of purification of chemical substances. Recrystallization. Sublimation.	Safety instructions. General instructions on the requirements. Recrystallization of KA1(SO ₄) ₂ . 12 H ₂ O. Sublimation of iodine.
Ion exchange. Distillation.Chemical purification.	Chemical purification of sodium chloride. Water purification using ion exchange resins.
Preparation of inorganic compounds. Stoichiometry of chemical reactions. Theoretical yield, actual yield and percent yield. Types of chemical reactions.	Distillation of hydrochloric acid. Preparation of CuSO ₄ . 5 H ₂ O
Acid-base reactions. Preparation of inorganic compounds by acid-base reactions.	Preparation of $(NH_4)_2SO_{47}$ H_3BO_3 from borax $(Na_2B_4O_7)$
Acid-base properties of salt solutions, hydrolysis.	Preparation of CaHPO ₄ . Observation of hydrolysis of some salts.
Thermal decomposition of inorganic compounds (acids, bases, salts).	Observation of thermal decompositions. Determination of the mass of a magnesium metal sample.
Oxidation-reduction reactions. Balancing redox equations.	Observation of some oxidation-reduction Reactions.
Preparation of inorganic compounds by oxidation-reduction reactions.	Preparation of metallic copper and metallic manganese. Reactions of metals.
Complex formation reactions. Naming of complex ions and coordination compounds.	Preparation of Cu_2O and $FeSO_4$
Methods of preparation of double salts and coordination compounds.	Preparation of precipitated sulfur. Experimental observation of direction of redox reactions (standard potentials).
Calculation of pH in solutions of acids and bases.	Preparation of a double salt (Mohr salt, $(NH_4)_2 Fe(SO_4)_2$. 6 H_2O
Buffer solutions and their functions, calculation of pH of buffer solutions.	Preparation of a buffer solutions. Preparation of $Cu(NH_3)_4 SO_4$ and Co Hg(SCN) ₄ coordination compounds.
Precipitation reactions. Equilibria in precipitation reaction.	Qualitative comparison of solubility products. Observation of osmosis.
Problem-solving in general chemistry. (Calculation of molar masses of nonelect-rolytes from colligative properties).	Dependence of the reaction rate on concentration and temperature. Observation of catalysis. Decomposition of hydrogen peroxide.
Problem solving in general chemistry (Electrochemistry)	Closing inventory. Problem-solving.

GENERAL AND INORGANIC CHEMISTRY II.

Lecturer: Dr. Szabolcs Béni

Second Semester

3 hours per week (lecture)

Weeks Introduction

1 The elemental composition of the Universe. Origins of the elements. The composition of the litosphere, hydrosphere and atmosphere. The evolution of the atmosphere. The classification of the elements: metals, nonmetals and metalloids. Trends in metallic and nonmetallic character.

2 Chemistry of hydrogen, oxygen, nitrogen and carbon.

Hydrogen: occurrence, preparation, chemical properties, uses. Binary hydrogen compounds (hydrides). Oxygen: occurrence, preparation, chemical properties, uses. Ozone. Peroxides, superoxides.

3 Nitrogen: occurrence, chemical properties. Hydrogen compounds of nitrogen. Oxides and oxyacids of nitrogen. The nitrogen cycle in nature. Carbon: elemental forms of carbon. Inorganic compounds of carbon. The carbon-oxygen cycle in nature.

4 *Chemistry of other nonmetallic elements*

The noble gases. (He, Ne, Ar, Kr, Xe, Rn) and their compounds. The halogens (F, Cl, Br, I, At): occurrences, preparation, properties and uses. Oxyacids and oxyanions. The biological role of halogens.

- 5 The group 6A elements (S, Se, Te). General characteristics, occurrences, preparation, properties. Oxides, oxyacids and oxyanions of sulfur and selenium. Sulfur and selenium in biology.
- 6 The group 5A elements (P, As, Sb, Bi). General characteristics, occurrences, preparation, properties. The oxycompounds of phosphorus. The biological significance of the P–O bond. Silicon. The major element of the geosphere. Silicates. Clay minerals. Glass. A comparison of the properties of carbon and silicon. Boron and its compounds.

Metals

- 7 Occurrence and distribution of metals. Metallurgy. The physical and chemical properties of metals and alloys. The alkali metals (Li, Na, K, Rb, Cs). General characteristics. Some important compounds of sodium and potassium.
- 8 The alkaline earth metals (Be, Mg, Ca, Sr, Ba). General characteristics. Some important compo unds of magnesium and calcium. The zinc-group metals (Zn, Cd, Hg). Occurrences, chemical properties.
- 9 The transition metals. Physical properties, electron configurations and oxidation states. The chemistry of selected transition metals: chromium, manganese, iron, copper, molybdenum, platinum.

Chemistry of coordination compounds

- 10 The structure of complexes. Types of ligands. Chelates. Isomerisms. Bonding in complexes. The magnetic and optical properties of complexes.
- 11 The dynamics of coordination compounds: Complex equilibria, ligand exchange rates. The coordination chemistry of alkali metal ions. (Hostguest complexation.)

Metals in biology

- 12 Life essential metals and ligands in biosystems. Metals in enzymatic and trigger processes. Metals in oxygen and nitrogen biochemistry.
- 13 Metals in biomineralization. Metal-induced toxicity. The biomedical use of metal complexes and metal complexation.

The chemistry of the environment

14 A brief overview of the chemistry of the litosphere, hydrosphere and atmosphere.

ANALYTICAL CHEMISTRY I.

Qualitative Chemical AnalysisLecturer:Dr. István Szalai, Dr. Norbert SzoboszlayPractical:Dr. István Szalai, Dr. Norbert SzoboszlayTutor:Dr. Krisztina Kurin-Csörgei

Second Semester

Lectures (2 hours per week)	Practicals (5 hours per week)
Subject and aims of analytical chemistry. Analytical chemistry and other sciences. Qualitative and quantitative chemical analysis. Chemical and physical methods of analysis.	General rules of work in the laboratory of analytical chemistry. Study of reactions of Group I cations. Part I: Bi^{3+} , Pb^{2+} , Cd^{2+} .
The characterization of analytical reactions. Specificity, selectivity and sensitivity of analytical reactions. Requirements for qualitative chemical reactions. Separation and identification of ions.	Study of reactions of Group I cations. Part II: Hg_2^{2+} , Hg^{2+} , Ag_+ , Cu^{2+} . Identification of cations in mixture of Group I cations.
Analytical classification of cations. Group reactions of cations. Analytical groups and periodic table of the element. Summary of properties of elements and reactions of Group I cations.	Study of ion reactions of Group II cations: As/III/, /V/, Sb/III/, /V/, Sn/II/, /V/.
Ion reactions in aqueous solution. Acidbase reactions. Thioamphoterism. Summary of properties of elements and reactions of Group II cations.	Analysis of Group I cation in unknown samples. Identification of the second group of cations in mixtures.
Complex formation reactions. Complex equilibria. Pearson classification of acids and bases.	Study of ion reactions of Group III cations. Part I: Co ²⁺ , Ni ²⁺ , Fe ²⁺ , Fe ²⁺ , Cr ³⁺ .
Precipitation reactions. Equilibria in cations. precipitation reactions. Solubility and pH. Precipitation and solubilities of metalsulfides.	Study of ion reactions of Group III Part II: Al ³⁺ , Mn ²⁺ , Zn ²⁺ . Analysis of unknown mixture of the third analytical group of cations.
Summary of properties of elements andreactions of Group III cations.	Study of ion reactions of Groups IV-V cations.
Solubility and complex ion equilibria and application in qualitative analysis of ions.	Analysis of Group III cations in unknown samples. Detection of cations in the mixture of the fourth and fifth analytical groups of cations.
Summary of properties of elements and reactions of Groups IV–V cations. Flame tests. Atomic spectroscopic methods of qualitative analysis.	Analysis of unknown samples containing cations of the Groups I–V. Study of reactions of the first analytical group anions.
Classification of anions into analytical groups. Group reagents for qualitative analysis of anions.	Study of reactions of the second and third analytical groups of anions.
Oxidation-reduction. Oxidation-reduction reactions in qualitative chemical analysis.	Study of reactions of the fourth group of anions. Identification of anions in the mixture of Groups I–IV anions.
Summary of reactions of common anions.	Special tests for mixture of anions.
Analysis of cation-anion solution sample. Preliminary and specific tests.	Analysis of cation anion unknownsolution sample (3-5 ions).
Analysis of cation-anion unknown solid sample. General procedure for chemical analysis.	Analysis of cation anion unknown solid samples (3–5 ions).
Physical methods of qualitative analysis	Analysis of unknown simple substances.

PHARMACEUTICAL BOTANY I.

Department of Plant Anatomy

Tutor: Dr. Gábor Kovács

Second Semester

Week	Lectures	Practicals
1	Introduction. The Plant Kingdom. The botanical sciences. Pharmaceutical Botany, the program of the lectures.	Fundamentals in Botany. The use of the light microscope. Knowledge of the medicinal plants
2	Compartmentalization and metabolic pathways in plant cells.	Plant cells (plasmolysis, cycloses).
3	Chloroplast and photosynthesis. Starch formation and degradation.	Plastids, reserve polysaccharides, protein bodies.
4	Synthesis of cell wall polysaccharides. Cell wall formation and architecture. Plasmodesmata. Mucilage synthesis and the dynamics of hydrophilic secretion.	Cell wall, structural polysaccharides and other wall substances.
5	Mitochondrion and respiration.	Vacuole, crystals, lipid bodies.
6	Lipid metabolism. Fatty acid polymers: cutin, suberin. Wax. Terpenoids. The lipophilic secretion.	$1^{\mbox{\scriptsize st}}$ Test Work. Stem morphology (buds). Monocots: analysis of a living plant.
7	Amino acid and protein metabolism. The N cycle. Protein bodies, protein mobilization. Protein secretion.	Analysis of dicots representing ancestral type (Ranunculaceae).
8	Formation of alkaloids and phenolics. Lignification. Vacuole, cell sap, osmoregulation, crystal formation, autophagy, autolysis.	Simple tissues, meristems.
9	Nucleic acid metabolism. The nucleus. Plant specificities of mitosis and meiosis.	Dermal tissue system, trichomes.
10	Organizational types of plants. The cormophyte plant body. Tissues, tissue system. Meristems.	2 nd Test Examination Analysis of living plants (Rosaceae, Apocynaceae), medicinal plants.
11	Dermal tissue system.	Conductive tissue system.
12	Conductive tissue system.	Ground tissue system.
13	Ground tissue system.	Analysis of living plants (Papaveraceae, Primulaceae).
14	Secretory structures.	3 Test Work Knowledge of the medicinal plants. Pteridophyta.

A visit to Research Institute for Medicinal Plant (Budakalász) by coach, to study the chemotaxonomic plant collection. Field practice in the mountains near to Budapest to study the springtime blossoming medicinal plants.

ANATOMY

Department of Anatomy, Histology and Embryology

Tutor: Dr. Ágnes Csáki Coordinator: Dr. Katalin Kocsis Subject code: GYANTANAG1A (practice) GYANTANAE1A (lecture)

Second Semester

Course principles:

- to teach the terminology of the human anatomy to the future pharmacists;
- to discuss the special anatomical and physiological conditions that may influnce the therapeutical considerations;
- to discuss the anatomical conditions that are necessary for the understanding of the further medical subjects of the pharmacists' studies;
- to teach the terminology (Latin and English) of human body parts (at a gross and microscopical anatomical level) necessary for the understanding of the medical language during the communication between the pharmacists and the doctors.

Special attention is required concerning the anatomy of the central nervous system and the digestive tract, the absorption of medicines and their mechanism of action.

week		ANATOMY LECTURES	PRACTICES (Makro: Dissecting room; Mikro: Histology)
1.	1. 2.	Introduction Locomotor System Skull, vertebral column, head, neck muscles	Makro: Introduction, upper and lower limbs
2.	34.	Basic Tissues, Skin	Mikro: basic tissues, skin
3.	5. 6.	The Immune System, the Lymphoid Organs Blood, hematopoiesis	Makro: skull, vertebral column, head, neck muscles
4.	7. 8.	Heart, the Vascular System The Respiratory System, the Mechanics of Breathing	Mikro: blood, lymphoid organs, vessels
5.	9. 10.	The Digestive System I, abdominal cavity The Digestive System II	Makro: respiratory tract, thoracic cavity
6.	11. 12.	The Liver, the Pancreas The Kidneys and the Urinary Tract	Mikro: respiratory tract histology, gastrointestinal tract histology I.
7.	13. 14.	The Female Reproductive Organs, Cycle The Male Reproductive Organs, Pelvis	Makro: heart, large vessels
8.	15. 16.	Nervous System Introduction (Synapses, Neurotransmitters) Central Nervous System, Meninges, Blood Supply, CSF, Encephalon, Spinal Cord, Spinal Nerves	Mikro: gastrointestinal tract histology II. kidney and urinary tract histology
9.	17. 18.	Motor system, Sensory System, Limbic system Cranial nerves, The Autonomic Nervous System	Makro: gastrointestinal tract, abdominal cavity
10.	19. 20.	The Eyeball and Visual system The Organ of Hearing and Equilibrium.	Mikro: midterm genital organs histology, spermatogenesis, oogenesis
11.	2122.	Hypothalamus, the Endocrine Organs	Makro: urogenital system, pelvis
12.	2324.	Germ cells, Fertilization, Development of the fetus, Placenta, Teratology	Mikro: nervous system and sensory organs histology
13.	2526.	Development of the Digestive System and Reproductive organs, Malformations	Makro: nervous system: brain, spinal cord, cranial nerves, spinal nerves, main vessels and nerves on limbs, sensory organs
14.	2728.	Repetition, complementary day for holidays	Mikro: endocrine organs, placenta

HISTORY OF SCIENCES, PROPEDEUTICS

Department pf Pharmacognosy Lecturer: Dr. Eszter Riethmüller Tutor: Dr. Eszter Riethmüller

First Semester

Week Lectures (2 hours per week)

- 1 The place and importance of the subject in the curriculum. Profession's history as bridge; methods, main fields. Symbols of medicine and pharmacy.
- 2 Knowledge of medicine and pharmacy in Babylonia-Assyria. Documented traditions of China, Japan, India, Indonesia. Knowledge of medicine and pharmacy in Egypt.
- 3 Knowledge of medicine and pharmacy in Greece. Hippocratic medical writings. Knowledge of medicine and pharmacy in Rome. Galenus.
- 4 The Arabs and the European Middle Ages. Transit ways of knowledge. Avicenna. Monastic medicine and pharmacy. The School of Salerno. Universities emerge, the birth of European professional pharmacy.
- 5 The idea of renaissance. Paracelsus and chemical drugs. Homeopathy as an example of medical sectarianism.
- 6 Development of pharmacy in Italy and France. Development of pharmacy in Germany and Britain.
- 7 Development of Pharmacy in Hungary.
- 8 Pharmaceutical education in Europe. Development of education.
- 9 Definition of drugs. Aspects of classification. Classification of drugs according to their origin and on the basis of strength.
- 10 Classification of drugs by their pharmaceutical action, use and by the place of application.

Drugs and doses. Specially named doses.

- 11 The evolution of drug discovery. Drug discovery today.
- 12 Ordering of drug preparations. Drug utilization. How could the increased drug consumption be influenced? Drug abuse. Prevention of drug abuse. Narcotic controls.
- 13 International professional trends. F.I.P., I.P.S.F. Unification of drug standards. Pharmaceutical literature: treatises, pharmacopoeias, formularies, journals, periodicals.
- 14 Pharmacies, pharmaceutical factories. Personnel in the pharmacies: pharmacists, pharmacy assistants etc. Health for all – all for health.

FIRST AID

Department: Department of Traumatology

Lecturer's name: *Prof. Dr. Hangody László* Professor Head of Department Contact telephone: +36 1 467 3851 e-mail: trauma_office@med.semmelweis-univ.hu Neptun code: GYTRAELSE1A

Number of lessons: 0 Credit points: 0

The objectives of the course:

First aid is the provision of initial care for an illness or injury. It generally consists of a series of simple and, in some cases, potentially life-saving techniques that an individual can be trained to perform with minimal equipment. All students who graduate from Semmelweis University, including pharmacists should have a knowledge of how to provide basic first aid to an injured or ill person. This curriculum is delivered to the students through e-learning material and practical training in resuscitation.

Decommonded competer	Loctures nor wook	Dractices new week	Cominana non wook	Individual lossons	Total lassame	Compostor

Recommended semester	Lectures per week	Practices per week	Seminars per week	Individual lessons	Total lessons	Semester	Consultation
Ι.	0	12	0	0	12	11.	0

Thematic of the lectures:

E-learning material: (Semmelweis University's E-learning portal - moodle)

- 1. Program and goal of first aid
- 2. Cardio-pulmonary resuscitation (CPR)
- 3. Bandaging methods
- 4. Mechanical injuries (fractures)
- 5. Bleeding and its control
- 6. Sport injuries
- 7. Thermal injuries

Seminars, practices:

One practice at Uzsoki Hospital to learn how to perform CPR on CPR manikins. Students have the opportunity for the consultation of the typical and the more frequent first aid cases during the practices.

Requirements of the course

Pre-requisites of the course: -

Accepted degree of absences:

Completion of CPR practice is obligatory, without that (only by listening to the electronic curriculum and completing the short tests afterwards) the student will not receive a signature.

In case the student fails to attend CPR practice due to illness, a medical certificate has to be presented and the student has to attend another CPR practice on a date announced by the department.

Interim controls: The students are required to listen to the e-learning material and complete the tests after each lecture. In case of failing to do so, the student cannot take part in the CPR practice.

Requisite of accepting the term: Studying the entire e-learning material at Semmelweis University's e-learning portal (moodle), and completing the short tests related to each lecture afterwards. At least 90% outcome of each test is required. In addition, during the semester, one CPR practice is obligatory for all students on one of the CPR practices organized by the Department of Traumatology.

Course material:

E-learning material and practical training in resuscitation Semmelweis University's E-learning portal (moodle)

- 8. Shock
- 9. First aid in internal medicine
- 10. Respiratory diseases
- 11. Multiple casualty accident: organization and transport
- 12. Unconscious patient
- 13. Internal bleeding

INTRODUCTION TO HEALTH INFORMATICS I.

Name of the educational organizational unit: SE EKK Institute of Digital Health Sciences

Name of the subject: Introduction to health informatics I. Type of the subject: Introduction to health informatics I. Type of the subject: 1 theory, 1 practice / week code: GYINFBEIE1A (theory), GYINFBEIG1A (practice) credit value: 2 (theory), 0 (practice) Name of the lecturer of the subject: Dr. Miklós Szócska Teachers: Dr. Ádám Zoltán Tamus (PhD, associate lecturer) Tamás Tóth (assistant lecturer Péter Dombai (lecturer)

Zoltán Sándor (assistant lecturer)

Administrator: Ms. Dóra Bacsa

Term: autumn

The exercise of the subject in the realization of the aim of the education:

To introduce the students to the medical application of informatics, the characteristics of modern, integrated information systems with respect to quantitative aspects and to decision demands of the modern sciences. The medical informatics leans on methods of mathematics, statistics and computer sciences and it also includes from the different engineering, management and informatics procedures.

Topics of the subject:

Topic of the theoretical lectures (broken down into weekly figures): 2×7 lectures = 14 lectures

- 1. Introduction: disruptive technologies in the healthcare
- 2. Medical data definitions, their collection and use on the individual and population level
- 3. Medical information on the Internet
- 4. Informatics background of the ambulance care mobilcommunication
- 5. The background of basic healthcare informatics integrated healthcare systems
- 6. The active aging lifestyle supported by informatics
- 7. The IT tasks of health care experts

2×7 practices = 14 practices
4×2 lessons
2×2 lessons
1×2 lessons

Requirements of participation of the lessons and the possibility of substitution of the absence:

According to rules of the Studies and Exam Code. Attendance at min. 75% of the classes (both lecture and practice). Max. 2 absence allowed from lectures. Max. 2 absence allowed from practices. Practices and lectures are evaluated separately!

The mode of the certificate in case of absence from the lessons:

According to rules of the Studies and Exam Code. No certificate accepted.

The requirements of signature at the end of the term (including also the number and the type of the students' exercises which are solved individual by them):

Suitable percentage of participation. Attendance on at least 5 of the 7 lectures and practices is mandatory.

The mode of acquisition of the mark:

Lecture: solution of a computer test (five-grade valuation). **Practice:** signature and solution of a computer test

Type of the exam:

Colloquium.

Exam requirements:

Exam: solution of a computer test (five-grade valuation).

Mode of the application for the exam:

Via Neptun system.

Mode of the certification in case of absence from the exam:

By a medical certification within three days.

List of lecture notes, course books, study-aids and literature which can be used to acquisition of the syllabus:

The educational materials are available at http://dei-cloud.semmelweis.hu Username and password is announced at the lecture/first practice.

Recommended literature:

- 1 Kékes-Surján-Balkányi-Kozmann: Egészségügyi informatika, Medicina Könyvkiadó, 2000 ISBN 9632423410
- 2 Dinya Elek (szerk.): Humán gyógyszerfejlesztés, Medicina Könyvkiadó Zrt, 2006 ISBN 9632429982
- 3 Meskó Bertalan: The Guide to the Future of Medicine, Webicina 2014 ISBN 9789631200072

INTRODUCTION TO HEALTH INFORMATICS II.

Name of the educational organizational unit: SE EKK Institute of Digital Health Sciences

Name of the subject: Introduction to health informatics II. Type of the subject: I theory, 1 practice / week code: GYINFBEIE2A (theory), GYINFBEIG2A (practice) credit value: 2 (theory), 0 (practice) Name of the lecturer of the subject: Dr. Miklós Szócska Teachers: Dr. Ádám Zoltán Tamus (PhD, associate lecturer) Tamás Tóth (assistant lecturer) Péter Dombai (lecturer)

Zoltán Sándor (assistant lecturer)

Administrator: Ms. Dóra Bacsa

Term: spring

The exercise of the subject in the realization of the aim of the education:

To introduce the students to the medical application of informatics, the characteristics of modern, integrated information systems with respect to quantitative aspects and to decision demands of the modern sciences. The medical informatics leans on methods of mathematics, statistics and computer sciences and it also includes from the different engineering, management and informatics procedures.

Topics of the subject:

Topic of the theoretical lectures (broken down into weekly figures): 2×7 lectures = 14 lectures

- 1. IT tools related to the lifecycle of medicines
- 2. Informatics of medicine planning molecular modelling
- 3. Pharmacovigilance
- 4. Informatics of medicine-licencing
- 5. Medicine-data and -databases on the Internet
- 6. Functions of pharmacy software
- 7. Telemedicine and pharmaceutics mobile phone applications connected with medicine

Topic of the practical practices (broken down into weekly figures): 2x7 practices = 14 practices Database management (PuPha (MS Access)) 3x2 lessons Practice with data representation and data visualisation (MS Powerpoint, Prezi) 3x2 lessons Execution of individual complex exercise 1x2 lessons

Requirements of participation of the lessons and the possibility of substitution of the absence:

According to rules of the Studies and Exam Code. Attendance at min. 75% of the classes (both lecture and practice). Max. 2 absence allowed from lectures. Max. 2 absence allowed from practices. Practices and lectures are evaluated separately!

The mode of the certificate in case of absence from the lessons:

According to rules of the Studies and Exam Code. No certificate accepted.

The requirements of signature at the end of the term (including also the number and the type of the students' exercises which are solved individual by them):

Suitable percentage of participation. Attendance on at least 5 of the 7 lectures and practices is mandatory.

The mode of acquisition of the mark:

Lecture: solution of a computer test (five-grade valuation). **Practice:** signature and solution of a computer test

Type of the exam:

Colloquium.

Exam requirements:

Exam: solution of a computer test (five-grade valuation).

Mode of the application for the exam:

Via Neptun system.

Mode of the certification in case of absence from the exam:

By a medical certification within three days.

List of lecture notes, course books, study-aids and literature which can be used to acquisition of the syllabus:

The educational materials are available at http://dei-cloud.semmelweis.hu Username and password is announced at the lecture/first practice.

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- 3 Meskó Bertalan: The Guide to the Future of Medicine, Webicina 2014 ISBN 9789631200072

TERMINOLOGY (1st semester)

Responsible organisational unit:

Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director: Zöldi Kovács Katalin PhD, Head of the Division

2 lessons per week, 2 credits

Assessment: 3 written tests

Role of subject in fulfilling the aim of training:

Students get familiarized with the Latin and Greek terminology of medicine in order to facilitate the acquisition of other subjects. Special focus is dedicated to anatomy, physiology, pathology and pharmaceutics. Furthermore, the course provides an introduction into general scientific terminology.

Brief description of subject:

The main aim of the subject is:

- 1. to acquire a knowledge of about 500-600 Latin words and phrases as a minimum vocabulary (basic vocabulary of medical and scientific language),
- 2. the correct application of
 - a) anatomical names,
 - b) names of diseases
 - c) names of drugs,
- 3. to understand diagnoses and prescriptions;
- 4. to learn about abbreviations used in prescriptions.
- 5. to be able to make a clear distinction between medical terms of English and Latin/Greek.

Course content of practical lessons:

- 1. Grammar:
 - Nouns: the 5 Declensions

Adjectives - construction of the most important attributive structures with the vocabulary of anatomy, clinical subjects and of pharmaceutics.

Prepositions (in anatomical, clinical and pharmaceutical phrases)

Numerals: Usage on prescriptions.

- 2. Texts containing:
 - a) anatomical names;
 - b) clinical and patho-anatomical diagnoses;
 - c) prescriptions
- 3. Vocabulary

Latin and bilingual (Greek-Latin) nouns, adjectives, numerals and prepositions used in anatomy, the clinical subjects and pharmaceutics; Course material, recommended text book(s), professional literature and supplementary reading(s)

Bakó, A. 2017. Medical Terminology - for students of pharmacy. Manuscript. Semmelweis University.

Hungarian Medical Terminology I.

Magyar orvosi szaknyelv 1. **Responsible organisational unit: Faculty of Health Sciences, Division of Foreign Languages and Communication Programme director:** Zöldi Kovács Katalin PhD, Head of the Division

4 lessons per week, 4 credits

Assessment: end-term written and oral exam

Role of subject in fulfilling the aim of training:

The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective communication in the language they use during their field practice both in their everyday life /'survival language'/ and in their academic studies. Raising students' awareness of cultural differences is one of our top priorities.

Brief description of subject:

The first three modules are dedicated to learning basic general vocabulary and grammar. In the first module students acquire basic structures and the vocabulary for everyday topics / e.g. shopping, food, housing etc./, language for "survival.". The course places special emphasis on phrases essential for everyday communications, e.g. introductions, greetings, getting/giving information etc. Grammar is of less importance in this phase of language studies.

Course content of practical lessons:		Lesson 29-30:	I would like a tea
Lesson 1-2:	The alphabet	Lesson 31-32:	Shopping for food
Lesson 3-4:	Greetings	Lesson 33-34:	Ordering food- in a café
Lesson 5-6:	Where are you from?	Lesson 35-36:	Rooms in the flat
Lesson 7-8:	Introducing people	Lesson 37-38:	Furniture in the rooms
Lesson 9-10:	Numbers-phone numbers	Lesson 39-40:	Where are the furniture?
Lesson 11-12:	What time is it?	Lesson 41-42:	As a guest
Lesson 13-14:	Practising telling the time	Lesson 11-12:	At a party
Lesson 15-16:	Days	Lesson 43-44:	Where can I find the library?
Lesson 17-18:	When do you study?	Lesson 45-46:	When shall we meet?
Lesson 19-20:	What is it? - food	Lesson 47-48:	Asking for information, setting programs
Lesson 21-22:	Consolidation	Lesson 49-50:	Places in the city
Lesson 23-24:	Test 1 + situations	Lesson 51-52:	Consolidation
Lesson 25-26:	What is the food like? - adjectives	Lesson 53-54:	Test 2 + situations and communication practice
Lesson 27-28:	What do you think of English tea?- giving opinions	Lesson 55-56:	Assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)

Gyöngyösi Lívia - Hetesy Bálint. Hungarian language: Jó reggelt! Semmelweis Egyetem Egészségtudományi Kar, 2010.

Hungarian Medical Terminology II.

Magyar orvosi szaknyelv 2.

Responsible organisational unit: Faculty of Health Sciences, Division of Foreign Languages and Communication Programme director: *Zöldi Kovács Katalin PhD*, Head of the Division

4 lessons per week, 2 credits,

Assessment: midterm (written) and endterm (written and oral) tests

Role of subject in fulfilling the aim of training:

The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective communication in the language they use during their field practice both in their everyday life /'survival language'/ and in their academic studies. Raising students' awareness of cultural differences is one of our top priorities.

Brief description of subject:

The first three modules are dedicated to learning basic general vocabulary and grammar. In the second module students acquire basic structures and the vocabulary for everyday topics (e.g. family, relatives, at the doctor's etc.) language for survival.". The course places special emphasis on phrases essential for everyday communications, e.g. likes, dislikes, offering help, etc. Grammar is of less importance in this phase of language studies.

Course content of practical lessons: Lesson 27-28: Consolidation Lesson 29-30: Test 1 + situations Lesson 1-4: Forming questions Lesson 5-6: Plural forms Lesson 31-32: I have a headache- at the doctor Lesson 7-8: What do you like doing in your free time? Lesson 33-34: At the chemist's I would like to..... Lesson 35-36: Communication practice- at the doctor, at the Lesson 9-10: Communication skills chemist's Lesson 11-12: Lesson 13-14: A date - what do you like? Lesson 37-38: My family, family members I like dancing, swimming etc. Lesson 15-16: Lesson 39-40: Family relations I can ride a bike, drive etc. Lesson 17-18: Lesson 41-44: Communication practice- introducing your family Lesson 19-20: Communication practice Lesson 45-48: My boss' wife - social relations Lesson 21-22: Can I help you? In a clothes shop Lesson 49-50: Consolidation Lesson 23-24: Can I give you something else? Lesson 51-54: Test 2 - situations, communication practice Lesson 55-56: Lesson 25-26: Communication practice Assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)

Gyöngyösi Lívia – Hetesy Bálint. Hungarian language: Jó napot kívánok! Semmelweis Egyetem Egészségtudományi Kar, 2011.

PHYSICAL EDUCATION I-II.

Department of Physical Education

Type of Subject: Compulsory Credit: 0 Name of the Lecturer: Várszegi Kornélia



Pharmaceutical Sciences 2nd year

Important: New curriculum is to be introduced in all years from the 2020-2021 academic year. Please, follow the updated curricula on the home page.

STUDY PROGRAMME

Second Year

3 rd semester						
Subjects	Lectures	Practices	Credit Points		Prerequisites	Examination
Analytical Chemistry (quantitative) I. GYASKAKVG1A	2	5	7	GYASKANKG1A GYEGYMATE2A GYASKASKE2A	Analytical Chemistry (qualitative) Mathematics II. General and Inorganic Chemistry II.	practical course grade
Physical Chemistry I. GYFKTFIKE1A	4	-	4	GYASKASKE2A GYEGYMATE2A GYFIZBIFE2A	General and Inorganic Chemistry II. Mathematics II. Biophysics II.	semi-final
Pharmaceutical Botany II. Practice GYNOVGYNG2A	-	3	2	GYGENBILE2A GYNOVGYNG1A	Biology II. Pharmaceutical Botany I.	practical course grade
Pharmaceutical Botany II. GYNOVGYNE2A	1	-	2	GYGENBILE2A GYNOVGYNG1A	Biology II. Pharmaceutical Botany I.	final #
Organic Chemistry I. Practice GYSZKSZKG1A	-	5,5	5	GYASKASKE2A GYASKANKG1A GYINFBEIE2A	General and Inorganic Chemistry II. Analytical Chemistry (qualitative) Introduction to Health Informatics II.	practical course grade
Organic Chemistry I. GYSZKSZKE1A	4	-	5	GYASKASKE2A GYASKANKG1A GYINFBEIE2A	General and Inorganic Chemistry II. Analytical Chemistry (qualitative) Introduction to Health Informatics II.	semi-final
Physical Education III. GYTSITSNG3A	-	1	0			signature
Hungarian Medical Terminology III. * GYLEKMSZG3A	-	4	2	GYLEKMSZG2A	Hungarian Medical Terminology II.	practical course grade
Total Credit			27			

4 th semester						
Subjects	Lectures	Practices	Credit Points		Prerequisites	Examination
Analytical Chemistry (quantitative) II. Practice GYASKAKKG2A	-	5	3	GYSZKSZKE1A Gyaskakkg1a	Organic Chemistry I. Analytical Chemistry (quantitative) I.	practical course grade
Analytical Chemistry (quantitative) II. GYASKAKKE2A	2	-	6	GYSZKSZKE1A Gyaskakkg1a	Organic Chemistry I. Analytical Chemistry (quantitative) I.	final #
Biochemistry I. GYOBIBIKE1A	3	-	3	GYGENBILE2A GYSZKSZKE1A GYFIZBIFE2A	Biology II. Organic Chemistry I. Biophysics II.	semi-final
Physical Chemistry II.GYFKTFIKG2A	1	4	5	GYFKTFIKE1A	Physical Chemistry I	practical course grade
Colloid Chemistry I. GYKOLKOLE1A	2	-	2	GYFKTFIKE1A	Physical Chemistry I.	semi-final
Organic Chemistry II. Practice GYSZKSZKG2A	-	5,5	4	GYSZKSZKE1A	Organic Chemistry I.	practical course grade
Organic Chemistry II. GYSZKSZKE2A	4	-	5	GYSZKSZKE1A	Organic Chemistry I.	final #
Hungarian Medical Terminology IV. * GYLEKMSZG4A	-	4	2	GYLEKMSZG3A	Hungarian Medical Terminology III.	practical course grade
Physical Education IV. GYTSITSNG4A	-	1	0			signature
Summer Practice I. ** GYSZGNSZG1A	-	35	4	GYASKAKKE2A Gyszkszke2a	Analytical Chemistry II. Organic Chemistry II.	
Total Credit			30+4			

The grade influences the qualification of the diploma

* Obligatory courses

** 4 weeks (140 hours) summer practice in elective place (accredited public / community pharmacy, Galenical laboratory, research institute, university department) after the second and third year.

LIST OF TEXTBOOKS (The list may change!)

- 1 Everett, D.H.: Basic Principles of Colloid Science. Royal Society of Chemistry, London, 1988. ISBN 0-85186-443-0
- 2 Atkins, P.W.: Physical Chemistry. 6th ed. Oxford Univ. Press ISBN 0-190850101-3 Paperback. **Or**: Atkins, P.W., de Paula J: Atkins' Physical Chemistry. 7th ed. Oxford Univ. Press. ISBN 0-19-897285-9
- 3 Buvári-Barcza: Quantitative Analytical Chemistry. Bp. (SOTE)
- 4 Murray (et al.): Harper's Biochemistry. Stanford. Appleton-Lange 2000. ISBN 0-8385-3684-0.

Recommended textbooks:

- 1 Shaw, D.J.: Introduction to Colloid and Surface Chemistry. Butterworth-Heinemann Ltd. Oxford, 1992. ISBN 0-7506-1182-0
- 2 Csempesz, F.: Experimental Colloid Chemistry. Bp. SOTE. 2012.
- 3 Skoog, West, Holler: Fundamentals of Analytical Chemistry. Saunders College Publishing Co.
- 4 Harwood L.M., Claridge T.D.W.: Introduction to Organic Spectroscopy. Oxford Univ. Press
- 5 Laidler,K.J.-Meiser,J.H.: Physical Chemistry. 1999. 3rd ed. Houhton Mifflin Co. Boston, ISBN 0-395-91848-0
- 6 Steiner E.: The Chemistry Maths Book. Oxford Univ. Press. ISBN 0-19-855913-5
- 7 Nelson, Fox, Lehninger, A.L.: Principles of Biochemistry. 3rd ed. 2000. Worth Publ. New York, ISBN 1-57259-153-6
- 8 Berg-Tymoczko-Stryer: Biochemistry 7th edition
- 9 F.A. Carey, R.M. Giuliano: Organic Chemistry, 10th Ed., McGraw Hill: New York, 2016, ISBN 0073511218
- 10 T.W.Gr. Solomons, C.B. Fryhle, S.A. Snyder: Organic Chemistry, 12th Ed., John Wiley & Sons, Inc., 2016, ISBN 1118875761
- 11 M. Jones, Jr., S.A. Fleming: Organic chemistry, 5th Ed., Norton Science Co., 2014, 978-0-393-91303-3
- 12 Experimental Organic Chemistry for students at the 2nd year of the Faculty of PharmacyCompiled by teaching staff of Department of Organic Chemistry under the supervision of Péter Mátyus, Department of Organic Chemistry, 2012
- 13 Gábor Krajsovszky: Collection of Organic chemical problems, Semmelweis University, Pharmaceutical Faculty, Department of Organic Chemistry, 2017, Editor: Gábor Krajsovszky, ISBN 978-963-06-5345-9 http://mek.oszk.hu/17200/17281/
- 14 László Szabó, Gábor Krajsovszky: Isomerism in Organic Compounds, Semmelweis University, Pharmaceutical Faculty, Department of Organic Chemistry, 2017, Editor: Gábor Krajsovszky, ISBN 978-963-12-9206-0 http://mek.oszk.hu/17200/17283/
- 15 Gábor Krajsovszky: Heterocyclic compounds, Semmelweis University, Pharmaceutical Faculty, Department of Organic Chemistry, 2018, Editor: Gábor Krajsovszky, ISBN: 978-615-5722-01-1 http://mek.oszk.hu/19100/19197
- 16 World of Molecules II, Compiled by Péter Mátyus, contribution by Gábor Krajsovszky, formated by Balázs Balogh, Department of Organic Chemistry, Semmelweis University, matyus.peter@pharma.semmelweis-univ.hu (2011) Pázmány Péter Katolikus Egyetem, Semmelweis Egyetem és a Dialóg Campus Kiadó-Nordex Kft. által alkotott konzorcium, http://www. tankonyvtar.hu/hu/tartalom/tamop425/0006_A_molekulak_vilaga_II/adatok.html
- 17 Organic and Biochemistry, Part: Organic Chemistry, Compiled by Péter Mátyus, contribution by Gábor Krajsovszky, formated by Balázs Balogh, Department of Organic Chemistry, Semmelweis University, matyus.peter@pharma.semmelweis-univ.hu (2011), Pázmány Péter Katolikus Egyetem, Semmelweis Egyetem és a Dialóg Campus Kiadó-Nordex Kft. által alkotott konzorcium, http://www.tankonyvtar.hu/ hu/tartalom/tamop425/0006_Szerves_es_biokemia/adatok.html
- 18 J. Clayden, N. Greeves, S. Warren: Organic chemistry (paperback), Oxford University Press, 2012, ISBN 978-0-19-927029-3
- 19 J. Clayden, S. Warren: Solutions manual to accompany organic chemistry (paperback), Oxford University Press, 2013, ISBN 9780199663347
- 20 A. Corbella, E. Marcantoni, G. Renzi: Seminars in Organic Synthesis, Royal Society of Chemistry, 2011, ISBN 978-88-86208-64-2
- 21 J.W. Zubrich: The Organic Chem Lab Survival Manual. A Student's Guide to Techniques. John Wiley & Sons, Inc., 2012, ISBN 978-1-118-08339-0
- 22 K.L. Williamson, K.M. Masters: Techniques Labs for Macroscale and Microscale Organic Experiments, Brooks Cole 2016, 7th Ed, ISBN 1305577191
- 23 E. Pretsch, P. Bühlmann, M. Badertscher: Structure Determination of Organic Compounds, Springer-Verlag, Berlin Heidelberg, 2009, ISBN 3540938095
- 24 2nd-3rd semesters: Gyöngyösi L. & Hetesy B., 2011. Jó napot kívánok! Bp. Semmelweis Egyetem Egészségtudományi Kar (available at Vas u. 17. Bookshop)
- 25 4th-5th semesters: Marthy A. & Végh Á. Egészségére! Magyar orvosi szaknyelv. Semmelweis Egyetem Egészségtudományi Kar, 2010. (available at Vas u. 17. Bookshop)

QUANTITATIVE ANALYTICAL CHEMISTRY I.

Lecturer: *Dr. Krisztina Kurin-Csörgei* Tutor: *Dr. Krisztina Kurin-Csörgei*

First Semester

	<i>Practicals</i> (5 hours per week)				
Lectures (2 nours per week)	Торіс	Task			
Introduction. Review of some elementary concepts. Analytical Chemistry: definition, aim, methods and brief history. Titrimetric methods of analysis.	Introduction.	Laboratory introduction; Safety and order in the laboratory; The schedule of the semester; Practical and theoretical requirements in the semester Practicing of use the laboratory tools; Calibration.			
Neutralization analysis: Standard solutions and standardization. Possibi- lities for end point detection. Change of pH during the acid-base titra- tion (calculation of titration curves for the reaction of strong acid/base with strong base/acid, weak acid/base with strong base/acid, polyprotic acid with strong base). Acid-base indicators. Indicator error	Calibration Acidi-Alkalimetry	Calibration; Neutralization analysis: Determination of sulfuric acid			
The main possibilities of determination in acidimetry and alkalimetry. (meas- urement of strong/weak acids, strong/weak bases, salts, "specific" determina- tions, with examples).	Acidi-Alkalimetry	Standardization of 0.1 N hydrochloric acid.			
Reactions in nonaqueous solutions. Classification of solvents. Advantages and disadvantages of using non-aqueous solvents	Acidi-Alkalimetry	Neutralization analysis: Determination of boric acid and sodium tetraborate; Determinations of hydroxide and carbonate ions in the presence of each other			
Nonaqueous titrations: standard solutions, end point detection, applications.	Acidi-Alkalimetry	Acidy-Alkalimetry: Indirect determination of sodium thiosulfate; Determination of "Lidocain" in nonaqueous solution			
Complex formation equilibra. Stepwise complex formation, stability con- stants. Effect of pH and auxiliary foreign ligands on the apparent (conditional) stability constant.	Acidi-Alkalimetry (Instrumental)	I. Test. Determination of lactic acid.			
Complex formation with monodentate and polydentate ligands. The chelate and entropy effect. Complexometric titrations with monodentate ligands.	Chelatometry	Chelatometric determination of bismuth ions; Chelato- metric determination of lead ions.			
Chelatometric titration curves. Calculation of $p[\mbox{Mn+}]$ at different points and regions of the curve	Chelatometry	Chelatometric determination of aluminum ions in "Al- uminium aceticum tartaricum solutum; Chelatometric determination of mercury and zinc ions in the presence of each other.			
Chelatometric titrations: standard solutions and standardization. Methods for end point detection at direct and back titrations. Metal ion indicators.	Chelatometry	Determination of calcium and magnesium ions in the presence of each other (in mineral water)			
Types and applicability of EDTA titrations.: direct, back, displacement and indirect titrations.	Chelatometry	Determination of copper and zinc in the presence of each other; Determination of cyanides by Liebig-Deni- gees' method			
Precipitation equilibra. The solubility product and the common ion effect. Effect of pH and complex formation on the solubility of precipitates (examples).	Gravimetry	Gravimetric determination of sulfate ions in the form of BaSO4; (precipitation, preparation of filter			
Gravimetry. Steps of gravimetry: precipitation, filtration, washing, treatment of precipitate, weighing, calculation. Applications of gravimetry: determination of different cations and anions (examples).	Gravimetry; Argentometry	Test II. Filtration, washing, weighing of BaSO4 precipitate; Determination of chloride ions by Mohr's method;			
Precipitation titrations: requirements for the reaction. Calculation of argento- metric titration curves. Standard solutions and standardization. Possibilities of end point detection.	Argentometry	Determination of bromide ions by Volhard's and Fajans' methods			
The main methods of argentometric titrations (Mohr's Volhard's, Fayans', Schulek's method).	Supplements Closing	Supplements; Closing			

QUANTITATIVE ANALYTICAL CHEMISTRY II.

Second Semester

	Practicals (5 hours per week)
Торіс	Task
Introduction Permanga nometry	Safety and order in the laboratory Practical and theoretical requirements in the semester The schedule during the semester Redox titrations (permanganometry) Standardization of » 0.1N potassium permanganate solution
Permanga nometry	Determination of the total iron content by Zimmermann-Reinhardt method Permanganometric determination of bromide ions (Winkler's method)
Chromatometry Bromatometry	Determination of Mohr salt with chromatometric titration Bromatometric determination of arsenic (III) (from As2O3) or antimony (III) compounds (in form of "tartar emetic": antymonyl tartarate) Determination of azophene
Bromatometry Cerimetry	TEST I. Bromatometric determination of ascorbic acid (Vitamin C) in tablets (e.gVit C, Rutascorbin, Béres C) Cerimetric determination of amidazophene
lodometry	Standardization of » 0.01N sodium thiosulfate solution. Determination of phenol in water / acetyl salicylic acid content in tablets (e.g. Aspirin, Kalmopyrin, Istopyrin,) by Koppeschaar's method
lodometry	lodometric determination of copper (II)-ionsnDetermination of mannitol by Malaprade's reaction with periodate
Iodometry	Determination of iodide by Winkler's method
Optional measurements	TEST II. One selection from "Other determinations"
Instrumental Analysis	Computer aided learning of modern instrumental analytical methods (HPLC; GC; UV-Vis Spectrophotometry)
Optional measurements	From "Potentiometric determinations" From "Other determinations"
Spectrophotometry Semi-quantitativ analysis	Spectrophotometric determination of ironcontent in multivitamin tablets Spectrophotometric determination of phosphate content in egg shell Semi-quantitative analysis using "Merkoquant" testpapers
Optional measurements	From "Potentiometric determinations" From "Other determinations"
Final test Determination	TEST III. (Qualitative and quantitative analysis of complex samples) Quantitative determination of the sample
Supplements Closing	Supplements Closing

Potentiometric determinations:

- 1. Direct potentiometric determination of fluoride content in tooth paste
- 2. Potentiometric titration of bromide content of "Elixirium thymi composita"
- 3. Potentiometric titrations of iodide and chloride ions in presence of each other
- 4. Potentimetric titration using computer controlled burette:
 - Determination of phosphoric acid content in "Coca Cola"

Other determinations:

- 1. Complexometric determianation of metals in coins: (e.g. 1,- Ft; 2,- Ft; US cent; Groschen) (Cu²⁺ Ni²⁺; Cu²⁺ Zn²⁺; Cu²⁺; Al³⁺)
- 2. Determination of calcium and magnesium ions in mineral water (e.g.. Römerquelle, Teodora Quelle, Margitszigeti), in bitter water (Míra) and in tap water
- 3. Chelatometric determination of aluminium ions in "Aluminium aceticum tartaricum solutum"
- 4. Iodometric determination of Cr³⁺ions
- 5. Permanganometric determination of hydrogen peroxide content in tablet "Hyperol"
- 6. Complex analysis of "Solutio iodi alcoholica"
- 7. Determination of "Papaverinium chloride" in nonaqueous solution (glacial acetic acid)
- 8. Conductometric determination of acid contents in red wine

ORGANIC CHEMISTRY I-II.

Complete name of the course: Szerves kémia I., II. Name of the Programme: Pharmacy Abbreviated name of the course: Org Chem English name of the course: Organic Chemistry I, II. Neptun Codes: GYSZKSZKE1A; GYSZKSZKE2A; GYSZKSZKG1A; GYSZKSZKG2A Institute: Semmelweis University, Department of Organic Chemistry Name of the tutor/lecturer: Dr. István Mándity Ph. D. Contacts Phone: +36-1-476-3600/53055 E-Mail mandity.istvan@pharma.semmelweis-univ.hu

Further tutors: Dr. Péter Tétényi Ph. D. Dr. Gábor Krajsovszky Ph. D.

Credit points: 5; 5; 5; 4

Course principles: To satisfy the requirements of the Faculty of Pharmacy, the course in Organic Chemistry has two main purposes:

- a) The presentation of modern concepts and subject-matter concerning the structures, syntheses, physical and chemical properties, structure – property relationships, and practical applications of organic compounds, with special emphasis on bioactive molecules. The presentation and practical applications of the most important methods and tools of organic chemistry.
- b) To provide a solid molecular, organic chemical basis for subsequent subjects in the curriculum of students at the Faculty of Pharmacy.

Brief course summary:

The course includes and discusses the state-of the art knowledge of synthetic and structural organic chemistry subjects to develop problem-solving skills for organic chemistry and biomolecular sciences.

Course data

Recommended semester of completing the course 3. Lecture (contact hrs/ week) 4 hours weekly Practice (contact hrs/ week) 8 hours biweekly Seminar (contact hrs/week) 2 hours biweekly Individual lecture (introductory lecture) 1 hour weekly Total number of contact hours/semester 70 (lectures+ introductory lectures) + 140 (seminars+ practices in 2 groups)

Semester

Spring semester* Winter semester* Both semesters* **Consultation** as many times as students ask for

Semester 1 program

I. Lecture topics/week				
' 1. week:	Introduction to Organic Chemistry 1. Introductory lecture: Safety requirements for organic chemical laboratory work; re- quirements for presentation of a laboratory note-book. Short summary of the Guidelines. Recrystallization and vacuum filtration. Extraction. Drying methods. Distillation of solvents. Thin layer chromatography, column chromatography, HPLC. Melting point determination. Test tube reactions.			
2. week:	MO theory 1. Atomic orbitals, LCAO-MO method, sigma and pi orbitals, molecular orbitals, delocalisation. Introductory lecture: Distillation. 4-Bromoacetanilide. Diethyl (3,5-dimethylpyrrol-2,4-dicarboxylate).			
3. week:	MO theory 2. Hybridisation, Lewis-Langmuir theory of bonds, valence bond method, resonance. Classification of organic compounds. Isomers: constitutional and conformational isomers, stereoisomers. Eclipsed, staggered conformers, gauche effect. Cycloalkanes: stereostructure, the most stable conformers, axial and equatorial substituents for disubstituted cycloalkanes.			
4. week:	Chirality, absolute configuration according to Cahn-Ingold-Prelog, enantiomers and diastereomers. Axial chirality, determi- nation of absolute configuration. Prochiral compounds: alkenes, imines or carbonyl compounds.			
5. week:	Nomenclature of organic compounds. Classification of reactions: ionic or radical reactions. Electronegativity, reactivity of reagents: inductive, mesomeric and steric effects.			
6. week:	Alkanes and cycloalkanes: physical properties, preparations, reactions.			
7. week:	Alkenes: structure, preparations, reactions. Asymmetric synthesis, and reactions. Diolefines: structure, cycloaddition reac- tions, Woodward-Hoffmann rules. Spectroscopy.			
8. week:	Alkynes. Benzene and aromaticity. Extension of the aromatic system. Antiaromatic and non-aromatic structures. S _E Ar reactions of aromatic compounds. Activating and deactivating groups, direction rules.			
9. week:	Isolated polycyclic compounds. Fused polycyclic compounds: direction rules in S _E Ar reactions. S _N Ar reactions of aromatic halogen compounds.			
10. week:	Structure of halogenated hydrocarbons, physical, biological properties, preparations. Radical reactions: thermochemistry. Main substitution reactions of halogenated hydrocarbons. Nucleophilic substitution reactions: $S_N 1$, $S_N 2$, $S_N i$. Molecularity and order of reactions. Reaction kinetics. Allylic rearrangement. E1, E2 and E1cB reactions, factors influencing ration of S_N vs. E reactions: substrate, solvent, temperature effects, role of the base, of the leaving group and of heavy metal salts. Aromatic halogen compounds. Reactivity differences of aromatic halogen compounds.			
11. week:	Alcohols: preparation. Redox reactions. Alcohols: oxidation and reduction methods. Phenols: preparation, chemical reac- tions. Acid-base theories. Ethers, crown ethers, phase transfer catalysis. Organic sulfur compounds and ylides; nitro com- pounds: preparation and properties.			
12. week:	Amines: structure. N-oxides. Amines: preparation, physical properties. Amines: chemical properties, regioselectivity and protecting groups.			
13. week:	Aromatic diazonium compounds, Sandmeyer reaction and azo coupling. More important amines. Organophosphorus com- pounds. Organometallic compounds of zinc, magnesium and palladium.			
14. week:	Oxo compounds.			

II. Practice and seminar topics/week _

- 1. week:
- 2. week:
- 3. week: Practice: Purification of 4-bromoacetanilide by recrystallisation, checking by TLC, laboratory glassware, how to carry out basic procedures, proper mounting, cleaning glassware. Test tube reactions.
- Seminar: Molecular orbital (MO) theory, hybridization 4. week:
- 5. week: Practice: Purification of ethyl acetate by extraction and distillation. Demonstration of melting point measurement
- 6. week: Seminar: Types of isomers
- 7. week: Practice: Preparation of 4-bromoacetanilide
- 8. week: Seminar: Stereochemistry: Cahn-Ingold-Prelog's and Fischer's convention, central (R, S, D, L) and axial chirality. Enantiomers and diastereomers
- 9. week: Practice: Preparation of diethyl (3,5-dimethylpyrrol-2,4-dicarboxylate)
- Seminar: Stereochemistry of cycloalkanes. Prochiral molecules, enantiotopic and diastereotopic atoms, groups and surfaces 10. week: with examples

11. week: Practice: Evaluation of spectra I. (theoretical basis, analysis of spectra)

- **12. week: Seminar:** Molecularity and kinetic order of reactions. Classification of organic chemical reactions (according to reagents, or from a kinetic aspect, according to polarity or by the reaction coordinate). Addition and elimination reactions (regio- and stereoselectivity). Kinetic and thermodynamic control.
- 13. week: Practice: Evaluation of spectra II. (complex analysis of spectra, problem solving)
- 14. week: Extra practice, checking students' cupboards. *Double seminar:* Aromaticity and direction rules for aromatic electrophilic and nucleophilic substitution. Aldehydes and Ketones.

Course data

Recommended semester of completing the course 4. Lecture (contact hrs/ week) 4 hours weekly Practice (contact hrs/ week) 8 hours biweekly Seminar (contact hrs/week) 2 hours biweekly Individual lecture (introductory lecture) 1 hour weekly Total number of contact hours/semester 70 (lectures+ introductory lectures) + 140 (seminars+ practices in 2 groups) Semester Spring semester* Winter semester* Both semesters* Consultation as many times as students ask for

Semester 2 program

I. Lecture topics/week

- **1. week:** Carboxylic acids 1.
- week: Introductory lecture: Preparation of the (organic chemical) electronic literature searching (e.g., DiscoveryGate, SciFinder Scholar, PubMed, PubChem, INTERNET and nomenclature) and molecular pharmaceutical informatics. Carboxylic acids 2.
 week: Introductory lecture: Acetylsalicylic acid. 4-nitrobenzoic acid. (*E,E*)-1,5-Diphenyl-1,4-pentadien-3-one. Nomenclature of oxo compounds and of carboxylic acid derivatives.
- *4. week:* Introductory lecture: Cyclohexanone oxime. Methyl 4-nitrobenzoate. Phthalimide.
- Carboxylic acid derivatives 1.
- 5. week: Carboxylic acid derivatives 2. Carbonic acid derivatives
- 6. week: Carbohydrates.
- 7. week: Amino acids, peptide and proteins.
- 8. week: Heterocyclic nomenclature.
- 9. week: Heterocycles 1.
- 10. week: Heterocycles 2.
- 11. week: Heterocycles 3.
- 12. week: Heterocycles 4.
- 13. week: Nucleotides. Natural compounds (terpenes, steroids and alkaloids) 1.
- 14. week: Natural compounds (terpenes, steroids and alkaloids) 2.

II. Practice and seminar topics/week

- 1. week:
- 2. week:
- 3. week: Practice: Practice of electronic literature searching
- 4. week: Seminar: Ambident nucleophiles, electrophilic substitution (reactions of aldehydes and ketones)
- 5. week: Preparation of acetylsalicylic acid and 4-nitrobenzoic acid
- 6. week: Seminar: Substituent effects, acid-base theory, and structure-pKa relationship
- 7. week: Practice: Molecular pharmaceutical informatics practice

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- 8. week: Seminar: Substitution reactions of carboxylic acid derivatives
- **9. week: Practice:** Preparation of (*E*,*E*)-1,5-Diphenyl-1,4-pentadien-3-one and cyclohexanone oxime
- 10. week: Seminar: Carbonic acid derivatives, chemistry of sugars
- 11. week: Practice: Special Chapters of Organic chemistry. Literature searching report
- 12. week: Seminar: Amino acids, and proteins
- 13. week: Preparation of methyl 4-nitrobenzoate and phthalimide
- 14. week: Extra practice **Double seminar:** Heterocyclic compounds (monocycles and fused compounds). Isoprenoids, alkaloids, and nucleotides

Course requirements

Order of consultations: as many times as students ask for consultation, at least 1 week before the date of consultation.

Prerequisites:	GYASKANKG1A	Analitical chemistry I. (qualitative)
-	GYASKASKE2A	General and inorganic chemistry II.
	GYINFBEIE2A	Introduction to medical informatics II.
	GYSZKSZKE1A	Organic chemistry I.

Semester acceptation conditions: (successful course attendance, mid-term tests, absence, etc.) Written examination at the end of the first semester

Students have to answer in written form questions on the subject-matter of the main lectures, the introductory lectures to the practicals and the practicals themselves, and on the spectroscopy discussed in the practicals and seminars.

Final (written) examination at the end of the second semester

Students have to answer in a written form questions on the theoretical and practical subject-matter from both semesters. The subject-matter involves all topics involved in the main lectures and the introductory lectures to the practicals, and related topics not necessarily directly indicated in the list of questions.

Practical course grade

On the basis of the attendance and the results described in the protocol, the performance of the practical tasks is validated by the signature of the leading instructor. Students are allowed to participate in the practicals only if they have participated in the corresponding introductory lecture. If necessary, students may make up for missed or unsuccessful experiments at a proper time after preliminary agreement with the leading instructor at the end of the semester. Without permission, the repetition of unsuccessful experiments is not allowed. The presence of the student at the main lecture is a necessary requirement for a consultation.

The grade for the practical course is awarded on the basis of the average of preparation mark.

At least 75% of the compounds or experiments must be graded as acceptable. Evaluation of the compounds is based on their yield and purity, and the average of the marks for each preparation gives the **preparation mark**. The appropriate parts of the laboratory note-book should be prepared in advance and after the completion of each practical, the note-book should be submitted to the leading instructor, together with the product of the experiment.

At the beginning of each laboratory practical, students must write a short test on the theoretical and practical subject-matter of the experiment. These tests are immediately corrected by the leading instructor, and the practical work can be started only if the short test is accepted. If the test is not successful, the preparation in question can be performed only at the end of the semester.

Knowledge testing during the semester: Midterm tests would be held at each semester twice in written form, the dates of which are fixed at the beginning of the semesters. The value of the midterm test can be either ranging 2-5 or failed. If the test is failed, the student must attend at the following correction test. If the value of the any correction tests reach the passmark, then the midterm test is accepted. If the value of the any correction tests is failed, then the student does not get signature for the semester, he/she is not allowed to sit in the (semi-)final examination.

Requirements of the signature at the end of the semester:

Evaluation of the student's performance at the seminars:

at least one successful oral report at the seminars per semester is also required for the signature for the semester. Seminars are obligatory; if anyone has 2 or more absences, then he/she must have report from the missing seminars, and this report must be accepted. *Evaluation of the student's presence during the lectures: ---*

How to get a practical course grade:

The performance of the practical tasks is validated by countersign of the leading instructor. It must be at least passmark.

Individual activity of the student during the semester (*protocol, etc.*) each student work separately in the laboratory, must prepare himself/ herself before entering to the laboratory, must strictly follow the prescriptions provided by us and must precisely demonstrate the experiments carried out by a complete laboratory note-book.

Performance control in the examination period (*final, semi-final*) students, who have got signature for the Semester, can sit in the examination. The examinations are evaluated by a mark 1-5 (5 is the best), and unsuccessful exams may be repeated not more than 3 times.

Performance control in the examination period (written, oral, written and oral) only written exams are held.

Prescribed external practice: no.

List of teaching materials: (List of textbooks, hand-outs, scripts, etc.)

- 1. F.A. Carey, R.M. Giuliano: Organic Chemistry, 10th Ed. McGraw Hill: New York, 2016 ISBN 0073511218
- 2. T.W.Gr. Solomons, C.B. Fryhle, S.A. Snyder: Organic Chemistry, 12th Ed. John Wiley & Sons, Inc., 2016 ISBN 1118875761
- 3. M. Jones, Jr., S.A. Fleming: Organic chemistry, 5th Ed. Norton Science Co., 2014 978-0-393-91303-3
- 4. Experimental Organic Chemistry for students at the 2nd year of the Faculty of PharmacyCompiled by teaching staff of Department of Organic Chemistry under the supervision of Péter Mátyus Department of Organic Chemistry, 2012
- 5. Gábor Krajsovszky: Collection of Organic chemical problems Semmelweis University, Pharmaceutical Faculty, Department of Organic Chemistry, 2017 Editor: Gábor Krajsovszky ISBN 978-963-06-5345-9 http://mek.oszk.hu/17200/17281/
- László Szabó, Gábor Krajsovszky: Isomerism in Organic Compounds Semmelweis University, Pharmaceutical Faculty, Department of Organic Chemistry, 2017 ISBN 978-963-12-9206-0 http://mek.oszk.hu/17200/17283/
- 7. Gábor Krajsovszky: Heterocyclic compounds, Semmelweis University, Pharmaceutical Faculty, Department of Organic Chemistry, 2018, Editor: Gábor Krajsovszky, ISBN: 978-615-5722-01-1 http://mek.oszk.hu/19100/19197
- 8. World of Molecules II Compiled by Péter Mátyus, contribution by Gábor Krajsovszky, formated by Balázs Balogh, Department of Organic Chemistry, Semmelweis University, matyus.peter@pharma.semmelweis-univ.hu (2011)
- 9. Pázmány Péter Katolikus Egyetem, Semmelweis Egyetem és a Dialóg Campus Kiadó-Nordex Kít. által alkotott konzorcium http://www. tankonyvtar.hu/hu/tartalom/tamop425/0006_A_molekulak_vilaga_II/adatok.html
- 10. Organic and Biochemistry, Part: Organic Chemistry Compiled by Péter Mátyus, contribution by Gábor Krajsovszky, formated by Balázs Balogh, Department of Organic Chemistry, Semmelweis University, matyus.peter@pharma.semmelweis-univ.hu (2011) Pázmány Péter Katolikus Egyetem, Semmelweis Egyetem és a Dialóg Campus Kiadó-Nordex Kft. által alkotott konzorcium http://www.tankonyvtar.hu/ hu/tartalom/tamop425/0006_Szerves_es_biokemia/adatok.html
- 11. J. Clayden, N. Greeves, S. Warren: Organic chemistry (paperback) Oxford University Press, 2012 ISBN 978-0-19-927029-3
- 12. J. Clayden, S. Warren: Solutions manual to accompany organic chemistry (paperback) Oxford University Press, 2013 ISBN 9780199663347
- 13. A. Corbella, E. Marcantoni, G. Renzi: Seminars in Organic Synthesis. Royal Society of Chemistry, 2011 ISBN 978-88-86208-64-2
- 14. J.W. Zubrich: The Organic Chem Lab Survival Manual. A Student's Guide to Techniques. John Wiley & Sons, Inc., 2012 ISBN 978-1-118-08339-0
- 15. K.L. Williamson, K.M. Masters: Techniques Labs for Macroscale and Microscale Organic Experiments. Brooks Cole 2016, 7th Ed ISBN 1305577191
- 16. E. Pretsch, P. Bühlmann, M. Badertscher: Structure Determination of Organic Compounds. Springer-Verlag, Berlin Heidelberg, 2009 ISBN 3540938095

The course description was prepared by dr. Péter Tétényi

PHYSICAL CHEMISTRY I.

First Semester

Lecturer: Dr. Tamás Turányi

Week Lectures (4 hours per week),

- 1 Ideal gas and real gases
- 2 First Law of thermodynamics
- 3 2nd and 3rd Laws of thermodynamics
- 4 Phase transitions
- 5 Mixtures; chemical equilibrium
- 6 Surface phenomena; transport phenomena
- 7 Reaction kinetics
- 8 Electric properties of materials
- 9 The Boltzmann distribution; selection rules
- 10 Beer Lambert's law; Raman spectroscopy; luminescence spectroscopy; photo electron spectroscopy
- 11 Vibrational spectroscopy; rotational spectroscopy
- 12 Magnetic properties; Nuclear Magnetic Resonance, NMR
- 13 Electrochemistry of ion activity; conductivity and transport number
- 14 Galvanic cells and electrochemical kinetics

PHYSICAL CHEMISTRY II.

Second Semester

Organizer: Dr. István Gyula Zsély

- Week *Lectures* (1 hour per week) Practicals (4 hours per week)
- 1 Fire and work safety instructions
- 2 Thermal analysis of tin-lead alloys
- 3 Enthalpy of hydration of sodium acetate
- 4 Freezing point depression
- 5 Determination of the temperature dependence of the vapor pressure
- 6 Mid-term test
- 7 Thermometer calibration
- 8 Determination of ionization constant
- 9 Measurement of surface tension
- 10 Base Electrochemical measurement
- 11 Column chromatography
- 12 Kinetics of a second order reaction
- 13 Mid-term test
- 14 Supplementary week

COLLOID CHEMISTRY I.

Lecturer: Dr. Róbert Mészáros

Second Semester

- Week Lectures (2 hours per week)
- 1 Colloids: definitions, nomenclature, historical perspective. Basic principles of colloid stability: intermolecular forces, interparticle forces, effect of the intervening medium.
- 2 Macromolecular colloids and gels: the formation and structure of macromolecules, general properties of polymer solutions, determination of the molecular mass of macromolecules.
- 3 Association colloids and self-assembly systems: micellisation, solubilization.
- 4 Thin films, foams and emulsions: film stability, film tension, foams, foaming and antifoaming agents, froth flotation, emulsions and microemulsions.
- 5 Preparation of colloidal dispersions: dispersion methods, condensation methods: nucleation and particle growth, emulsion and dispersion polymerization, preparation of monodisperse colloids.
- 6 Interfaces: surface tension, surface energy, wetting phenomena. Adsorption: the Gibbs adsorption equation, the influence of adsorption on interparticle forces, the effect of the curvature of surfaces on equilibrium
- 7 Electrostatic forces and the electrical double layer, steric repulsion, the effect of adsorbed or anchored layers, the total interaction potential curve.
- 8 Aggregation processes in colloidal dispersions: flocculation and coagulation of electrostatically stabilized dispersions, the DLVO theory, kinetics of coagulation.
- 9 Sterically stabilized systems, reversible flocculation, bridging flocculation, depletion flocculation, heterocoagulation, structure of flocs and sediments, coalescence and particle growth.
- 10 Some important properties of colloids: kinetic properties, electrokinetic phenomena, sedimentation and creaming.
- 11 Optical properties of colloidal systems. Scattering of radiation: conventional light scattering, neutron scattering, dynamic light scattering.
- 12 Rheology: viscosity, Newtonian and non-Newtonian systems, rheology of suspensions of colloidal particles.
- 13 Cohesive colloidal systems. Gels, forces leading to gel formation, swelling properties of of gels. The industrial importance of colloids

PHARMACEUTICAL BOTANY II.

Department of Plant Anatomy

Tutor: Dr. Gábor Kovács

First Semester

Weeks	<i>Lectures</i> (1 hour per week)	Practicals (3 hours per week)
1	Embryo development. The root apex, primary structure of roots. Root modifications Brassicaceae	Germination, seedlings. Plants representing fam.: Fabaceae,
2	The shoot apex. The primary structure of stems. Stemport connection	Roots. Plants representing fam.:
3	Secondary growth of roots and stems.	Stems I. Plants representing fam.: Solanaceae. Lamiaceae
4	Development and anatomy of leaves. Adaptations to the environment. Shoot modifications.	Stems II. Plants representing fam.: Asteraceae
5	The movement of water in plants. Mineral nutrition. Transport of assimilates.	1. Test Work: Plants representing fam.: Cannabaceae
6	Initiation and anatomy of flowers. Sporo- Angiosperms.)	Woddy stems (Gymnosperms,
	and gametogenesis in angiosperms. Fruits and seed.	The fungi (introduction). I.Test Work on the knowledge of medicinal plants
7	Control of growth and development.	The Fungi I.
8	Mycophyta, Bryophyta, Pteridophyta, Gymnospermatophyta	The Fungi II.
9	Angiospermatophyta: Magnoliidae Preparing a cleared specimen	2. Test Work: Fungi
10	Angiospermatophyta: Hamamelididae, Carvophyllidae	Leaf and flower anatomy
11	Angiospermatophyta: Rosidae 2. Test Work on the knowledge	Morphology and anatomy of the seed
12	Angiospermatophyta: Dilleniidae	Morphology and anatomy of the fruit.
13	Angiospermatophyta: Asteridae flower, seed, fruit.	3. Test Work: woody stems, leaf,
14	Angiospermatophyta: Monocotyledoneae the practicals.	Consultation, questioning, finishing

Visit in the Botanical Garden of Eötvös Loránd University to learn taxonomy of higher plants. Field trip (1 day) to learn medicinal plants and fungi in the wild. Handing in of your own herbarium (collection of 30 medicinal plants, pressed and dried, mounted for permanent display with references).

BIOCHEMISTRY I.

Department of Medical Biochemistry

Lecturer: **Dr Attila Ambrus** Tutor: **Dr Erzsébet Maróthy-Tóth**

Second Semester

Lectures (3 hours per week, 3 credits)

Week 1-4.

Proteins. The amino acid building blocks of proteins. Determination of amino acid composition and primary structure of proteins. Ordered conformations of polypeptide chains. Four levels of protein structure. Determination of secondary and tertiary structure. Purification and characterization of proteins. Separation techniques based on molecular size, differences in solubility, charge, and selective adsorption. Enzymes. Identification of functional groups essential for catalysis. Kinetics of enzyme-catalyzed reactions: the Michaelis-Menten equation and plot. Enzyme inhibition. Allosteric and covalent regulation of enzymes. Detailed mechanism of enzyme action. Mechanism of action of serine proteases. Structure of myoglobin and hemoglobin. Regulation of oxygen transport by hemoglobin. Fetal hemoglobin. Molecular pathology of hemoglobin.

Week 5-9.

- Bioenergetics. High energy compounds. Digestion and absorption of carbohydrates.
- Glycolysis. Gluconeogenesis. Regulation of glycolysis and gluconeogenesis. Pasteur effect. Fructose and galactose metabolism.
- Oxidative decarboxylation of pyruvate. Citric acid cycle: reactions, regulation, catabolic and anabolic role.
- Respiratory chain. Oxidative phosphorylation. Mitochondrial transport of reductive equivalents. Substrate anion carriers. Energetics of glucose oxidation.
- Reactions, significance and regulation of the pentose phosphate pathway. Glucuronic acid pathway. Glycogen metabolism. Regulation of glycogenolysis and glycogenesis.

Week 9-14.

- Beta-oxidation of saturated and unsaturated fatty acids. Metabolism of ketone bodies. Synthesis, desaturation and elongation of fatty acids.
- Digestion and absorption of lipids. Synthesis and degradation of triglycerides and phospholipids.
- Biosynthesis and significance of cholesterol and bile acids. Regulation of cholesterol and bile acid synthesis.
- Metabolism of lipoproteins. Synthesis of steroid hormones.
- Protein digestion and absorption. Important reaction types in amino acid metabolism.
- Degradation of amino acids. Urea cycle. Synthesis of amino acids.

Hungarian Medical Terminology III.

Magyar orvosi szaknyelv 3.

Responsible organisational unit: Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:

Zöldi Kovács Katalin PhD, Head of the Division **4 lessons per week, 2 credits**,

Assessment: midterm (written) and endterm (written and oral) tests

Role of subject in fulfilling the aim of training:

The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective communication in the language they use during their field practice both in their everyday life /'survival language'/ and in their academic studies. Raising students' awareness of cultural differences is one of our top priorities.

Brief description of subject:

The first three modules are dedicated to learning basic general vocabulary and grammar. In the third module students acquire basic structures and the vocabulary for everyday topics / e.g. travelling in a city, travelling abroad, arranging accommodation etc. /, language for "survival.". The course places special emphasis on phrases essential for everyday communications, e.g. past time activities, telephoning, buying/ordering tickets etc. Grammar is of less importance in this phase of language studies.

Course content of practical lessons:

Lesson 1-2:	What was your weekend like?
Lesson 3-4:	What did you yesterday?
Lesson 5-6:	Did you like the city?
Lesson 7-8:	Have you ever been to England?
Lesson 9-10:	What did you do on Monday?
Lesson 11-12:	Communication practice: What did you do?
Lesson 13-14:	What did your neighbour say?
Lesson 15-16:	Practising past tense
Lesson 17-18:	He didn't know that we were there. –Past tense
Lesson 19-20:	Communication practice – Practising past tense
Lesson 21-22:	Consolidation
Lesson 23-24:	Test 1 + situation
Lesson 25-26:	I'd like a ticket to London.
Lesson 27-28:	Travelling by train
Lesson 29-30:	Travelling abroad
Lesson 31-32:	Communication practice: travelling
Lesson 33-34:	Accommodation
Lesson 35-36:	Booking accommodation
Lesson 37-38:	Booking accommodation- conversations
Lesson 39-40:	At a hotel
Lesson 41-42:	Communication practise: travelling and booking accommodation
Lesson 43-46:	Customs and festivities – modal auxiliaries
Lesson 47-48:	At the dentist
Lesson 49-50:	Healthy lifestyle
Lesson 51-52:	Consolidation
Lesson 53-54:	Test – situation, communication practice
Lesson 55-56:	Assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)

Gyöngyösi Lívia - Hetesy Bálint. Hungarian language: Jó napot kívánok! Semmelweis Egyetem Egészségtudományi Kar, 2011.

Hungarian Medical Terminology IV.

Magyar orvosi szaknyelv 4.

Responsible organisational unit: Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:

Zöldi Kovács Katalin PhD, Head of the Division 4 lessons per week, 2 credits,

Assessment: midterm (written) and endterm (written and oral) tests

Role of subject in fulfilling the aim of training:

The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective professional communication in the language they use during their field practice. With the help of this course they become able to communicate with the patients in the Hungarian hospitals.

Brief description of subject:

The fourth module is dedicated to learning basic medical vocabulary. Students acquire the skills needed in taking family, social, and medical history in internal medicine. They also learn how to address the patient during an examination and give advice for the treatment.

Course content of practical lessons:

Lesson 1-4:	Revision
Lesson 5-6:	Family history – asking for family members, names
Lesson 7-8:	Family history – describing state
Lesson 9-10:	Family history – communication practice
Lesson 11-12:	Social history – habits
Lesson 13-16:	Social history – expressing frequency
Lesson 17-18:	Body parts, internal organs
Lesson 19-20:	Symptoms
Lesson 21-22:	Consolidation
Lesson 23-24:	Test 1 + situation
Lesson 25-28:	Asking the patient about the pain
Lesson 29-30:	Describing pain and symptoms
Lesson 31-32:	Names of diseases
Lesson 33-36:	Taking medical history
Lesson 37-40:	Medication
Lesson 41-48:	Giving advice, doctor's recommendations
Lesson 49-52:	Consolidation
Lesson 53-54:	Test – situation, communication practice
Lesson 55-56:	Assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)

Marthy Annamária – Végh Ágnes. Egészségére! - Magyar orvosi szaknyelv. Semmelweis Egyetem Egészségtudományi Kar, 2010.

PHYSICAL EDUCATION III-IV.

Department of Physical Education

Type of Subject: Compulsory Credit: 0 Name of the Lecturer: Várszegi Kornélia

SUMMER PRACTICAL TRAINING PROGRAM I.

Four weeks: 35 hours/week, min. 6/max. 8 hours/day. The aim of the summer practical training: getting acquainted with the pharmacy as a sanitary unit.

Duties and respects:

- 1 Survey of duties in a public pharmacy of drug dispensing.
- 2 Introduction to the structure of a public pharmacy: rooms, office, laboratories, stores etc., accessories.
- 3 Knowledge related to the storage of drugs in a pharmacy. Storage of drugs according to their activity, strength etc.
- 4 Accessories in a public pharmacy. Practising their use, working with pharmacy balances etc.
- 5 Examination of chemical and crude drugs already learnt in the 1st–4th semesters. (Knowledge of materials, organoleptic, physicochemical methods etc.)
- Practising of some pharmaceutical technological manipulations: measuring, compounding, sieving, milling filtration, homogenization of powders, ointments etc.
 Getting acquainted with the equipments of these manipulations.

Right selection of the accessories: scale, scale-relations, place etc.

- 7 Drug dispensing according to regulations. Corking of flasks for solutions, signal-signature, packing, presentation. Esthetic demunt.
- 8 Labour safety in a pharmacy. (Inflammable, explosive goods, acids, corrosive chemicals etc.)

Important note: Document certifying the completion of the practice must be handed in at registration! Registration to the next year is not allowed without it!

STUDY PROGRAMME



Pharmaceutical Sciences 3rd year

Important: New curriculum is to be introduced in all years from the 2020-2021 academic year. Please, follow the updated curricula on the home page.

Third Year

5 th semester						
Subjects	Lectures	Practices	Credit Points	Prerequisites		Examination
Biochemistry II. Practice GYOBIBKIG2A	-	1,5	0	GYSZKSZKE2A Gyobibike1a	Organic Chemistry II. Biochemistry I.	signature
Biochemistry II. GYOBIBKIE2A	2,5	-	3	GYOBIBIKE1A Gynyelatg1a	Biochemistry I. Medical Terminology	final #
Physiology I. Practice GYKIKELTG1A	-	1	2	GYOBIBIKME1A GYNYELATG1A	Biochemistry I. Medical Terminology	practical course grade
Physiology I. GYKIKELTE1A	5	-	4	GYOBIBIKME1A GYNYELATG1A	Biochemistry I. Medical Terminology	semi-final
Pharmaceutical Chemistry I. GYGYKGYKG1A	4	5	8	GYASKAKKE2A GYSZKSZKE2A GYFKTFIKG2A GYNYELATG1A	Analytical Chemistry (quantitative) II. Organic Chemistry II. Physical Chemistry II. Medical Terminology	practical course grade
Pharmaceutical Technology I. GYGYIGYTG1A	2	3	5	GYSZKSZKE2A Gykolkole1A Gyfktfikg2a Gynyelatg1a	Organic Chemistry II. Colloid Chemistry I. Analytical Chemistry (quantitative) II. Medical Terminology	practical course grade
Basic Immunology GYGENIMUE1A	2	-	2	GYGENBILE2A GYNYELATG1A GYHUMANAE1A	Biology II. Medical Terminology Anatomy	semi-final
Colloid Chemistry II. GYKOLKOLG2A	-	2	2	GYKOLKOLE1A Gyfktfikg2a Gyszkszke2a	Colloid Chemistry I. Analytical Chemistry (quantitative) II. Organic Chemistry II.	practical course grade
Hungarian Medical Terminology V. GYLEKMSZG5A	-	4	2	GYLEKMSZG4A	Hungarian Medical Terminology IV.	final
Total Credit			28			
6 th semester						
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Subjects	Lectures	Practices	Credit Points		Prerequisites	Examination
Physiology II. Practice GYKIKELTG2A	-	1	2	GYOBIBKIE2A	Biochemistry II.	practical course grade
Physiology II. GYKIKELTE2A	5	-	4	GYKIKELE1A	Physiology I.	final #
Pharmacognosy I. Practice GYFMGGNDG1A	-	4	3	GYNOVGYNE2A GYOBIBKIE2A	Pharmaceutical Botany II. Biochemistry II.	practical course grade
Pharmacognosy I. GYFMGGNDE1A	2	-	3	GYGYKGYKG1A	Pharmaceutical Chemistry I.	semi-final
Pharmaceutical Chemistry II. Practice GYGYKGYKG2A	-	5	4	GYKOLKOLG2A	Colloid Chemistry I. Biochemistry II. Pharmaceutical Chemistry I.	practical course grade
Pharmaceutical Chemistry II. GYGYKGYKE2A	4	-	4	GYGYKGYKG1A		semi-final
Pharmaceutical Microbiology GYMIKGMIE1A	3	-	5	GYOBIBKIE2A	Biochemistry II.	final #
Pharmaceutical Microbiology Practice GYMIKGMIG1A	-	2	-	GYGENIMME1A	Basic Immunology	signature
Pharmaceutical Technology II. Practice GYGYIGYTG2A	-	5	4	GYGYKGYKG1A	Pharmaceutical Chemistry I.	practical course grade
Pharmaceutical Technology II. GYGYIGYTE2A	2	-	3	GYGYIGYTG1A	Pharmaceutical Technology I.	semi-final
Summer Practice II. ** GYSZGNSZG2A	-	35	4	GYGYKGYKE2A GYGYKGYKG2A GYGYIGYTE2A	Pharmaceutical Chemistry II. and Practice Pharmaceutical Technology II.	signature
Total Credit			32+4			

Important note: Signing up for Physical Education (PE) V. in the 1st semester and for PE VI. in the 2nd semester is compulsory.

The grade influences the qualification of the diploma

** 4 weeks (140 hours) summer practice in elective place (accredited public / community pharmacy, Galenical laboratory, research institute, uni-versity department) after the second and third year.

LIST OF TEXTBOOKS (The list may change!)

- 1 Csempesz: Experimental Colloid Chemistry. Bp. (SOTE)
- 2 Hansen, Pedersen-Bjergard, Rasmussen:Introduction to Pharmaceutical Chemical Analysis (Wiley, 2012)
- 3 Mazák: Pharmaceutical Chemistry, The Quality Controll of Medicinal Compounds and Pharmaceutical Preparations. BP. Semmelweis Publishers (2010)
- 4 Lemke, Williams, Roche, Zito: Foye's Principles of Medicinal Chemistry 7th ed.(Wolter Kluwer, 2013)
- 5 Rácz: Drug Formulation (Bp.)
- 6 Rácz: Pharmaceutical Technology Part One (Bp.)
- 7 Rácz: Pharmaceutical Technology Part Two (Bp.)
- 8 Rácz: Pharmaceutical Technology Part Three (Bp.)
- 9 Murray P, Rosenthal K, Pfaller M: Medical Microbiology, 8th edition. Elsevier 2015. ISBN 9780323299565
- 10 Bruneton J.: Pharmacognosy Phytochemistry Medicinal Plants. Lavoisier Publ. 2nd ed. Paris, 1999. ISBN 1-898298 637
- 11 Dee Unglaub Silverthorn: Human Physiology An Integrated Approach, 5th edition (Pearson Education, 2010)
- 12 Bray, J.J.-Cragg, P.A.-Anthony D.C: Macknight, Roland G.Mills: Lecture notes on human physiology. 4th ed. 1999. Blackwell Science. ISBN 086542-775-5
- 13 Abbas, Lichtmann, Pillai, Basicv Immunology 5th Edition,Elsevier, 2015, eBook ISBN: 9780323400145, eBook ISBN: 9780323400114, eBook ISBN: 9780323400152, Paperback ISBN: 9780323390828
- 14 European Pharmacopoeia (Council of Europe, Strasbourg)
- 15 Michael E. Aulton, Kevin Taylor: Aulton's Pharmaceutics: The Design and Manufacture of Medicines, Elsevier Health Sciences, 2013
- 16 James Swarbrick, Marcel Dekker Encyclopedia of Pharmaceutical Technology, Second Edition Volume 1 of 3, 2002
- 17 Remington Essentials of Pharmaceutics (Ed. L. Felton), Pharmaceutical Press, 2012

Recommended textbooks:

- 1 Guyton and Hall: Textbook of Medical Physiology 13th edition (Elsevier, 2016)
- 2 Ganong's Review of Medical Physiology 24th Edition (McGraw-Hill & Lange, 2012)
- 3 A. Fonyó: Principles of Medical Physiology (Medicina Publishing House, 2002)

PHARMACEUTICAL CHEMISTRY I.

Director: **Dr. Péter Horváth** Tutor: **Prof. Dr. Krisztina Takács–Novák**

First Semester

Week	<i>Lectures</i> (4 hours per week)	Practicals (5 hours per week)
1	Introduction. (Pharmaceutical Chemistry, Pharmacopoeias) Methods for identification of inorganic compounds. Solubility, acidity-basicity.	Equipping, repetitional analytical tasks.
2	Preliminary testing of organic compounds, classification Identification of organic functional groups	Preliminary testing and systematization of inorganic and organic compounds official in Ph. Eur.
3	General purity tests in Pharmacopoeias	Preliminary testing and systematization of inorganic and organic compounds official in Ph. Eur.
4	Structural and physical chemistry of drug action III.	General reaction of organic functional groups Analysis of IR spectra
5	Structural and physical chemistry of drug action III-IV.	General purity tests of inorganic ions I.
6	Narcotics Sedato-hypnotics and anxiolytics	General purity tests of inorganic ions II.
7	Major analgetics	General purity tests of inorganic ions III.
8	Minor analgetics	Complete pharmacopoeial qualification of an inorganic compound official in Ph. Eur.
9	Psychopharmacons	Narcotics, sedato-hypnotics
10	UV-VIS spectroscopy in the analysis of drug mixtures ORD and CD spectroscopy in the analysis of drug mixtures	Major analgetics I.
11	Separation techniques IV. Application of chromatographic methods for the drug analysis. TLC	Major analgetics II.
12	GC, HPLC, CE	Minor analgetics I.
13	Cholinergic and adrenergic agents	Minor analgetics II.
14	Cholinergic and adrenergic agents	Nonsteroidal anti-inflammatory drugs

PHARMACEUTICAL CHEMISTRY II.

Second Semester

Week	<i>Lectures</i> (4 hours per week)	Practicals (5 hours per week)
1	Protonspeciation of drugs Determination of protonation constants	Equipping, identification
2	Optimization of pH-dependent processes Characterization of lipophilicity	Psychopharmacons
3	Cardiac glycosides, sugars Analysis of cardiac glycosides, sugars	Drugs acting on the vegetative nervous system I.
4	Local anaesthetics	Drugs acting on the vegetative nervous system II.
5	Cardiovascular drugs: antiarrhythmic agents Cardiovascular drugs: antianginal agents	Local anaesthetics
6	Cardiovascular drugs: antilipaemic agents Cardiovascular drugs: antihypertensive agents	Digitalis glycosides, sugars
7	Cardiovascular drugs: anticoagulants Diuretics I.	Determination of protonation macroconstants
8	Diuretics II. Vitamins I.	Determination of protonation microconstants
9	Vitamins II. Quality assurrance, GLP, validation	Determination of logP
10	Corticosteroids I. Corticosteroids II.	Diuretics
11	Sexual hormones I. Sexual hormones II.	Complete pharmacopoeial qualification of an organic compound official in Ph. Eur.
12	Antidiabetics Antihistamines	Steroid hormones
13	MS NMR: phenomena	Quality assurance, GLP, validation I.
14	NMR: d, J, T1, T2 NMR: multiplicity, 1D NMR	Quality assurance, GLP, validation II.

PHARMACEUTICAL TECHNOLOGY I.

Department of Pharmaceutics

Director: **Dr. István Antal** Tutor: **Dr. Emese Bertalan-Balogh**

First Semester

Lectures

- 1. The scope of pharmaceutical technology. History of pharmaceutical compounding.
- 2. Dosage forms as drug carrier systems. Classification of dosage forms and methods of administration.
- 3. Biopharmaceutical and pharmacokinetic bases of pharmaceutical technology.
- 4. Technological aspects of drug quality. Quality standards.
- 5. Physico-chemical principles in the pharmaceutical technology. Basic compounding procedures.
- 6. The guide for pharmaceutical compounding in Hungary. Storage of pharmaceuticals. Individual presciptions. Packaging materials in the pharmacy and their quality standards.
- 7. Liquid dosage forms. Solutions and solubility. Preparation of solution.
- 8. Ideal and colloid solutions, aromatic water, syrup, mucilage.
- 9. Elixire, mixture, gargles, enema preparations.
- 10. Drops for internal (Gutta) and external use (Oto-nasogutta). Microbiological preservatives.
- 11. Principles and practice of aseptic preparation. Eye drops.
- 12. Preparations made by extractions. Extractives, infusions, decoctions, tinctures.
- 13. Suspensions. Theory and preparation. Suspending agents. Apparatuses.
- 14. Emulsions. Theory and preparation. Emulsification, emulsifying agents, stability of emulsions.

Practice

- 1. Introduction, general information, labour safety. The prescription. Nomenclature. Instruments in the pharmacy. Technical books of pharmacy.
- 2. The prescription, its control and types. Nomenclature.
- 3. Reading prescriptions. Nomenclature and synonyms. Latin words and phrases. Knowledge of materials
- 4. Computer in pharmacy. Practice using softwares.
- 5. Fundamental pharmaceutical operations. Weighing and balances, rules, control. Measuring.
- 6. Preparing solutions. Preparation of simple and composite solutions.
- 7. Preparation of composite solutions.
- 8. Directions of preparing the ophthalmic solutions. Preparation of eye drops.
- 9. Preparation of drops. Nasal and ear drops. Preparation of gargle and enema.
- 10. Preparation of decoctions and infusions.
- 11. Preparation of suspensions without excipients.
- 12. Preparation of suspensions with excipients.
- 13. Preparation of emulsions.
- 14. Supplemental practice. Consultation.

PHARMACEUTICAL TECHNOLOGY II.

Second Semester

Lectures

- 1. Good Pharmacy Practice. Laws governing the pharmacy practice. Quality assurance in the pharmacy.
- 2. Dosage forms with coherent structure. Semi-solid preparations. Classification and preparation.
- 3. Dermal preparations.
- 4. Ointments, gels, pastes. Eye ointments.
- 5. Tests of semisolid preparations. Rheological and stability considerations.
- 6. Compounding of cosmetics and biocosmetics.
- 7. Rectal and vaginal preparations
- 8. Preparation and tests of suppositories
- 9. Dosage forms prepared by aggregation (Pills, boluses, sticks, foams, medicated chewing gums)
- 10. Powders. Comminution, powdering, sieving, mixing Compounding powder preparations
- 11. Compounding and technological aspects of the pharmacopoeia (Eur.Ph.)
- 12. Technological aspects of veterinary preparations
- 13. Incompatibility problems I. Solutions.
- 14. Incompatibility problems II. Other dosage forms.
- 15. Incompatibility problems III. Incompatibility problems of widely used drugs and excipients

Practice

- 1. Introduction, general information, labour safety. Formulae Normales: the guide for pharmaceutical compounding in Hungary.
- 2. Preparation of ointments of solution and emulsion type. Preparation of ointments of emulsion and suspension.
- 3. Preparation of ointments of composite type. Directions of eye ointments and gels. Preparations of eye ointments.
- 4. Preparation of pastes. Preparation of biocosmetics.
- 5. Preparation of suppositories by cold compression and by moulding. Preparation of vaginal preparations.
- 6. Preparation of pills. Preparation of multidose powders. Topical powders.
- 7. Preparation of single-dose powders. Division of powders. Manual capsule filling machine. Preparations of veterinary preparations.
- 8. Dispensing a test preparation independently. Dispensing a test preparation independently.
- Guidelines for the preparation of incompatible drugs. Elimination of incompatibility problems in solutions I.
- 10. Incompatibility problems of solutions. Incompatibility problems of powder mixtures.
- 11. Incompatibility problems of emulsions. Incompatibility problems of ointments.
- 12. Incompatibility problems of ointments. Health accessories in pharmacy.
- 13. Dispensing a test preparation independently. Dispensing a test preparation independently.
- 14. Supplemental practice. Consultation. Supplemental practice. Consultation.

PHARMACOGNOSY I.

Director: Dr. Szabolcs Béni Tutor: Dr. Eszter Riethmüller

Second Semester

Week	<i>Lectures</i> (2 hours per week)	Practicals (4 hours per week)
1	Pharmacognosy, History of pharmacognosy. Medicinal plant - herbal drug. Nomenclature. Classification of herbal drugs.	Introduction, safety rules. Macroscopic and microscopic knowledge.
2	From plant to phytopharmaceutical. Sources of drugs, factors involved in the production of drugs. Quality control.	General methods in pharmacognosy.
3	Compounds of primary metabolism. Carbohydrates. Mono- and oligosaccharides and their drugs. Homogenous and heterogenous polysaccharides and their drugs.	Vegetable drugs containing carbohydrates. (Starches, mucilages, etc.)
4	Lipids. Vegetable oils, fatty acids, alkyne derivatives. Organic and inorganic acids of plants.	Plant acids and their drugs.
5	Compounds of special (secondary) metabolism. Plant phenolics in general. Phenols, phenolic acids, their derivatives and herbal drugs.	Plant lipids and their drugs.
6	Coumarins and coumarin containing drugs.	Phenolglycosides, flavonoids, anthocyanins and chief drugs I.
7	Lignans, lignan-containing drugs. Flavonolignans and their pharmaceutical significance. Polyphenols in the Zingiberaceae family (diarylheptanoids and arylalkanones).	Phenolglycosides, flavonoids, anthocyanins and chief drugs II.
8	Flavonoids, chemical structure and classification, biological properties, use of flavonoid-containing drugs, therapeutical significance.	Lignans, Coumarins and diarylheptanoids.
9	Chief flavonoid containing herbal drugs.	Tannins and chief tannin drugs.
10	Isoflavonoids, rotenoids, biological significance. Anthocyanins, chief anthocyanin-containing drugs.	Anthraglycoside containing crude drugs I. Chemical tests.
11	Tannins. Classification of tannins. Structures and properties of hydrolyzable and condensed tannins, biological significance. Chief tannin containing drugs.	Anthraglycoside containing crude drugs II. Quantitative determinations.
12	Polyketides-quinones. Naphthoquinone-containing drugs. Laxative hydroxyanthraquinone glycosides. Main anthraquinone glycoside-containing drugs.	Terpenophenolics and phloroglucine derivatives.
13	Naphthodianthrones. Orcinols, phloroglucinols and cannabinoids.	Individual task I.: Natural product development
14	Obligatory test - examination	Individual task II.: Identification of crude drugs based on the methods prescribed in the Ph. Eur.

BIOCHEMISTRY II.

Department of Medical Biochemistry

Lecturer: **Dr. Attila Ambrus** Tutor: **Dr. Erzsébet Maróthy-Tóth**

First Semester

Week	Lectures (2.5 hours per week)	Practicals (3 hours every second week)
1	Hemostasis: blood clotting cascade, formation of fibrin gel.	Safety rules. Succinate dehydrogenase activity measurement
	Inhibition of thrombin.	
2	Fibrinolysis, formation of plasmin. Role of thrombocyte, endothel,	liver, neutrophil granulocyte.
3	Metabolism of xenobiotics. Cytochrome P450 system.	Blood coagulation: prothrombin time, APTT,
	Regulation of drug metabolism. Conjugation reactions.	fibrin stabilization
4	Signal transduction	
5	Neurochemistry: Glu, GABA, Gly, 5-HT metabolism, receptors,	Pyruvate kinase isoenzymes, midterm effects
6	Neurochemistry: Ach, NA, DA metabolism, receptors, effects	
7	Metabolic integration: red blood cell, intestine, kidney, muscle	Mitochondrial oxidation
8	Metabolic integration: adipose tissue, liver, brain	
9	Metabolism of nucleotides	Polyacrylamide gel electrophoresis of proteins
10	DNA replication and repair	
11	RNA and protein synthesis, regulation of gene expression	Determination of serum cholesterol and triglycerides, midterm
12	Molecular biology techniques	
13	Cell cycle, cell death	Kinetic characterisation of glutamate dehydrogenase
14	Tumors	

COLLOID CHEMISTRY II.

Tutor: Prof. Dr. Éva Kiss

First Semester

Practice (2 hours per week)

- Surface and interfacial tensions
- Measurement of the surface, the tension of aqueous surfactant solutions. Calculation of the relative adsorbed amount at fluid interfaces.
- Adsorption at interfaces
- Adsorption from solution; determination of adsorption isotherm for methylene blue on cellulose.
- Stability of colloidal dispersions
- Preparation of electrostatically stabilized inorganic sol. Determination of critical coagulation concentration of electrostatically stabilized sols.
- Flocculation and stabilization of sols by uncharged polymers and polyelectrolytes.
- Suspensions and emulsions
- Determination of particle size distribution of a dispersed system by Andreasen pipette.
- Preparation of a concentrated dispersion by ultraturrax technique. Determination of apparent viscosity of concentrated suspensions, investigation of thyxotropy.
- Preparation of emulsion by dispersion method, determination of the type of emulsion and detrmination of size distribution of emulsion
 droplets by microscopic image analysis. Measurement of the viscosity of concentrated emulsions by rotational viscometric method.
- Elavuation of the type from comparision of viscosity values.
- Association colloids
- Determination of critical micelle formation concentration by conductometric titration. Solubilization of organic acids, determination of solubilization saturation.
- Macromolecular colloids
- Determination of the relative molecular mass of polymers by viscosity measurements. Dependence of the viscosity of polyelectrolyte solutions on pH comparative analysis of the calculated and measured pH values .
- Phase states and structures of polymers
- Determination of the thermomechanical curve of a polymer by Höppler consistometer. Determination of the relative deformation of a polymer at various loading times.

PHYSIOLOGY I.

First Semester

Week	<i>Lecture</i> (5 hours per week)
1	Historic overview, concepts of physiological control, homeostasis. Basics in cell physiology. Cell-to-cell interactions. Cellular membranes and transmembrane transport. Membrane receptors. Ionic equilibria and resting membrane potentials, ion channels and gates. Action potentials, synaptic transmission.
2	Muscle. Contractile mechanism. Skeletal, cardiac, and smooth muscles. Biomechanics, electrical properties, metabolism.
3	Physiology of blood circulation. Introduction. Functional organization of the cardiovascular system, basic principles and conditions of its healthy functioning. Dynamics of blood and lymph flow: Physiological functions of the blood vessels, their significance in the healthy functioning of the organism. Principles of hemodynamics. Rheology of blood.
4	Biomechanical properties of the vessel wall. Significance of vessel geometry. Signal transduction in the blood vessels. Pressure & flow in large vessels. Circulatory resistance. Measurement of pressure, flow and cardiac output. Factors influencing blood pressure. Venous circulation.
5	Cardiac functions: Biomechanical basis of cardiac functions. Cardiac pump. Signal transduction in the cardiomyocytes.
6	Cardiac cycle. Electrical activity of the heart. Transmembrane potentials. Conduction in cardiac fibers, cardiac excitability, cardiac rhythmicity, electrocardiography.
7	Microcircuiation. Tissue oxygenization. Fluid movement across the capillary wall. Control of lymphatic flow and interstitial fluid volume.
8	Cardiovascular control mechanisms: Systemic control mechanisms. Local control mechanisms. Control of cardiac output.
9	Circulation through organs and special regions: Coronary circulation. Circulation of blood and cerebrospinal fluid in the brain. The blood-brain barrier. Regulation of cerebral circulation. Brain metabolism & oxygen requirements.
10	Splanchnic circulation. Circulation through skeletal muscles. Circulation of the skin. Thermoregulation. Placental & fetal circulation. Physiological aspects of circulatory shock.
11	Pulmonary circulation. Structure and function of the respiratory system, pulmonary mechanics. Gas transport between the lungs and the tissues. Regulation of RBC count - erythropoietin, acclimatization.
12	Regulation of respiration: Neural and chemical control of respiration. Adaptation of cardiorespiratory system and skeletal muscle to physical exercise.
13	Formation and excretion of urine. Physiological functions, their significance in the maintanance of the internal milieau and in healthy functioning of the organism. Renal circulation. Glomerular filtration.

14 Tubular functions. Mechanisms adjusting the composition of urine. Fluid compartments. Regulation of extracellular fluid composition and volume. Role of the kidneys in the control of blood pressure. Micturition.

Practice and consultation (2 hours biweekly)

Seminars Blood pressure measurement ECG

PHYSIOLOGY II.

Second Semester

Week	Lecture (5 hours per week)
1	Regulation of acid-base balanceProduction of blood cells. Blood groups. Blood coagulation. Anemias and pathophysiological conditions.
2	Whole body metabolism. Gastrointestinal motility and secretions. Innervation of the GI tract. GI hormones. Regulation of GI motility. Regulation of GI secretion: Salivary secretion; Gastric secretion; Exocrine pancreas.
3	Liver & biliary system. Digestion & Absorption. Carbohydrates, lipids and proteins. Absorption of water and electrolytes. Absorption of vitamins and minerals.
4	General principles of endocrine physiology. The pituitary gland. Posterior lobe hormones. Anterior lobe hormones. Growth hormone and physiology of growth.
5	The adrenal cortex. Blood supply and its control. Innervation. Structure and biosynthesis of adrenocortical hormones. Effects of glucocorticoids and control of their secretion. Effects of mineralocorticoids and control of their secretion. Effects of adrenal androgens and estrogens. Endocrine regulation of calcium metabolism and the physiology of bone.
6	The thyroid gland. Formation and secretion of thyroid hormones. Control of synthesis and secretion. Transport and metabolism of thyroid hormones. Effects of thyroid hormones. Clinical correlates. Endocrine functions of the pancreas and the regulation of carbohydrate metabolism. Hormonal control of intermediary metabolism.
7	The reproductive glands. Development and tunction of the reproductive system. The female reproductive system. The menstrual cycle. Ovarian hormones. Control of ovarian function. Pregnancy. Lactation. The male reproductive system. Endocrine function of the testes. Control of testicular function.
8	Principles of sensory systems. Sensory receptors. Electrical and ionic events in receptors. "Coding" of sensory information. Somatosensory functions. Cutaneous, deep and visceral sensation; pathways. Pain. Arousal mechanisms, sleep and the electrical activity of the brain. The reticular formation and the reticular activating system. The thalamus and the cerebral cortex. Evoked cortical potentials and the EEG. Physiologic basis of consciousness and sleep.
9	Spinal organization of motor tunction. Monosynaptic reflexes. Polysynaptic reflexes. Spinal reflexes. Ascending and descending pathways. Spinal and supraspinal control of muscular tone. Effects of lesions. Spinal shock.
10	Control of posture and movement. The vestibular system. Basal ganglia. Cerebellum. Lateral and medial descending pathways involved in motor control (spinal integration, medullary, midbrain and cortical components).
11	The visual system. The image-forming mechanism. The photoreceptor mechanism: Genesis of action potentials. Responses in the visual pathways and cortex. Color vision. Eye movements
12	The auditory system. Chemical senses. Olfactory receptors and pathways. Physiology of olfaction. Taste receptor organs and pathways. Physiology of taste.
13	The autonomic nervous system and its central control. Anatomic organization and chemical transmission. Adrenal medulla. Control of autonomic functions.
14	Neural basis of instinctual behavior. Physiology of the hypothalamus. Regulation of body temperature. Fever. Limbic functions. Motivation. Emotion. Higher cerebrocortical functions. Conditioned reflexes, learning and memory. Integrative functions of the neocortex.

Practice and consultation (2 hours biweekly)

Seminars Blood glucose measurement, OGGT

PHARMACEUTICAL MICROBIOLOGY

Institute of Medical Microbiology

Subject code: GYMIKGMIE1A Program director: *Prof. Dr. Dóra Szabó* Tutor: *Dr. Orsolya Dobay* Prerequisite subject: Biochemistry II., Physiology I., Basic immunology Credits: 5

Second Semester

Lectures (3 hours per week)

- Week 1. Brief history, subject and aim of Microbiology. Occurrence and importance of microbes in nature. Morphology, reproduction and physiology of bacteria. Microbial genetics.
- Week 2. Disinfection. Principles and practice of sterilization. Introduction to antimicrobial chemotherapy.
- Week 3. Mode of action of the antibiotics. Resistance to antibiotics.
- Week 4. Principles of microbial pathogenicity. Immunity to microbes. Active and passive immunization.
- Week 5. Cocci causing purulent diseases (Staphylococcus, Streptococcus, Neisseria)
- Week 6. Normal flora of the intestinal tract and the importance of it. Bacteria causing enteral diseases.
- Week 7. Causative agents of respiratory tract infections.
- Week 8. Endospore forming bacteria. Parasitology (protozoa and helminths).
- Week 9. Causative agents of human mycosis and their therapy.
- Week 10. General virology. Antiviral chemotherapy. DNA viruses.
- Week 11. Enteral viruses and diseases caused by them. Hepatitis viruses.
- Week 12. Respiratory pathogenic viruses. Arbo- and roboviruses, Rhabdoviruses.
- Week 13. Retroviruses. AIDS. Tumor viruses. The role of viruses in carcinogenesis.
- Week 14. Production of therapeutic substances by recombinant DNA technology. Microorganisms in pharmaceutical sciences. Nosocomial infections

Practices (2 hours per week)

- Week 1. Introduction to basic microbiology, laboratory rules. Microscopic examination of microbes.
- Week 2. Cultivation of bacteria.
- Week 3. Methods for sterilization and disinfection.
- Week 4. Determination of antibiotic susceptibility of bacteria.
- Week 5. In vitro antigen-antibody reactions (serological methods).
- Week 6. Gram-positive and Gram-negative cocci (Cultures, smears, biochemical reactions, serological tests, antibiotic susceptibility, vaccines).
- Week 7. Enteral Gram-negative rods (Enterobacteriaceae). Vibrio, Helicobacter, Campylobacter.
- Week 8. Pseudomonas. Gram-negative coccobacilli (Cultures, smears, antibiotic susceptibility, vaccines).
- Week 9. Non-spore forming Gram-positive bacteria. Mycobacteria (Cultures, smears, enzyme reactions, serological tests, antibiotic susceptibility, vaccines).
- Week 10. Endospore-forming Gram-positive bacteria (Cultures, smears, enzyme reactions, serological tests, antibiotic susceptibility, vaccines).
- Week 11. Spirochetes. Rickettsiae, Chlamydiae, Mycoplasmas (Cultures, smears, enzyme reactions, serological tests, antibiotic susceptibility, vaccines).
- Week 12. Medically important fungi (Cultures, smears).
- Week 13. Medical parasitology (macroscopic and microscopic preparations).
- Week 14. General virology (cultivation and morphology of viruses, cell-virus interactions, serological tests).

Midterms: twice during the semester, each should be passed with 60%.

Exam: Oral exam with a preceding written "minimum questions".

Note: The maximum number of the absences from the practical classes is 3. More than 3 absences invalidate the semester.

BASIC IMMUNOLOGY

Department of Genetics, Cell and Immunobiology

Course director: Prof. Dr. Edit Buzás Tutor: Dr. Marianna Csilla Holub Subject code: GYGENIMM1EA Prerequisite subject: Biology II., Anatomy, Medical Terminology Credits: 2

Lectures (2 hr / week)

- 1. The role, processes, organs and cells of the immune system
- 2 Principles of natural immunity
- 3. The complement system
- 4. Inflammation, acute phase reaction
- 5. Antigen, antigen presentation and MHCs
- 6. Antigen receptors and their formation
- 7. T lymphocytes and cell-mediated immune response
- 8. B lymphocytes and humoral immune response
- 9. Immune response in infections, immunodeficiencies
- 10. Hypersensitivity reactions
- 11. Immunological tolerance and autoimmunity
- 12. Antitumor immunity
- 13. Immunology of transplantation, immunity of pregnancy
- 14. Immunopharmacology (The sequence of lessons may change.)

Exam: written test in the exam period. For passing you have to reach more than 50 % of the exam scores.

Literature:

The course textbook is: Abbas, Lichtmann, Pillai, Basic Immunology 5th Edition, Elsevier, 2015, eBook ISBN: 9780323400145, eBook ISBN: 9780323400114, eBook ISBN: 9780323400152, Paperback ISBN: 9780323390828

Other information: gsi.semmelweis.hu (The user name and password is on the course datasheet of the Neptun.)

CLINICAL PHYSIOLOGY LABORATORY MEASUREMENTS

GYKIKKFVE1A

Elective course for pharmacy students in the 3rd, 4th and 5th years.

The purpose of the subject is to familiarize pharmacy students with the background, uses and implementation of clinical diagnostic measurement techniques which are closely related to the knowledge acquired on the physiology course. The course provides theoretical and practical knowledge which helps to integrate basic physiology in the broader scope of clinical and pharmaceutical sciences. Moreover, the subject helps to develop fundamental skills which are relevant for proficient medical professionals (measurement skills, presentation of precise documentation, cooperativity etc.).

Program:

Theoretical course:

meoreneur co	
1 st week	Introduction to the bases of measurement techniques.
2 rd week	Scientific and diagnostic measurement techniques for studying the electrophysiology of motor nerves, neuromuscular trans- mission and skeletal muscle.
5 th week	Electrophysiology of the heart, cardiac arrhythmias. Regulation of arterial blood pressure under physiological and pathophys- iological conditions. The characteristics of the pulse wave propagation.
7 th week	Mechanical properties of the respiratory system under physiological conditions and in respiratory diseases. Adaptation of the cardiorespiratory system to physical exercise.
9 th week	Regulation of carbohydrate metabolism and its disorders.
11 th week	Reflexes of the somatic nervous system. Function of the vestibular system. Regulation of body position under physiological conditions and in neural disorders.
13 th week	Consultation
Practical cours	se:
2 nd week	Introduction to the uses of instruments and data acquisition software applied during the course
4 th week	Electromyography, electroneurography. Study of the electrical properties of the skeletal muscle, measurement of the impulse conduction velocity of a motor nerve by Biopac student lab system.
6 th week	Measurement of pulse wave velocity. Recording and analysis of a 12-lead ECG. Demonstration of pathological ECG record- ings. 8 th week – Spirometry. Studying the circulatory and respiratory adaptation responses during physical exercise
10 th week	Oral glucose tolerance test, determination of HbA., level, analysis of normal and pathologic glucose tolerance curves.
12 th week	Neurological examination techniques: examination of motor reflexes and vestibular function. FQG.
13 th week	Optional lab retake.
14 th week	Repetition and practice for the practical exam

Acknowledgement of the course: Attendance of at least 6 lab practices and 5 theoretical classes; presentation of the completed lab manual to the tutor. Semifinal exam. Two (2) credit points will be provided after a successful completion of the course.

Hungarian Medical Teminology V. (5th semester)

Magyar orvosi szaknyelv 5.

Responsible organisational unit:

Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:

Zöldi Kovács Katalin PhD, Head of the Division 4 lessons per week, 2 credits,

Assessment: midterm (written) and endterm (written and oral) tests and a final examination

Role of subject in fulfilling the aim of training:

The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective professional communication in the language they use during their field practice. With the help of this course they become able to communicate with the patients in the Hungarian hospitals.

Brief description of subject:

The last module covers the terminology of the main body systems and provides further training in taking history. The symptoms, diseases and common treatments of the diverse body systems (respiratory, cardiovascular, urinary, digestive and endocrine) are discussed during the semester.

Course content of practical lessons:

Lesson 1-4:	Communication practice (family and social history)
Lesson 5-6:	Communication practice (internal medicine – medical history)
Lesson 7-8:	Communication practice (treatments, medication)
Lesson 9-10:	Common illnesses – symptoms
Lesson 11-16:	The respiratory system
Lesson 17-22:	The cardiovascular system
Lesson 23-24:	Consolidation
Lesson 25-26:	Test 1 + situation
Lesson 27-32:	The urinary system
Lesson 33-38:	The digestive system
Lesson 39-44:	The Endocrine system
Lesson 45-50:	Consolidation
Lesson 51-52:	Test – situation, communication practice
Lesson 53-56:	Mock final exam (oral part), assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)

Marthy Annamária – Végh Ágnes. Egészségére! - Magyar orvosi szaknyelv. Semmelweis Egyetem Egészségtudományi Kar, 2010.

COMPULSORY SUMMER PRACTICE II.

Program

Four weeks: 35 hours/week; min. 6 max. 8 hours/day.

The aim of summer practical training: to deepen theoretical and practical knowledge of Pharmaceutical Technology learnt in the 3rd year; adaptation of basic knowledge (chemistry, physics, colloidics, physiology etc.) to the practical work in pharmacies.

Duties and respects:

- 1. Appreciation of prescriptions, reading of prescriptions (Formula Magistralis, Formula Normales, Formula Originalis). The forms of dispensing, dose calculating etc. Preparation of medicaments (Formula Magistralis) under supervision of the instructing pharmacist.
- 2. Prescriptions and regulations of narcotics
- 3. Various dosage forms (solutions, suspensions, emulsions, ointments, solid dosage forms etc.), their preparation.
- 4. Practising of the pharmaceutical technological manipulations, procedures etc.
- 5. Aseptic production of medicaments. Main technological steps.
- 6. Guidelines for the preparation of incompatible drugs. Preparation of these medicaments.
- 7. Health accessories.
- 8. Control of medicines and raw materials in the pharmacy. Administration in the pharmacy.
- 9. Organization of drug supply.

Important note: Document certifying the completion of the practice must be handed in at registration! Registration to the next year is not allowed without it!



Pharmaceutical Sciences 4th year Important: New curriculum is to be introduced in all years from the 2020-2021 academic year. Please, follow the updated curricula on the home page.

STUDY PROGRAMME

Fourth Year

The prerequisite to start 4th year is to take a Basic Hungarian Language Exam (oral).

7 th semester					
Subjects	Lectures	Practices	Credit Points	Prerequisites Exan	nination
Pharmacognosy II. Practice GYFMGGNDG2A	-	4	3	GYFMGGNDE1A Pharmacognosy I. practica GYGYKGYKE2A Pharmaceutical Chemistry II. grade	l course
Pharmacognosy II. GYFMGGNDE2A	2	-	3	GYFMGGNDE1A Pharmacognosy I. GYGYKGYKE2A Pharmaceutical Chemistry II.	
Pharmaceutical Chemistry III. Practice GYGYKGYKG3A	-	4	3	GYGYKGYKE2A Pharmaceutical Chemistry II. practical grade	l course
Pharmaceutical Chemistry III. GYGYKGYKE3A	2	-	3	GYGYKGYKE2A Pharmaceutical Chemistry II. GYKIKGELE2A Physiology II. final #	
Pharmacology and Toxicology I. Practice GYGYHHATG1A	-	2	2	GYKIKGELE2APhysiology II.GYGYKGYKE2APharmaceutical Chemistry II.practicalGYMIKGMIE1APharmaceutical MicrobiologygradeGYGENIMME1ABasic Immunology	l course
Pharmacology and Toxicology I. GYGYHHATE1A	4	-	4	GYKIKGELE2A Physiology II. GYGYKGYKE2A Pharmaceutical Chemistry II. GYMIKGMIE1A Pharmaceutical Microbiology GYGENIMME1A Basic Immunology	al
Pharmaceutical Technology III. Practice GYGYIGYTG3A	-	9	5	GYGYKGYKE2A Pharmaceutical Chemistry II. practical GYGYIGYTE2A Pharmaceutical Technology II. grade	l course
Pharmaceutical Technology III. GYGYIGYTE3A	3	-	4	GYGYKGYKE2A Pharmaceutical Chemistry II. GYGYIGYTE2A Pharmaceutical Technology II.	al
Basic Medical Pathophysiology I. GYGYHKKAE1A	2	-	2	GYKIKGELE2A Physiology II. GYMIKGMIE1A Pharmaceutical Microbiology semi-fir	al
Industrial Pharmaceutical Technology I.* GYGYIIGTE1A	2	-	2	GYGYKGYKE2A Pharmaceutical Chemistry II. GYGYIGYTE2A Pharmaceutical Technology II.	al
Total Credit			31		

8 th semester						
Subjects	Lectures	Practices	Credit Points		Prerequisites	Examination
Pharmacology and Toxicology II. Practice GYGYHHATG2A	-	2	2	GYGYHHATE1A GYGYKGYKE3A GYGYIGYTE3A GYGYHKKAE1A	Pharmacology and Toxicology I. Pharmaceutical Chemistry III. Pharmaceutical Technology III. Basic Medical Pathophysiology I.	practical course grade
Pharmacology and Toxicology II. GYGYHHATE2A	4	-	4	GYGYHHATE1A GYGYKGYKE3A GYGYIGYTE3A GYGYHKKAE1A	Pharmacology and Toxicology I. Pharmaceutical Chemistry III. Pharmaceutical Technology III. Basic Medical Pathophysiology I.	final #
Pharmaceutical Technology IV. Practice GYGYIGYTG4A	-	9	6	GYGYKGYKE3A GYGYIGYTE3A GYFMGGNDE2A	Pharmaceutical Chemistry III. Pharmaceutical Technology III. Pharmacognosy II.	practical course grade
Pharmaceutical Technology IV. GYGYIGYTE4A	3	-	4	GYGYKGYKE3A GYGYIGYTE3A GYFMGGNDE2A	Pharmaceutical Chemistry III. Pharmaceutical Technology III. Pharmacognosy II.	final #
Pharmacy Administration I. GYEGYGSZE1A	2	-	2	GYINFBEIE2A GYEGYTTPE1A GYGYIGYTE3A	Introduction to Health Informatics II. History of Sciences, Propedeutics Pharmaceutical Technology III.	semi-final
Basic Medical Pathophysiology II. GYGYHKKAE2A	2	-	2	GYGYHKKAE1A GYGYHHATE1A	Basic Medical Pathophysiology I. Pharmacology and Toxicology I.	final #
Public Health GYNEINETE1A	2	-	2	GYKIKGELE2A GYMIKGMIE1A	Physiology II. Pharmaceutical Microbiology	final #
Public Health Practice GYNEINETG1A	-	2	2	GYKIKGELE2A GYMIKGMIE1A	Physiology II. Pharmaceutical Microbiology	practical course grade
Written scientific thesis (diploma work) I. GYSZDSZDG1A	-	4	0	All of the 7th semes	ster subjects	signature
Industrial Pharmaceutical Technology II.* GYGYIIGTE2A	2	-	2	GYGYINIPE1A GYGYIGYTE3A	Industrial Pharmaceutical Technology I. Pharmaceutical Technology III.	semi-final
Total Credit			26			

Important note: Signing up for Physical Education (PE) VII. in the 1st semester and for PE VIII. in the 2nd semester is compulsory.

The grade influences the qualification of the diploma *Obligatory elective subject

LIST OF TEXTBOOKS (The list may change!)

- 1 Ritter J., Flower R., Henderson G., Loke Y.K., MacEwan D., Rang H. Rang and Dale's Pharmacology. 9th ed., Elsevier, 2019. ISBN 978-0-7020-7448-6
- 2 Hadházy P.: The Basis of Functional and Medical Pathology. Bp.
- 3 The New Public Health: An Introduction for the 21st Century. By: T.Tulchinsky, E.A.Varavikova. 2000. ISBN 0-12-703350-5
- 4 Dandy, D.J.: Essential Orthopaedics and Trauma. 2nd ed. 1989. Churchill Livingstone.
- 5 Z.Vincze: Pharmacy Administration. Lecture notes.
- 6 European Pharmacopoeia, 8th (Ph. Eur. 8)
- 7 Pharmaceutical Technology I. Theory (Budapest, 1993)
- 8 Pharmaceutical Technology III. Practice (Budapest, 1993)
- 9 Michael E. Aulton, Kevin Taylor: Aulton's Pharmaceutics: The Design and Manufacture of Medicines, Elsevier Health Sciences, 2013
- 10 James Swarbrick, Marcel Dekker Encyclopedia of Pharmaceutical Technology, Second Edition Volume 1 of 3, 2002
- 11 Remington Pharmaceutical Sciences, Ed. 20. (Easton, Pennsylvania, 1999)
- 12 Rácz, I.: Drug formulation. (Wiley, New York, 2001.)

Recommended textbooks:

- 1 Forrai J.-Ballér P.: Chrestomathy on the History of Medicine. Bp. SOTE 1992.
- 2 C. Edwards-P. Stillman: Minor Illness or Major Disease? (Ph. P. Pharmaceutical Press, 2000.) ISBN 0 85369 447 8

PHARMACEUTICAL CHEMISTRY III.

Director: Dr. Péter Horváth

First Semester

Week	Lectures (2 hours per week)	Practicals (4 hours per week)
1	Disinfectants	Equipping, identification
2	Chemotherapeutics: sulfonamides	Desinfectants, chemoterapeutics
3	Chemotherapeutics: antimalarial drugs, fluoroquinolones	Antibiotics
4	Analysis of drug mixtures I.	Identification of drug mixtures
5	Analysis of drug mixtures II.	Identification of drug mixtures
6	Analysis of drug mixtures III.	Quantitative determination of drug mixtures
7	Chemotherapeutics: antituberculotics, antifungal agents	Quantitative determination of drug mixtures
8	Antibiotics: β-lactams, chloramphenicol	Quantitative determination of drug mixtures
9	Antibiotics: tetracyclines, aminoglycosides	Quantitative determination of drug mixtures
10	Antiviral agents	Quantitative determination of drug mixtures
11	Anticancer drugs	Quantitative determination of drug mixtures
12	Drug research I.	
13	Drug research II.	
14	Biological and biosimilar drugs	

PPHARMACEUTICAL TECHNOLOGY III-IV.

Department of Pharmaceutics

Director: **Dr. István Antal** Tutor: **Dr. Emese Bertalan-Balogh**

First Semester

Lectures

- Theoretical background for the Pilot Plant laboratory practices. Introduction into industrial pharmaceutical technology.
- Aspects of the pharmaceutical development. Preformulation. Theoretical background for the Parenteral laboratory practices.
- Condition system of drug manufacturing. Good Manufacturing Practice (GMP). Industrial manufacturing and safety technique.
- Stabilization possibilities of medicinal preparations. Principles of drug stability.
- Chemical engineering, scaling-up, optimization principles. Stability testing.
- Pharmaceutical unit operations. Particle size reduction, milling, sieving. Particle-engineering. Pharmaceutical unit operations. Aggregation, compaction and compression.
- Critical manufacturing parameters. In-process-Control. Quality by design. Pharmaceutical unit operations. Heat transfer, evaporation, distillation.

Practice

Laboratory for parenteral preparations

- Aseptic processing.
- Autoclaving.
- Determination of internal pressure of bottles at different filling volumes.
- Preparation of dextrose infusion.
- Preparation of mannitol infusion.
- Filtration by frame filter.
- Control of infusions and injections containing dextrose (pH, refractive index, degradation product).
- Preparation and control of infusions containing electrolytes and sugars.
- Preparation of infusions used in acidosis.
- Determination of endotoxin concentration in parenteral solutions by the quantitative LAL test.
- Adjustment of isotonicity.

Pilot plant practices

- Drying process.
- Filtrating process.
- Mixing of solids and solid-liquid heterogeneous systems.
- Study of some parameters of fluidization.

- Pharmaceutical unit operations. Drying. Pharmaceutical unit operations. Filtering, sedimentation, centrifugation, extraction by squeezing.
- Pharmaceutical unit operations. Freeze-drying and lyophilized products. Pharmaceutical unit operations. Sterilization.
- Pharmaceutical unit operations. Fluidization. Parenteral preparations. Factory design
- Validation. Large volume parenteral preparations.
- Pharmaceutical unit operations. Crystallization. Pharmaceutical unit operations. Amorphization. Spray-drying.
- Solution and dispersion type injections. Pharmaceutical unit operations. Mixing, dispersing.
- Packaging technology and packaging materials I. Packaging technology and packaging materials II.
- Investigations of factors affecting the size reduction in ball mill.
- Preparation and stability examination of emulsions.
- Quality control of solid dosage forms.
- Quality control of raw materials.
- Preparation of suppositories.
- Physical technology laboratory practices:
- Studies on ion exchange resins.
- Determination of the dissociation constant (pK) for drugs.
- Effect of pH on the solubility of drugs.
- Hydrotropic auxiliary materials.
- Solubilization of volatile oils by Tweens.
- Effect of permittivity on the solubility of salicylic acid.
- Determination of sugar concentration by viscometry.
- Studies on makromolecular colloids by viscometry.
- Studies on the phase inversion by viscometry.
- Determination of CMC by stalagmometry.
- Measurement of surface tension by Donnan pipette.
- Measuring the sun protection effect of oily products by spectrophotometry.
- Examination of suspensions by Wiegner tube and Andreasen device.

Chemical technology practices:

- Introduction, Fire-, Safety rules.
- Determination of decrease of the acetic acid content of Spiritus antirheumaticus (FoNo VII.) during storage.
- Stability study of hydrocortisone hemisuccinate solutions.
- Study of the stability of penicillin-containing solutions in the presence of other medicinal substances.
- Thermokinetic study of the decomposition of phenobarbital.
- Study of the catalytic oxidation of ascorbic acid solutions.
- Kinetic study of the saponification process of castor oil.

- Determination of lipase activity of pancreatine filmcoated tablet.
- Determination of the dissolution rate constant of benzoicacid with UV spectrophotometry.
- Kinetic study of the neutralization of antacids.
- Testing the activity of antacid formulations with Rosett-Rice method.
- In vitro investigation of the acid binding capacity of thermolabile aluminumhydroxide gels.
- Study of degradation processes of paracetamol by HPLC-UV method.

Second Semester

Lectures

- Theoretical considerations of pilot plant practices. Theoretical considerations of parenteral preparations.
- Classification and preformulation of solid dosage forms. Solid state characterization. Granulation I.
- Granulation II. Inhaled preparations, aerosols.
- Pellets and palletization. Particle systems and their characterization.
- Tablets I. Tablets II.
- Capsules I. Capsules II.
- Coating I. Coating materials and procedures, film coating. Coating II. Traditional sugar coating.
- Coating III. Solvent-free coating. Modern dosage form design: modified drug release.

Practice

Laboratory for parenteral preparations

- Preparation of injections liable to hydrolysis.
- Determination of the chloride ion concentration by ion selective electrode.
- Filling and closing of ampoules.
- Preparation and control of aerosols.
- Preparation of heat sensitive injections.
- Sterilization by membrane filtration. Integrity testing of membranes.
- Non-aqueous injections.
- Freeze-drying.
- Preparation of injections liable to oxidation.
- Control of drug content of ascorbic acid injection.
- Preparation of suspension injections.
- Color determination of ascorbic acid injections.
- Isotonicity setting based on freezing point depression.
- Isotonicity setting based on sodium chloride equivalents.

- Innovative pharmaceutical technological products. Generics and supergenerics. Quality by Design, PAT, nondestructive analysis.
- Modern dosage form design: testing and evaluation of drug release profile. Modern dosage form design: improvement of dissolution and solubility.
- Modern dosage form design: colloidal carrier systems, liposomes. Pharmaceutical technological aspects of Pharmacopoeias.
- Modern dosage form design: transdermal therapeutic systems. Modern dosage form design: Molecular pharm. tech. microfabrication.
- Patient centric dosage forms
- Pharmaceutical technology and quality assurance. Modern dosage form design: Delivery of biopharmaceuticals.

Pilot plant practices

- Product development.
- Ointment preparation.
- Preparation of liquid dosage forms (solutions, elixirs, syrups, mixtures). Qualifying test of solutions.
- Coating I. (coating materials, calculation of the required amount for the coating process).
- Coating II. (Preparation of coating dispersion, film dissolution tests and gastro-resistance examination).
- Pellet preparation in high shear mixer and extrusion-spheronization, quality control of pellets.
- Coating of pellets by fluid technique.
- Granulation, Tablet compression and IPC test methods.
- Calculation of suppository displacement factor. Preparation of suppositories by molding technique.
- Digital pharmaceutical technology (3D printing).

Physical technology laboratory practices:

- Determination of slip point and dropping point for suppository vehicles and ointment bases.
- Determination of the congealing point of vehicles.
- Examination of the compression strength and disintegration time of suppositories.
- Homogeneity of active ingredient distribution in suppositories.
- Examination of drug release from suppositories.
- Studies on vehicles of ointments and suppositories with penetrometry and DSC.
- Examination of crystals, studies on disintegration.
- Adsorption on the surface of active coal.
- Statistical evaluation of uniformity of mass of single-dose capsules.
- Drug release of tablets in the presence of adsorbents.
- Examination of granules and powders.
- Determination of real density of granules.
- Study of drug release in artificial gastric fluid and in artificial intestinal fluid.

Chemical technology practices:

- Packaging materials I.: Hydrolytical and physical resistence of medicine bottles.
- Packaging materials II.: Light emission of medicine bottles.
- Iodine adsorption of plastic containers.
- Blister-closing test.
- Investigation of acetylsalicylic acid content decreasing due to moisture in solid drug preparation.
- Quality control of prenoxdiazine tablet (ionpair method).
- Preparation and examination of theophylline-containing microcapsules.
- Formulation and examination of KCl containing sustained-release capsule preparation.
- Encapsulation of tocopherylacetate in to liposomes.
- Quality control of prenoxdiazine tablets (ionpair method).
- Study of the interaction of methyl-4-hydroxybenzoate (methylparaben) and macromolecules.
- Examination of complexation between acetaminophen (paracetamol) and methylxanthines.
- Investigation of a sustained release matrix tablet of tolperisone HCl with HPLC-UV method.
- HPLC-MS study of ciprofloxacin film-coated tablet in high-fat milk.

PHARMACOGNOSY II.

Director: Dr. Szabolcs Béni Tutor: Dr. Eszter Riethmüller

First Semester

Week	<i>Lectures</i> (2 hours per week)	Practicals (4 hours per week)
1	Terpenoids. Biogenetic generalities, classification.	Bitter substances of plants. Classification, reactions, bitterness value.
2	Essential oils I. Distribution, localization, function, physical properties and chemical composition of essential oils. Methods of production.	Essential oil containing drugs I.
3	Essential oils II. Pharmacological properties and toxicity of essential oils. Oleoresins.	Essential oil containing drugs II.
4	Chief drugs containing essential oils.	Saponins and chief saponin drugs. Methods used in the identification and quality control of saponins.
5	Iridoids, sesquiterpene lactones, diterpenes and chief drugs.	Cardioactive glycosides and chief drugs
6	Triterpenes and steroids. Saponins and chief drugs.	Methods used in the analyses of cardioactive glycosides
7	Cardioactive glycosides and chief drugs. Unusual terpenoids. Ecdisteroids.	Tropane alkaloid containing drugs
8	Alkaloids. Generalities. Alkaloids derived from ornithine and lysine I. (Tropane alkaloids).	Isoquinoline alkaloids, their chief drugs
9	Alkaloids derived from ornithine and lysine II. (pyrrolizidine, quino- lizidine, indolizidine, piperidine alkaloids). Alkaloids derived from nicotinic acid. Alkaloids derived from phenylalanine and tyrosine I. (Ephedras and Khat, Peyote).	Quinoline and indole alkaloids, their chief drugs
10	Alkaloids derived from phenylalanin and tyrosine II. (Curares, Proto- berberines, Morphinan alkaloids, Phenethylisoquinolines, Amarillida- ceae alkaloids, Monoterpenoid isoquinolines).	Pseudo- and protoalkaloids, their chief drugs I.
11	Alkaloids derived from tryptophane (Hallucinogenic indole alkaloids, Calabar bean, Ergot alkaloids, Monoterpenoid indole alkaloids, Loga- niaceae, Rubiaceae, Apocynaceae, Cinchonas).	Pseudo- and protoalkaloids, their chief drugs II.
12	Alkaloids derived from anthranilic acid and histidine. Terpenoid alkaloids. Cyanogenic glycosides, glucosinolates. Purine bases.	Plant biotechnology
13	Obligatory written test.	Individual task I.: Natural product development
14	Plants in complementary and traditional medicine.	Individual task II.: Identification of crude drugs based on the methods prescribed in the Ph. Eur.

PHARMACOLOGY AND TOXICOLOGY I-II.

Department of Pharmacodynamics

Course Director: **Prof. Dr. György Bagdy** Tutor: **Dr. Tamás Tábi**

First Semester

- General principles of drug action: receptor theory
- General principles of drug action
- The fate of drugs in the body
- Drug metabolism
- Pharmacokinetics
- Factors influencing the drug effect
- Basics of clinical pharmacology
- Chemical neurotransmission
- Pharmacology of ANS
- Drugs acting on striated muscle
- Chemical neurotransmission in the CNS
- General and local anaesthetic agents
- Narcotic analgesics: opioids

- Drug abuse and drug dependence
- Anxiolytic and hypnotic drugs
- Drugs used in affective disorders
- Antipsychotic drugs
- Antiepileptics and excitatory amino acid neurotransmitters
- Neurodegenerative disorders
- Immunopharmacology
- Histamine and antihistamines. Glucocorticoids
- Antirheumatoid drugs
- Non-steroidal anti-inflammatory drugs
- Drugs of the respiratory system
- Drug interactions. Adverse effects

Second Semester

- Drugs affecting the heart
- Drugs affecting the circulation
- Diuretics
- Pharmacology of insulin and antidiabetics
- Lipid lowering drugs
- Drugs affecting blood coagulation and thrombocytes
- Pharmacology of the reproductive system
- Pharmacology of calcium and bone metabolism
- Pharmacology of the gastrointestinal tract
- Basic principles of antimicrobial chemotherapy
- Antibacterial drugs affecting nucleic acid metabolism

- Antibacterial drugs inhibiting cell wall synthesis
- Antibacterial drugs inhibiting protein synthesis
- Antimycobacterial drugs
- Antifungal, antiprotozoal and anthelminthic drugs
- Antiviral drugs
- Anticancer drugs
- Drugs affecting the haemopoietic system
- Vitamins, retinoids and trace elements
- Pharmacology of the thyroid and pituitary
- Toxicology

PHARMACY ADMINISTRATION I.

Faculty of Pharmacy

University Pharmacy Department of Pharmacy Administration Director: Prof. Dr. Romána Zelkó Tutor: Dr. Ágnes Mészáros

4th year term 2

Lecture

- Objectives and research methods of pharmacy administration
- European Pharmacopoeia, Ph.Hg. VIII, FoNo VII.
- Managing health care
- Financial pressures and human resource management
- Resource allocation in health care
- Managing quality in health care
- Quality systems and total quality management

- Good Clinical Practice (GCP)
- European marketing authorisation procedures
- The registration dossier
- Legal regulations in health care
- Health promotion
- Good Pharmacy Practice (GPP)
- International pharmaceutical organisations
- Pharmaceutical ethics

BASIC MEDICAL PATHOPHYSIOLOGY I-II.

Institute of Pharmacodynamics

Course Director and Tutor: Dr Gabriella Juhász

First Semester

- Fundamental pathological processes
- Psychiatry: diagnostic systems
- Delirium, dementia, amnestic disturbances
- Inflammation. Tissue repair. Pain. Edema
- Injuries produced by high and low temperatures and electricity
- Schizophrenia.
- Depressive disorders
- Anxiety disorders. Drug induced disorders
- Sleep disorders.
- Eating disorders.Impulse control disorders
- Epilepsy.
- Neurodegenerative disorders
- Inflammatory diseases of the central nervous system

- Headache.
- Backache
- Disorders of erythropoiesis and haemostasis
- Varicose veins.
- Thrombo-embolic disorders
- Congestive heart failure.
- Atherosclerosis
- Ischaemic heart disease.
- Cardiac arrhythmia
- Inflammatory diseases of the heart
- Hypertension.
- Circulatory shock

Second Semester

- Gastrointestinal disorders I
- Gastrointestinal disorders II
- Gastrointestinal disorders III
- Respiratory diseases I.
- Respiratory diseases II.
- Genitourinary disorders
- Infectious disorders I.
- Infectious disorders II.

- Ophtalmologic disorders I.
- Ophtalmologic disorders II., Ear disorders
- Endocrine and metabolic disorders I.
- Endocrine and metabolic disorders II.
- Musculoskeletal disorders
- Immunologic disorders, Oncologic disorders
- Dermatologic disorders, Consultation

PUBLIC HEALTH

Tutor: Dr. András Terebessy

Second Semester

Lectures (2 hours per week)	Practices (2 hours per week)
The development and role of public health in medicine. Basic principles of epidemiology and demography.	Introduction to Public Health. Principles of epidemiology of com- municable diseases.
Global situation of communicable diseases in the world and in Hungary. Life expectancy, morbidity, mortality in Hungary.	Classification of communicable diseases. Disinfection and sterilisa- tion. Laboratory investigations
The occurrences of communicable diseases. Surveillance. New im- munizations, chemoprophylaxis.	Activity of doctors in case of communicable diseases. Immunisations: vaccines and sera. Nosocomial infections.
Infections of Gastrointestinal and Respiratory Tract.	Epidemiology I. (Most important rates and indices).
Haematogen infections and infections of the skin.	Epidemiology II. (Methods of epidemiology, calculations: standar- disation, risk).
STD. AIDS/HIV. Viral hepatitis.	The role of the pharmacist in primary prevention of smoking, alcohol and drugs.
New, emerging diseases. Health care in case of disasters.	The role of the pharmacist in healthy nutrition and required physical activity.
Malnutritions. Nutrition related non infectious diseases. Vegetar- ianism.	Nutrition I. (Healthy nutrition. Assessment of nutritional status. Diet planning.)
Acute food-borne diseases.	Nutrition II. (Prevention of food – borne diseases)
Water hygiene.	Practical aspects of water hygiene.
Air-and soil hygiene.	Practical aspects of air hygiene.
Occupational risk factors, prevention of occupational diseases.lon- ising and non-ionising radiation	Occupational diseases, accidents. Vibration, noise.
The health care system, quality assurance.	Toxicology. Radiation hygiene.
Maternal, infant child and youth health care.	Practical aspects of maternal, infant, child and young people hy- giene.
Health promotion and health education.	Practical aspects of health education.

Practices are compulsory for each student.

The obligatory material for the final exam:

The material of the lectures and practices compulsory textbooks, see List of Textbooks

INDUSTRIAL PHARMACEUTICAL TECHNOLOGY I:

Dosage form and product development Department of Pharmaceutics Director: Dr. István Antal

First Semester

The subject is recommended for the students interested in several fields of industrial pharmaceutical technology such as research and development of new dosage forms and medicinal preparations.

Topics:

The significance of the pharmaceutical industry. The evolution of the pharmaceutical industry. Structure, characteristics. Pharmacists in the pharmaceutical industry. Technological aspects of the quality for the approval of medicinal preparations. Pharmaceutical development. Innovation and Intellectual Property. Intellectual property aspects of pharmaceutical technology I. Intellectual property aspects of pharmaceutical technology II. Formulation design. Manufacturing processes and unit operations. Design of drug delivery systems. The quality of the drug and excipients. Optimisation and scale-up general methods. Summary. Overview of consultation.

INDUSTRIAL PHARMACEUTICAL TECHNOLOGY II:

Operations and procedures Department of Pharmaceutics Director: **Dr. István Antal**

Second Semester

The subject is recommended for the students interested in several fields of industrial pharmaceutical technology such as operations and procedures in the manufacture of medicinal preparations.

Topics:

Introduction to the pharmaceutical manufacturing processes. The main characteristics of the pharmaceutical manufacturing. The evolution of manufacturing processes. Dosage form development and production. Drug delivery systems I. Drug delivery systems II: Nanocarriers. Quality aspects of production. In-process control. Process Analytical Technology. Non-destructive analytical tests. Dosage form design and Quality by Design. Pharmaceutical excipients and special formulations. Biotechnological products. Validation and statistical process control. Summary review.

CLINICAL PHYSIOLOGY LABORATORY MEASUREMENTS

GYKIKKFVE1A

Elective course for pharmacy students in the 3rd, 4th and 5th years.

The purpose of the subject is to familiarize pharmacy students with the background, uses and implementation of clinical diagnostic measurement techniques which are closely related to the knowledge acquired on the physiology course. The course provides theoretical and practical knowledge which helps to integrate basic physiology in the broader scope of clinical and pharmaceutical sciences. Moreover, the subject helps to develop fundamental skills which are relevant for proficient medical professionals (measurement skills, presentation of precise documentation, cooperativity etc.).

Program:

Theoretical course:

incorcticut co	
1st week	Introduction to the bases of measurement techniques.
2nd week	Scientific and diagnostic measurement techniques for studying the electrophysiology of motor nerves, neuromuscular trans- mission and skeletal muscle.
5th week	Electrophysiology of the heart, cardiac arrhythmias. Regulation of arterial blood pressure under physiological and pathophys- iological conditions. The characteristics of the pulse wave propagation.
7th week	Mechanical properties of the respiratory system under physiological conditions and in respiratory diseases. Adaptation of the cardiorespiratory system to physical exercise.
9th week	Regulation of carbohydrate metabolism and its disorders.
11th week	Reflexes of the somatic nervous system. Function of the vestibular system. Regulation of body position under physiological conditions and in neural disorders.
13 th week	Consultation
Practical cour	'se:
2nd week	Introduction to the uses of instruments and data acquisition software applied during the course
4th week	Electromyography, electroneurography. Study of the electrical properties of the skeletal muscle, measurement of the impulse conduction velocity of a motor nerve by Biopac student lab system.
6th week	Measurement of pulse wave velocity. Recording and analysis of a 12-lead ECG. Demonstration of pathological ECG record- ings. 8th week - Spirometry. Studying the circulatory and respiratory adaptation responses during physical exercise
10th week	Oral glucose tolerance test, determination of HbA1c level, analysis of normal and pathologic glucose tolerance curves.
12th week	Neurological examination techniques: examination of motor reflexes and vestibular function, EOG.
13th week	Optional lab retake.
14th week	Repetition and practice for the practical exam

Acknowledgement of the course: Attendance of at least 6 lab practices and 5 theoretical classes; presentation of the completed lab manual to the tutor. Semifinal exam. Two (2) credit points will be provided after a successful completion of the course.



Pharmaceutical Sciences 5th year Important: New curriculum is to be introduced in all years from the 2020-2021 academic year. Please, follow the updated curricula on the home page.

STUDY PROGRAMME

Fifth Year

9th semester (12 weeks)

Subjects	Lectures	Practices	Credit Points	Examination
Compulsory Practical Training I. (2 months) * GYSZGSZVG1A	-	40	8	practical course grade
Biopharmacy-Pharmacokinetics Practice GYGYIBFKG1A	-	3	2	practical course grade
Biopharmacy-Pharmacokinetics GYGYIBFKE1A	2	-	2	semi-final
Pharmaceutical Sociology, Ethics GYMAGGYEE1A	2,5	-	2	semi-final
Drug Therapy Practice GYGYHGTRG1A	-	2	0	signature
Drug Therapy GYGYHGTRE1A	2	-	4	semi-final
Pharmacy Administration II. Practice GYEGYGSZG2A	-	2	2	practical course grade
Pharmacy Administration II. GYEGYGSZE2A	2	-	2	final #
Clinical Pharmaceutical Care GYEGYGYGE1A	2	-	4	semi-final
Clinical Pharmaceutical Care Practice GYEGYGYGG1A	-	3	-	signature
Written Scientific Thesis (diploma work) II. GYSZDSZDG2A	-	6	0	signature
Total Credit				

10th semester (16 weeks)

Subjects	Lectures	Practices	Credit Points	Examination
Compulsory Practical Training I. (4 months) *GYSZGSZVG2A	-	40	16	Practical course grade
Diploma Defence GYSZDDIVE1A			15	final
Total Credit	26			

Important note: Signing up for Physical Education (PE) IX. in the 1st semester and for PE X. in the 2nd semester is compulsory.

LIST OF TEXTBOOKS (The list may change!)

- 1 Walker Roger, Whittlesea Cate: Clinical Pharmacy and Therapeutics. 5th Edition, Churchill Livingstone Elsevier, 2012 eBook ISBN: 9780702048487
- 2 Z. Vincze: Pharmacy Administration. Lecture Administration.
- 3 Wells BG. at. al.: Pharmacotherapy Handbook. 10th ed. McGraw-Hill, New York, 2017
- 4 Conrad Fischer—Caterina Oneto (2009): USMLE Medical Ethics: The 100 cases you are most likely to see on the exam (Second edition) New York: Kaplan Publishing ISBN: 9781419553141
- 5 Michael E. Aulton, Kevin Taylor: Aulton's Pharmaceutics: The Design and Manufacture of Medicines, Elsevier Health Sciences, 2013
- 6 James Swarbrick, Marcel Dekker Encyclopedia of Pharmaceutical Technology, Second Edition Volume 1 of 3, 2002
- 7 Remington Pharmaceutical Sciences, Ed. 20. (Easton, Pennsylvania, 1999)
- 8 Rácz, I.: Drug formulation. (Wiley, New York, 2001.)

Recommended textbooks:

- 1 Herfindal-Gourley-Hart, L: Clinical Pharmacy and Therapeutics. Williams and Wilkins USA. ISBN 0 683 03966 0
- 2 Fincham, J.E:-Wertheimer, A.I: Pharmacy U.S. Health Care System. ISBN L-56024-097-0
- 3 Smith, M.C: Studies in Pharmaceutical Economics. ISBN 0-7890-0062-8
- 4 Ritschel, W.A.: Handbook of Basic Pharmacokinetics. Drug Intelligence Publ. Inc. Hamilton Press, 1999. ISBN 0-914768-40-9

CLINICAL PHARMACEUTICAL CARE

Faculty of Pharmacy

UniversityPharmacy Department o Pharmacy AdministrationDirector:Prof. Dr. Romána ZelkóTutor:Dr. Ágnes Mészáros

5th year term 1

Lectures

- 1. About clinical pharmacy
- 2. Pharmaceutical care
- 3. Individual therapy with magistral preparation
- 4. Clinical guidelines in the treatment of type 2 diabetes mellitus
- 5. Clinical guidelines in the treatment of hypertension
- 6. Special conditions influencing drug therapy
- 7. Clinical bio-analytical analyses
- 8. Therapeutic drug monitoring, Pharmaco-genetics
- 9. Pediatrics
- 10. Total Parenteral Nutrition
- 11. Pharmaceutical care in asthma
- 12. Patient education in OTC products I.

Practical lessons

- 1. Pharmaceutical care in diabetes
- 2. Pharmaceutical care in hypertension
- 3. Surgery
- 4. Dermatology
- 5. Preparations for surgery, intensive therapy
- 6. Headache, depression, distress, insomnia
- 7. Patient education in OTC products I.
- 8. Patient education in prescription drugs
- 9. Patient education in OTC products II.
- 10. Drug information systems
- 11. Laboratory diagnostic
- 12. Adverse Drug reactions

BIOPHARMACY – PHARMACOKINETICS

Department of Pharmaceutics

Director: Dr. István Antal Tutor: Dr. Emese Bertalan-Balogh

First Semester

Lectures

- Evolution and significance of biopharmacy.
- Basic concepts. Terms and definitions. Pharmacokinetic models and parameters I.
- Fate of drug in the body. The LADME-model.
- Drug release. The Biopharmaceutical Classification System.
- Transport processes and absorption mechanisms. Factors influencing the absorbtion.
- Pharmacokinetic models and parameters II. Single and multiple administration.
- Metabolism and its biopharmaceutical aspects. Importance of Bioanalysis.
- Excretion processes.
- Methods of pharmacokinetic analysis. Compartment, non-compartment analysis and other approaches.
- Bioavailability and bioequivalence. Importance of food interaction.
- Pharmacokinetic investigations during drug research and development.
- Biopharmaceutical and pharmacokinetic studies, in vitro-in vivo correlations.

Practices

- Introduction.
- The distribution of salicylic acid in a three-phase system. The influence of surface active agent on the transport.
- Dissolution rate determination using rotating basket method in the case of Diclofenac-ratiopharm tablet (50 mg) and Voltaren retard tablet (100 mg).
- Study on in vitro drug release from ointments with local effect. Penetration study from semisolid preparation in Franz cell like apparatus.
- Release of diclofenac from patch.
- The extraction and assay of diclofenac sodium from synovial fluid.
- Urinary excretion of ASA after rectal administration.
- Determination of theophylline plasma levels in beagle dogs after iv. administration.
- Determination of theophylline plasma levels in beagle dogs after oral administration.
- Pharmacokinetic calculations.
- Computer Aided Learning.
- Consultation.

PHARMACEUTICAL SOCIOLOGY, ETHICS

Credit: 2

Lecturer: Prof. Dr. József Kovács

Syllabus (14 hours)

Course objectives:

- a. To enable students to recognize ethical issues when encountered in everyday practice and research
- b. To provide students with a conceptual-logical system, which helps them to address ethical questions and to resolve ethical dilemmas in an efficient way
- c. To introduce students to a body of knowledge, which helps them to understand, respect and protect the rights of patients, research subjects and fellow health care professionals
- d. To help the would be health care professional to understand the responsibility of the individual, of the health care system and of the society as a whole in maintaining health

1. week (Lecture)

Basic concepts of ethics. Descriptive ethics, normative ethics, metaethics. General ethics and applied ethics. Bioethics, medical ethics, health care ethics. Similarities and differences. The role of bioethics in a pluralistic society. The relationship between law and ethics. Reasoning in ethics. The most common mistakes.

2. week (Lecture)

Normative theories of ethics. The basic principles of medical ethics.

Deontological theories of ethics. (The Golden Rule, Kant and the categorical imperative, the principle of double effect, W.D. Ross and the prima facie duties,)

Teleological theories of ethics. (Act and rule utilitarianism.)

Theories of natural law.

Contractarian theories of ethics. (The theory of justice of John Rawls)

The principle of respect for autonomy.

The principle of non-maleficience.

The principle of beneficience.

The principle of justice.

Arguments against "principalism".

3. week (Lecture)

Justice in Health Care. Ethical questions of macro- and microallocation

Higher and lower level macroallocational problems.

The principles and practice of rationing in contemporary health care systems. (Soft and hard rationing.)

Medical ethics and medical economics. Ethical questions of cost-benefit and cost effectiveness analysis.

The problem of right to health care. (The libertarian, the liberal and the socialist views about the right to health care.)

The role of the market and that of the state in the health care system.

The concept of microallocation.

Ethical analysis of various selection criteria. (Medical benefit, psychological ability, supportive environment, social value criterion, resources required criterion, age, ability to pay, random selection, personal responsibility for the illness, etc.)

4. week (Lecture)

Informed consent and truth telling Simple consent and paternalism in medicine. The emergence of the doctrine of informed consent. Standards for information disclosure for patients. When is informed consent not necessary? Standards of competence and incompetence. The right to refuse medical treatment. Some psychological and communicational aspects of informed consent. The history of information disclosure to terminally ill patients. Pros and cons for lying to terminally ill patients. The weaknesses of the arguments in favour of lying. The dying process according to E. Kübler-Ross. How to communicate the bad news to terminally ill patients. The physicians's relationship with the relatives of the deceased patient.

5. week (Lecture)

Euthanasia and the withholding of life-sustaining treatment Definitions.

The sanctity of life versus the quality of life doctrine.

Is there any difference between active and passive euthanasia?

The practice of active euthanasia in the Netherlands. The Remmelink Report.

Refusal of life sustaining treatment by competent and incompetent patients.

Possibilities to extend the autonomy of patients: living will, durable power of attorney, substituted judgement, etc.

The concept of medically futile treatment.

Ethical problems of the treatment of handicapped newborns. (The debate about the treatment of spina bifida babies, the Baby Doe case, the legal situation, etc.)

6. week (Lecture)

Ethical questions of human experimentation. Possible forms of experimentation on humans. Contradiction between the two roles of the physician. (Healer and scientist.) The ethics of Randomized Controlled Clinical Trials. (RCT) Randomization and prerandomization.

7. week (Lecture)

Ethical questions of organ- and tissue transplantation. Some problems of justice concerning kidney transplantation and chronic haemodialyisis. Ethical questions of transplantation from living kidney donors. The concept of death. Ethical questions of organ harvesting from the dead. The debate about the market of organs. Ethical questions of using embryo- or foetal tissue in human therapy. Ethical problems of using anencephal newborns as organ donors.

Course Faculty:

Professor József Kovács, MD, PhD, (Head of the Institute), Phone: 210-2930/6350; E-mail: kovjozs@net.sote.hu Ágnes Dósa, MD, JD, PhD e-mail: dosaagi@yahoo.com Imre Szebik, MD, PhD e-mail: szebimre@net.sote.hu Jeno Lorincz, MD, JD e-mail: lorjen@net.sote.hu
Department:

Institute of Behavioral Sciences Department of Bioethics NET Budilding, 19th, 20th floor 1089. Budapest, Nagyvárad tér 4. Phone: 210-2953 Secretary: NET Building, 20th floor, Room-2005

List of questions

- 1. Deontological theories of ethics.
- 2. Utilitarian theories of ethics.
- 3. The principles of medical ethics
- 4. Justice and medical ethics: the allocation of scarce medical resources.
- 5. Paternalism in medical practice
- 6. Informed consent
- 7. Information disclosure for terminally ill patients
- 8. Advance Directives
- 9. Medical confidentiality
- 10. Experimentation on human subjects
- 11. Objection to Transplantation of Organs and Counterarguments
- 12. Ethical probems of live organ donation
- 13. Organ donation from brain-dead donors: the system of donor cards.
- 14. Organ donation form brain-dead donors: presumed consent
- 15. Stages of Dying
- 16. Active and Passive Euthanasia
- 22. Withdrawing and withholding life sustaining treatment.

Important notes:

To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature. (Two absences from the lectures is the maximum number permitted.) The student can make up for the absences in practicals held at other times elsewhere.

Justification of an absence: Doctor's certificate

Semester requirement: To participate on at least 75% of the total number of lessons.

Grade: The result of the semi-final.

Sign up for the exam: Through the NEPTUN system. Modifying of the exam date: Through the NEPTUN system.

Justification of absence from the exam: A telephone message to the secretary of the Institute.

Textbook:

Conrad Fischer–Caterina Oneto (2009): USMLE Medical Ethics: The 100 cases you are most likely to see on the exam (Second edition) New York: Kaplan Publishing ISBN: 9781419553141

SOCIOLOGY

(14 hours)

Course objectives:

To introduce to the students the concepts of the social distribution of health and illness, the causes and consequences of health status inequalities, the role of psychosocial factors in health care, the social phenomena occurring in healing, the social situation of medicine, and the social embeddedness of the health care system.

Course syllabus

- 1 Social Science and Pharmacy (lecture)
- 2 Sociological Understanding of Health and Illness (lecture)
- 3 Lay Health Beliefs and "Help-seeking" Behavior (lecture)
- 4 Social Factors and Health (lecture)
- 5 Social Inequalities and Health (lecture)
- 6 Is Pharmacy a Profession? (lecture)
- 7 Pharmacist and Health Promotion (lecture)

Course Faculty:

Zsuzsa Szántó, PhD, (Head of the Department of Sociology), 210-2930/56338; e-mail: szanzsu@net.sote.hu Katalin Kovács, PhD e-mail: kovacsk.katalin@gmail.com

Department:

Institute of Behavioral Sciences Department of Sociology NET Building, 19th, 20th floor 1089. Budapest, Nagyvárad tér 4. Tel: 210-2953 Secretary: NET Building, 20th floor, Room-2005

Important notes: To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature. (Two absences from the lectures is the maximum number permitted.) The student can make up for the absences in practicals held at other times elsewhere. Participation submitting home paper.

Justifying absence: with doctor's certificate

Semester grade: The result of the semi-final and home paper.

Justifying absence from the exam: A telephone message to the secretary of the Institute.

Textbook:

- 1 Kevin Taylor, Sarah Nettleton, Geoffrey Harding: Sociology for pharmacists. Taylor and Francis, London, 2003
- 2 Handouts for the lectures will be accessible on the homepage of the Institute of Behavioral Sciences: www.magtud.sote.hu.

PHARMACY ADMINISTRATION II.

Faculty of Pharmacy University Pharmacy Department of Pharmacy Administration Director: Prof. Dr. Romána Zelkó Tutor: Dr. Ágnes Mészáros

5th year term 1

Lectures

- 1. Dispensing in Pharmacy
- 2. Reimbursement systems
- 3. RCT and clinical trials
- 4. Evidence Based Pharmacy
- 5. Pharmacoeconomics 1.
- 6. Pharmacoeconomics 2.
- 7. Quality of life analysis
- 8. Pharmaceutical research and development, Pharmaceutical industry
- 9. Good Manufacturing Practice (GMP), Good Laboratory Practice (GLP)
- 10. Good Documentation Systems, QC
- 11. Trends in the international drug markets
- 12. Marketing of pharmaceuticals

Practical lessons

- 1. Hospital Pharmacy Management
- 2. Micromedix, drug information
- 3. Publication strategies
- 4. Medline 1
- 5. Medline 2, IPA
- 6. Drug information, Micromedix
- 7. Presentation concerning health promotion
- 8. Internet in Pharmacy, computer skills
- 9. Quality criteria of economic evaluations
- 10. Critical decision making
- 11. Supply of OTC medicines
- 12. Consultation, assessment

DRUG THERAPY

Course Director: **Prof. Dr. Éva Szökő** Tutor: **Dr. Tamás Tábi Department of Pharmacodynamics**

Lecture: 2 Practice: 2 Credit: 4 Exam: semi-final (oral)

First semester

Program:

Lectures:

- 1. week: Strategies of drug therapy. Evidence based medicine
- 2. week: Drug therapy of chronic cardiac failure and hypertension
- 3. week: Therapy of acute and chronic joint disorders
- 4. week: Pharmacotherapy of neuropathic pain and some neurological diseases
- 5. week: Pain management in cancer
- 6. week: Therapy of dermatologic inflammations
- 7. week: Therapy of gastroenterological diseases
- 8. week: Therapy of eye disorders
- 9. week: Therapy of urological disorders
- 10. week: Contraception. Treatment of common gynecological disorders
- 11. week: Vaccination
- 12. week: Drug usage in the elderly and during pregnancy

Practices:

- 1. week: Treatment of venous disorders
- 2. week: Therapy of diabetes mellitus
- 3. week: Treatment of ischemic heart disease and myocardial infarction
- 4. week: Therapy of allergic rhinitis
- 5. week: Treatment of skin disorders
- 6. week: Drug therapy of anxiety and insomnia
- 7. week: Therapy of GI disorders
- 8. week: Therapy of asthma and COPD
- 9. week: Therapy of osteoporosis
- 10. week: Therapy of Parkinson's disease and schizophrenia
- 11. week: Therapy of community acquired infections
- 12. week: Therapy of breast and colorectal cancer

FACULTATIVE SUBJECTS

PHYTOTHERAPY

Department of Pharmacognosy

3 hours/week

- 1. The complexity of herbal medicines. Herbal products regulations.
- 2. Activity, safety and quality of herbal medicines. Side effects, interactions.
- 3. Plants and the nervous system.
- 4. Plants and the cardiovascular system.
- 5. Plants and the renal system.
- 6. Anti-inflammatory plants.
- 7. Plants and the respiratory system.
- 8. Plants and the reproductive system.
- 9. Plants and the digestive system. Plants and metabolic diseases.
- 10. Plants and the liver and biliary system.
- 11. Plants and the cutaneous system.
- 12. Adaptogenic plants. Medicinal plants in the prevention and complementary treatment of cancer.

HEALTH INFORMATICS

Name of the educational organizational unit: SE EKK Institute of Digital Health Sci-ences Name of the subject: Health Informatics Type of the subject: 3 theory / week Code: GYINFEUIE1A Credit value: 2 Name of the lecturer of the subject: Dr. Miklós Szócska Teachers: Prof. Dr. Elek Dinya

Term: autumn

The exercise of the subject in the in the realization of the aim of the education:

Biostatistics is an innovative field that involves the design, analysis, and interpretation of data for studies in public health and medicine. Biostatistics experts arrive at conclusions about disease and health risks by evaluating and applying mathematical and statistical formulas to the factors that impact health. By looking at empirical data, such as the out-come of a clinical trial, you can predict whether a medical treatment will help a sick patient. Choose this subject if you have a mathematics background and a strong interest in biology and public health. This program emphasizes statistical theory and methods and will prepare you to design, execute, and collaborate on all types of studies as well as contribute to the methodological development of biostatistics.

Topics of the subject:

- 1. Probability theorem, Discrete and Continuous Probability Distributions. Data scales, data reductions, data distributions and representations. Genetic applications.
- 2. Decision theorem: significance level, hypothesis, type I-II errors and its handlings. Power anlysis, sample size calculations. Confidence limits.
- 3. Parametric tests I.: one sample, paired and two sample t-tests. Effect size calculations.
- 4. Parametric tests II.: the principle of the analysis of variance (ANOVA). ANOVA tables. Different ANOVA models, post-hoc tests.
- 5. Parametric tests III.: Mixed models.
- 6. Nonparametric tests: (sign, Wilcoxon rank-test, Mann- Whitney U-test, Friedman ANOVA, Kruskal-Wallis test). Permutation tests.
- 7. Contingency tables: khi-square test, Fisher-test, trend analysis.
- 8. Classification functions: sensitivity, specificity, OR, RR calculations. ROC analysis.
- 9. Linear and nonlinear regressions (GLM/GLZ models): simple, multiple, Ridge reg-ression.
- 10. Logistic regression.
- 11. Survival analysis I.: life-table and Kaplan-Maier mthods.
- 12. Survival analysis II.: Cox-model.
- 13. Multivariate exploratory techniques I: PCA, cluster, discriminant.
- 14. Test

The mode of the certificate in case of absence from the lessons and from the exams: According to rules of the Studies and Exam Code.

The requirements of signature at the end of the term (including also the number and the type of the students' exercises which are solved individual by them):

To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature. Maximum number of absences in a semester is 3.

The mode of acquisition of the mark:

Exam: Course will conclude with a written semi-final examination in the examination period. Statistical problems should be solved in written.

Type of the exam:

Colloquium.

Exam requirements:

Content of the lectures.

Mode of the application for the exam:

Via Neptun system.

Order of the modification of exam application:

According to Studies and Exams Code.

Mode of the certification in case of absence from the exam:

By a medical certification within three days.

List of lecture notes, course books, study-aids and literature which can be used to acqui-sition of the syllabus:

The use of educational materials on the institute website is obligatory: www.semelweis.hu/dei

Recommended literature:

- 1. Beth Dawson, Saunders R. G. Trapp: Biostatistics, Prentice-Hall international Inc.
- 2. http://semmelweis.hu/dei/files/2013/11/Biostatistic1.pdf

BIOINORGANIC CHEMISTRY

Institute of Chemistry, Department of Analytical Chemistry (ELTE)

During the last two decades our knowledge on the behavior of metals and some nonmetals (e.g. boron, silicon, selenium) has widened considerably. As a result of this the cooperation between inorganic chemists, biochemists and biologists became most involved and a new multidisciplinary branch of natural sciences developed that is termed bioinorganic chemistry or inorganic biochemistry.

It is rather difficult to mark the boundaries of this discipline since it includes biological metabolic processes and syntheses where metal ions and/or metal complexes are involved as well as ion transport, biomineralization, metal toxicity, chelate therapy, and the application of metal complexes in the treatment of different conditions.

In order to understand all aspects of the material discussed in the course a brief summary is given on metal coordination compounds: on their sterochemistry, equilibria and kinetics.

A rather fascinating problem is how certain metal ions have been selected during a long evolutionary process for biological purposes, and how the various metal containing systems developed due to the change of the geoenvironment.

The biosystems take up metals and non-metals from the geosphere. The entry of an element into the living system and its incorporation into a specific site of a biomolecule is a multistep process controlled both by thermodynamic and kinetic factors. This will be demonstrated on many examples including metal ions, anions, and neutral molecules.

In the following topics the roles of bioessential metals are dealt with. Many physiological phenomena are connected to the biochemistry of sodium, potassium, magnesium, and calcium, e.g. the conduction of nerve impulses, muscle contraction, and blood clotting.

Zinc metalloenzymes are most abundant in the living organism and catalyze a large number of hydrolitic and group transfer reactions. Iron, copper and molybdenum take part in many bioredox processes, and the former two metals also in the transport of molecular oxygen. Also, cobalt, manganese, chromium, nickel and vanadium have their roles in important biochemical processes.

Transition metals are needed to activate small molecules as CO_2 , N_2 and O_2 . The biochemistry of the latters is an intriguing topic of bioinorganic chemistry. The deposition of certain solid inorganic compounds (CaCO₃, Ca-phosphates, etc.) in the organism is under biological control and worth dealing with briefly.

Among the biomedical problems some metaldependent diseases (e.g. Wilson's desease, Menkes' desease) are touched upon. Much time will be devoted to metal complexes of antitumor activity and to those that are used in the treatment of rheumathoid artritis. Metal ion toxicity, an increasing hazard due to the contaminated environment, and chelate therapy are the topics that also deserve attention.

A look into the future closes the course.

BIOTECHNOLOGY

Department of Plant Anatomy (ELTE)

Topics

- 1. Introduction to biotechnology Historical evolution of biotechnology. Biotechnology as an interdisciplinary pursuit. Application of biotechnology. Substrates of biotechnology.
- 2. Applied genetics Selection and screening. Culture maintenance. Mutagenesis. Protoplast and cell fusion technologies.
- 3. Introduction to genetic engineering The emergence of recombinant DNA technology. Regulation and control of recombinant DNA experimentation. Basic recombinant DNA techniques. Restriction endonucleases and other DNA and RNA modification enzymes.
- 4. Gene cloning Transformation. Cloning vectors. Construction of libraries. Indentification of transformants and recombinants. Gene isolation and analysis. Nucleic acid labelling and detection. Hybridization analysis. DNA sequencing. DNA amplification by the polymerase chain reaction.
- 5. Expression of foreign DNA in bacteria Control of gene expression in bacteria and in eukaryotes. Expression of eukaryotic genes in bacteria. Alternative host organisms.
- 6. Cloning in higher organisms Gene cloning in mammalian cells. Vector systems. Gene transfer methods. Plant tissue culture techniques. Rotoplast fusion. Plant genetic engineering. Transformation using. Agrobacterium as a gene vector. Direct gene transfer. Crop improvement using molecular techniques: resistance to herbicides and diseases. RFLP-analysis.
- 7. Application of molecular biology in medicine Diagnosis of genetic disorders. DNA fingerprinting. Case applications.
- 8. Genetic engineering and the pharmaceutical industry Fermentation products. Antibiotics production. Protein production. Recombinant virus vaccines. Monoclonal antibodies.
- 9. Fermentation technology Microbial cultivation. Bioreactor design. Media design. Instrumentation and process control. Scale-up. Animal and plant cell cultivation. Solid substrate fermentation.
- 10. Enzyme technology Enzyme engineering. Site-directed mutagenesis. Enzyme stabilization. Product of enzymes. Immobilized enzymes. Immobilization of cells.
- 11. Biosensors Priciple and structure of biosensors. Application in clinical chemistry and medicine. Application in fermentation industries.

ENVIRONMENT PROTECTION – ECOLOGY

Institute of Public Health

"... One of the fundamental human rights is to live in a healthy environment appropriate to the dignity of man ... But the man is responsible for this environment not only to the contemporary society but to the rising generations too..." (Proclamation of the UNO conference on Environmental Protection, Stockholm, 16. June, 1972.)

Aim of the training:

Teaching of general and profession-orientated subjects of environment protection based on the studies of human ecology and environmental hygiene/epidemiology, which are obligatory for all students in the course of Hygiene and Epidemiology in the first semester of the fourth study-year.

PROGRAMME

A) General relations

 Environmental conditions of living. Biosphere. Adaptation to the environment.
 Self regulating systems in (global and local) ecosystems. "Nourishment chains" (systems) – ability for maintaining. The "environment" as a unified system.
 Regenerating and non-regenerating resources for the humans

(thesis of the "Roman Club").
 Influences of human activities on biogeochemical circulation.
 Anthropogenic pollution of the environment – indirect and direct dangers.
 Possibilities of protection: environment – spare technological procedures;
 biodegradability; technical development; waste materials: reduction of its quantity, reutilization, neutralization of toxic and radioactive materials.

III Primary prevention of actual environmental damages, hygienic standardization.

B) **Professional knowledge**

- Environmental pollution due to sanitary activities prophylaxis, protection.
- II Environmental pollution due to pharmaceutical activities-prophylaxis,
- protection:
 - a) production and preparation of drugs biotechnology, medical plants\drugs, basic and subsidiary materials of drugs, packaging materials, chemical medicaments, biological, immunological and microbiological products, plant protecting materials, insecticides, pesticides;
 - b) distribution and utilization of drugs;
 - c) scientific and laboratory activities.

PHARMACEUTICAL COMPOUNDING (obligatory elective course)

Department of Pharmaceutics Head: **Dr. István Antal**

Credit: 2

Second semester

Lectures

The significance of the pharmaceutical compounding. Past and future of pharmaceutical compounding. Combined preparations for individual therapy. Pharmacopoeial aspects of compounded dosage forms. Practical guidelines for traditional compounding (Formulae Normales). Pharmaceutical substances, synonyms. Dose calculations. Functional excipients in the formulation. The quality of starting materials. Practical problems of incompatibilities in combined preparations. The evolution of the patient centric formulation. Technological aspects of the quality for individual preparations. Operations and equipments. Procedures and techniques. Summary and overview, consultation.

PHARMACOINFORMATICS

3 hours/ week

1. Aims :

- to present state of art computing and telecommunication techniques including the INTERNET and to illustrate how these techniques are applied in drug industry, pharmacies and clinical patent management.
- to discuss various data base and knowledge base management systems, health care information systems, decision support tools for pharmacotherapeutic problem solving, educational programs and telemedicine techniques as they are applied in drug research and development, and in evidence based pharmacotherapy
- to teach pharmacy students how to rely on informatics tools when making cost effective decisions and trying to improve patient compliance.

2. Organization of the course :

The course consists of lectures and practices. Lectures provide theoretical foundations as well as examples of the use of various technologies and methods in research and pharmacy practice. Practices allow students to work with different medical databases, information systems, and decision support tools that address various drug related problems

	Lectures	References	Hour
1.	MEDICAL INFORMATICS AS A DISCIPLINE	HEALTH INFORMATICS IN THE 21st CENTURY by John Mantas, Document 506 GLOBAL INFORMATION SOCIETY AND HEALTH- CARE by Jean ROBERTS Document 508	2
2.	DATA TYPES, CLINICAL DATA-BASES, DATA BASE MODELS, AND MEDICAL IMAGES	TERMING, CODING AND GROUPING SYSTEMS IN HEALTH by Rudiger KLAR, Document 416 DATABASES, SPREADSHEETS AND WORD PROCESSING IN HEALTH by Francesco PINCIROLI, Luisa PORTONI Document 401	2
3.	THE THERAPEUTIC PROCESS AND THE MEDICAL RECORD	HEALTHCARE RECORD by Jos AARTS Document 407	2
4.	HEALTH CARE INFORMATION SYSTEMS	OPERATIONAL USES OF HOSPITAL INFORMATION SYSTEMS by Marie-Christine JAULENT, Document 405 ARCHITECTURES IN HEALTH by Sergio TORRES, Jose TORRES Document 422	2
5.	COMPUTER-BASED SUPPORT FOR PHARMACISTS (AN OVERVIEW)	EH Shortliffe and LE Perrault Medical Informatics, Reading MA Ad- dison Wesley, 1990	2
6.	REPRESENTING DRUG-RELATED KNOWLEDGE (classification of drugs, describing drug properties, drug informationsystems, examples	EH Shortliffe and LE Perrault Medical Informatics, Reading MA Ad- dison Wesley, 1990	2
7.	HOSPITAL PHARMACY AND DRUG-USE MONITORING SYSTEMS (informatics of public and hospital pharmacies, patient education	EH Shortliffe and LE Perrault Medical Informatics, Reading MA Ad- dison Wesley, 1990	2
8.	INFORMATION RESOURCES AND THE INTERNET, KNOWLEDGE COUPLERS EVIDENCE-BASED DRUG THERAPY (pharmacoeconomics and outcome research planning therapeutic protocols)	REFERENCE SOURCES IN HEALTH by Jean ROBERTS, UK Doc- ument 412 ELECTRONIC COMMUNICATIONS IN HEALTH by Enrique GOMEZ AGUILERA, Francisco DEL POZO GUERRERO, Teresa ARREDONDO WALDMEYER, Andres MARTINEZ FERNAN- DEZ, Document 403	2
9.	INFORMATICS OF DRUG PRESCRIPTION	EXPERT SYSTEMS AND ARTIFICIAL INTELLIGENCE IN HEALTH by Jana ZVAROVA, Jan TALMON Document 424 COMPUTER-AIDED DIAGNOSTIC SUPPORT by Ann OOSTENDORP, Document 408	2
10	. COMPUTER SUPPORT FOR PLANNING DRUG THERAPY (Watchdog, focusing, critiquing and advisory systems, patient-centred pharmaco-therapy), PLANNING DRUG DOSAGE	EH Shortliffe and LE Perrault Medical Informatics, Reading MA Ad- dison Wesley, 1990 Van Bemmel and M.Musen: Handbook of Med- ical Informatics, Springer, 197 (www.mihandbook.stanford.edu)	2
		Total:	20

	PRACTICES:	10 hours
1.	Informatics of high throughput screening (METABOL EXPERT)	2
2.	Drug information systems (Micromedex and Internet resources) Resources of evidence based medicine (Cochrane library)	2
3.	Analysis of dose response data in pharmacology (PROBIT analysis) Evaluation of clinical trial data (analysis of variance)	2
4.	An antibiotic advisor UTI	2
5.	A drug-dosage planning assistant USC PACK	2
	Total:	10

CLINICAL PHYSIOLOGY LABORATORY MEASUREMENTS

GYKIKKFVE1A

Elective course for pharmacy students in the 3rd, 4th and 5th years.

The purpose of the subject is to familiarize pharmacy students with the background, uses and implementation of clinical diagnostic measurement techniques which are closely related to the knowledge acquired on the physiology course. The course provides theoretical and practical knowledge which helps to integrate basic physiology in the broaders cope of clinical and pharmaceutical sciences. Moreover, the subject helps to develop fundamental skills which are relevant for proficient medical professionals (measurement skills, presentation of precise documentation, cooperativity etc.).

Program:

Theoretical course:		
1 st week	Introduction to the bases of measurement techniques.	
2 rd week	Scientific and diagnostic measurement techniques for studying the electrophysiology of motor nerves, neuromuscular transmission and skeletal muscle.	
5 th week	Electrophysiology of the heart, cardiac arrhythmias. Regulation of arterial blood pressure under physiological and patho- physiological conditions. The characteristics of the pulse wave propagation.	
7 th week	Mechanical properties of the respiratory system under physiological conditions and in respiratory diseases. Adaptation of the cardiorespiratory system to physical exercise.	
9th week	Regulation of carbohydrate metabolism and its disorders.	
11 th week	Reflexes of the somatic nervous system. Function of the vestibular system. Regulation of body position under physiological conditions and in neural disorders.	
13 th week	Consultation	
Practical cours	e:	
2 nd week	Introduction to the uses of instruments and data acquisition software applied during the course	
4 th week	Electromyography, electroneurography. Study of the electrical properties of the skeletal muscle, measurement of the impulse conduction velocity of a motor nerve by Biopac student lab system.	
6 th week	Measurement of pulse wave velocity. Recording and analysis of a 12-lead ECG. Demonstration of pathological ECG record- ings. 8 th week - Spirometry. Studying the circulatory and respiratory adaptation responses during physical exercise	
10 th week	Oral glucose tolerance test, determination of HbA _{1c} level, analysis of normal and pathologic glucose tolerance curves.	
12 th week	Neurological examination techniques: examination of motor reflexes and vestibular function, EOG.	
13 th week	Optional lab retake.	
14 th week	Repetition and practice for the practical exam	

Acknowledgement of the course: Attendance of at least 6 lab practices and 5 theoretical classes; presentation of the completed lab manual to the tutor. Semifinal exam. Two (2) credit points will be provided after a successful completion of the course.

PHYSICAL BASICS OF BIOPHYSICS – obligatory elective subject for Pharmacy (Dentistry students may sign up, too)

Code: GYFIZBFAE1A

EVALUATION OF PROGRESS

Grading system

- a) Five-scale excellent (5) good (4) satisfactory (3) pass (2) fail (1)
- b) Three-scale merit (5) pass (3) unsatisfactory (1)

Types of evaluation

- 1. Practical course grade (gyakorlati jegy) (according to either the 5-scale or the 3-scale grading system)
- 2. Semi-final examination (kollokvium) Evaluation of a one-semester subject matter (1-5 grading system)
- 3. Final examination (szigorlat) Evaluation of the whole subject matter (1–5 grading system)
- 4. Obligatory practice at hospital (3-scale grading system)

Average Results

When the student has taken all the compulsory examinations and fulfilled every other obligation during the examination period, the semester will be validated in the student's lecture book by the Dean's signature.

The student's average results are:

Outstanding	(kitűnő)	if the average is 5.00
Excellent	(jeles)	if the average is 4.51–4.99
Good	(jó)	if the average is 3.51–4.50
Satisfactory	(közepes)	if the average is 2.51–3.50
Pass	(elégséges)	if the average is 2.00–2.50

EXEMPTION

Exemption **from courses** and examinations may be granted on the basis of the student's previously documented studies or additional credit-by-examinations stipulated by the departments. The student must submit all relevant documents at the departments concerned. Exemption may be granted by the Educational Board of each Faculty on the basis of the department's written prior approval. "Checking" exams can be prescribed by the departments. PE exemption: Only under condition the diagnosis is checked by a licensed Hungarian health care practitioner, too.

Application deadline: Prior to registration to the first and the second semester!

No reduction of tuition fee is granted in case of exemptions.

DIPLOMA WORK (Degree Thesis) AT THE FACULTY OF MEDICINE AND PHARMACEUTICAL SCIENCES

The dissertation and degree thesis

- 1. In Bachelor's programmes, Master's programmes and undivided programmes, students must prepare a dissertation or a degree thesis in order to obtain a degree. The purpose of the dissertation is to contribute to students' improving their ability of discernment and mastering the methods of using libraries and researching specialist literature, and their ability to formulate their opinions succinctly and accurately, by means of independently performing a scientific study of any problem in the given area of science.
- The preparation of a dissertation (degree thesis) is guided by a thesis supervisor and occasionally also by a consultant. The thesis supervisor can be a professor or researcher of the faculty, or, if authorised by the dean, an external expert. The consultant is a university lecturer, a researcher or an external expert who supports the student's work. An external thesis supervisor may only be used if an internal consultant is used. Both the fundamental and newest Hungarian studies relating to the subject must be used in processing the subject.
 The rules for announcing and approving topics for dissertations (degree theses):
- The educational organisational unit prepares a list of topics, which must also contain the names of consultants. The list of topics must be published both on the department's notice board and electronically by the last day of the examination period of the first term of every year, in the case of Bachelor programmes, Master programmes and undivided programmes at least four terms before the year of graduation.
- 4. Rules for applying for the topics:

Students may choose any of the announced topics. Students may also choose topics other than those announced subject to the approval of the head of the competent educational organisational unit. The student must choose and submit the topic of their dissertation to the head of the given educational organisational unit at least one year before graduation at the latest. If the topic is approved, the head of the unit will arrange its registration and provide a consultant. The chosen topic must discuss a current issue of the discipline concerned.

5. Formal requirements of the dissertation:

The minimum length of the degree thesis is 50,000 characters and it cannot be longer than 100,000 characters (without spaces). Font: Times New Roman, 12. Tables and the cited literature will be included in the length of the thesis but diagrams, other relevant literature and footnotes will not. The degree thesis must be submitted in 2 copies, stapled in a folder or bound as a book. The cover must show the title of the thesis, the student's name, year and study group, the date of submission and the consultant's name and workplace. If authorised by the head of department, the student may submit their degree thesis in a foreign language.

6. The submission deadline:

The student must meet the consultant at least three times:

- for the first time no later than 1 October of the year of graduation: the consultant outlines the requirements relating to the preparation of the degree thesis and the possibilities inherent in the topic;
- for the second time no later than 15 November of the year of graduation: the student gives an account of the work until that time;
- for the third time no later than 1 January of the year of graduation: the consultant evaluates the results achieved by the student and advises the student on finalising the findings.

The finished dissertation must be submitted to the department in duplicate, by January 15 of the year of graduation at the latest. At the Faculty of Pharmaceutical Sciences this deadline is 1 March in the year of graduation.

- 7. The dissertation (degree thesis) must be assessed by a reviewer. The reviewer must be an external expert holding a university degree (college degree) or a university lecturer or researcher invited by the head of the educational organisational unit. The reviewer will also prepare a separate evaluation. The assessments must be sent to the candidate at least 5 days before the dissertation (degree thesis) defence. The reviewer and the thesis supervisor make a proposal on grading the dissertation (degree thesis).
- 8. The subject of dissertations (degree theses) must fall within mandatory subjects and they are evaluated on a scale of five grades (1-5). The extent of independent research demonstrated in the paper must be taken into account when assessing the dissertation (degree thesis). Dissertations are defended before a panel made up of three members from the educational organisational unit, the chairperson of which is the head of the educational organisational unit or a deputy, and its other members are the consultant and a lecturer of the department. The department may also invite an external lecturer as the third member of the panel, for example from among the private lecturers of the university.

In the event that the thesis is graded as "fail", the head of the educational organisational unit informs the student of this and the conditions of a repeat thesis.

A dissertation (degree thesis) marked as "unsatisfactory" can only be corrected once.

9. After the defence, the head of the educational organisational unit will hand over a copy of the dissertation to the student and the other copy, as well as a copy of the minutes certifying the defence, will remain with the educational organisational unit. Dissertations must be stored in the library of the educational organisational unit for five years.

A copy of the thesis defence minutes must be sent to the competent dean's office by 1 April at the latest.

- 10. Based on the proposal of the head of the educational organisational unit responsible for the subject of the dissertation, the dean of the competent Faculty may exempt the following students from the obligation of writing a dissertation:
 - fstudents who prepared an individual competition essay or a joint competition essay (with two authors) for a competition announced by the rector, and achieved first place.
 - fstudents publishing a paper as the primary author in a peer-reviewed scientific journal.

Students must submit their applications for exemption by the end of the academic year preceding the year of graduation. The exemption from writing the dissertation does not involve an exemption from the obligation to defend it.

The educational organisational unit will return a copy of the successfully defended dissertation (degree thesis) to the student after the defence, and the other copy must be stored in the organisational unit in accordance with the effective archiving rules.

A copy of the form specified in Annex 1, completed in duplicate, must be sent to the competent Dean's Office 60 days before the final examination period, while the other copy of the form will remain at the organisational unit.

PLAGIARISM DECLARATION

at the Faculty of Medicine

(Declaration on compliance with regulations on preparing thesis work)

is my own work, and I adhered to the provisions of Act LXXVI of 1999 on Copyright in the preparation of the thesis work and respected the rules laid down by the University.

I acknowledge by signing this declaration that Semmelweis University refuses accepting the thesis provided it can be proved that this thesis work was not carried out by me or violation of copyright law arises with regard to the thesis.

I am also aware, that the authorization holders may take action against me because of violation of copyright law, which may result in legal consequences, including consequences of civil law, infringements act and criminal law.

Budapest,, 20......

student's signature

700

New rules and requirements of writing a diploma thesis at the Faculty of Dentistry are announced on the website.

COST OF THE PROGRAM FOR TWO SEMESTERS

Tuition fee for the 2020/2021 academic year

Medicine	USD 9,100 / semester
Dentistry	USD 9,100 / semester
Pharmaceutical Sciences	USD 6,000 / semester

The first year tuition fee (+ the enrollment fee – USD 220 payable in the 1st semester) should be paid in two installments (unless the Hungarian Visa regulations have different conditions):

Medicine	USD (USD 9,100 enrollment	9,320 tuition fee is p	fee + USD 220 enrollment fee ayable once during the studies)
Dentistry	USD (USD 9,100 enrollment i	9,320 tuition fee is p	fee + USD 220 enrollment fee ayable once during the studies)
Pharmaceutical Sciences	USD (USD 6,000 enrollment	6,220 tuition fee is p	fee + USD 220 enrollment fee ayable once during the studies)
Before February 1	Medicine Dentistry Pharmacy	USD USD USD	9,100 9,100 6,000

Dentistry students pay additional material fee:

years 5, 4 & 5.	030 3,000
(first semester:	USD 1,800
second semester:	USD 1,800)

Please note: the material fee is subject to change; also 2nd year students taking clinical subject(s) from the 3rd year have to pay material fee 3rd, 4th and 5th year students may apply for exemption from paying the material fee under certain conditions. Please inqure about the rule regarding eligibility for exemption at the English Secretariat.

Students admitted to the 1st year are obliged to pay a deposit fee of USD 2000 to confirm their seat. The deposit fee is non-refundable. Students failing a year or after passive status pay the sum of the year they join after the failure/ passive status.

Transfer students pay the highest tuition fee in force in the actual academic year.

Application fee for transfer students: USD 350 (non-refundable)

Enrollment fee for transfer students: USD 220 (payable together with the tuition fee)

The student admitted delaying the commencement of his/her studies is obliged to pay the tuition fee of that academic year when he/she starts his/her studies.

Payment Details

Payments can be made by bank transfer in **USD** to the bank account of Semmelweis University:

Account name ("account with institution"): Semmelweis University

Account (IBAN) Number: HU67 1000 4012 1000 8016 0051 4534

Bank name: Magyar Államkincstár (Hungarian State Treasury)

Bank address: 4. Hold Street, H-1054 Budapest, Hungary

Swift/BIC code: HUSTHUHB (correspondent Swift/BIC code: MANEHUHB)

Note: The money transfer sheet should include the **name of the student** as it is written in the passport and the remark invoice ID number. Personal checks and money orders are not accepted.

Please note that the above mentioned net amounts have to arrive to the account – the bank commission charges have to be paid by the student.

The bank account at the Hungarian National Treasury is **not a classic bank account**. There is absolutely no personal administration of payments in that institution, and they do not have a cashier, so going there to pay fees personally is pointless.

Please understand that it is only the recipient instituion of Semmelweis Univerity's tuition fees, and not a bank.

Important: If the tuition fee is not credited to our bank account by the above deadlines, students have to pay a default charge to the university and may be suspended/dismissed.

OTHER MEDICAL UNIVERSITIES IN HUNGARY

University of Szeged, Hungary

H-6720 Szeged, Dugonics square 13. Phone: (+36-62) 544-000 Fax: (+36-62) 546-371 Foreign Students' Secretariat Head: Andrea Lehocki-Balog office.fs@med.u-szeged.hu Tel.: + 36 62 545-458

University of Pécs, Medical School

H-7624 Pécs, Szigeti út 12., HUNGARY General Medicine in English Dentistry in English Pharmacy Lívia Csidei (Ms.) Head of the English Student Service Center Tel.: +36 72/ 536-018 Fax: +36 72/ 536-110 E-mail: studentservice.center@aok.pte.hu

University of Debrecen Medical and Health Science Center

International Education Center Address: Nagyerdei krt. 98. 4032 Debrecen Hungary E-mail: info@edu.unideb.hu Tel.: + 36 52 258-051, + 36 52 258-052

VISA AND RESIDENCE PERMIT INSTRUCTIONS

Application for Entry Visa & Residence Permit

Foreign nationals (**under visa obligation**) wishing to pursue studies in Hungary are required to apply for entry visa & residence permit (exceeding 90 days) in their home countries and enter the country on the entry visa issued by the Hungarian Embassy or Consulate. The entry visa is valid for a single entry and up to 30 days of stay in Hungary. Within 3 DAYS upon arrival, you will have to register your address and within 30 DAYS you have to submit your application for the residence permit to the Immigration Office in Budapest.

The following documents are required for the application for the entry permit:

- A wholly and legibly completed Application for Residence Permit (+ INSET 14 Purpose of Study or Student Mobility)
- a valid passport (valid for at least eighteen months at the time of submitting the application)
- two passport size color photos (not older than six months)
- Letter of Acceptance from the University
- proof of payment of the tuition fee* (you get it from the University after your tuition fee has arrived)
- **proof of financial means** ensuring livelihood in Hungary (bank statement about the balance of your credit card, cash, or a declaration by the parents that they will provide the funds for all your expenses in Hungary)
- an application fee of 60 EUR
- the Hungarian Embassy may ask for your flight reservation and air ticket
- the address of your residence in Hungary
- certification of valid medical insurance coverage in Hungary

REGISTRATION PROCEDURE FOR EU AND EEA CITIZENS

Citizens of the member states of the European Union and the European Economic Area are not required to obtain a student visa in order to enter Hungary for the purpose of studies. They will, however, be required to register their stay with the Immigration Office not later than 93 days, following their entry into Hungary.

The following documents are required for registration:

- completed Data Sheet for the Issuance of Registration Certificate and for the Registration of Residence
- school certificate in Hungarian from the secretariat of your college / university
- your ID card or your valid travel document
- lease contract (*lakásbérleti szerződés*) for the apartment (It has to specify the landlord's and your personal data date and place of birth, mother's maiden name, permanent address, landlord's ID number, your passport number. The contract has to be signed by two witnesses.)*

If you stay with an acquaintance or a relative as a guest, a statement of admission (befogadói nyilatkozat) has to be attached by the owner of the apartment that you stay with them as a guest. If the apartment is your property, a property sheet (tulajdoni lap) has to be attached to verify it. If you rent the apartment through an agency and you signed a contract with the agency, the agency should provide the authorization received from the owner of the apartment.

- The administrative service fee charged for the issue of a registration certificate is HUF 1,000, payable by credit card at the Immigration office
- proof of funds to cover your expenses (bank statement for 3 months) You may also be required to hand in maintenance statement signed by your parents.

^{*} Citizens of countries in Africa, Asia, Eastern Europe (under visa obligation) and the Middle East are required to transfer the tuition fee for the first academic year in full before applying for the entry permit.

If you are the holder of the bank account (opened in your home country or in Hungary), it is sufficient to enclose a bank statement on the current balance. If the holder of the account is a parent or a relative, you should document that you have exchanged or drawn funds from ATMs in the amount of at least approx. USD 800 and enclose a photocopy of the bank card.

• copy of a valid medical insurance coverage in Hungary (EHIC card, contract with a private medical insurance company or a valid health insurance policy), but take the original too with you.

If you meet all conditions for residence in Hungary for a period longer than three months, the immigration authority will issue a Registration Certificate to you that contains the address of your first residence in Hungary. You will receive your ID card on spot and Address Card by mail. Please see below for how to reach the Immigration Office.

Application for residence permit for students from non-EU countries with a permanent residence visa

Within 30 days of your arrival in Hungary, you have to go to the Immigration Office to Clients' Service II. ("II. sz. Kirendeltség") to receive your residence permit and to register your accommodation in Hungary.

The following documents are required:

- your passport with your visa inside
- 1 passport-size photo
- your lease contract
- completed address registration form (signed by the owner of the property).

Please see below for how to reach the Immigration Office.

Application for residence permit for students from Non-EU countries with a permanent residence visa

After arriving in Budapest

Within **30 days** on arrival in Hungary, you have to go to the Immigration Office to Clients' Service II. ("II. sz. Kirendeltség") to receive your residence permit and to register your accommodation in Hungary.

The following documents are required:

- your passport with your visa inside
- 1 passport-size photo
- your lease contract
- completed address registration form (signed by the owner of the property)

Application for residence permit for citizens of Non-EU countries arriving without visa

You are required to submit your application for residence permit to the Immigration Office within 90 days after your arrival. Documents required for the residence permit:

- passport valid for at least 3 more months longer than the period you are applying for (about 15 months)
- application form (Application for Residence Permit + INSET 14 Purpose of Study or Student Mobility)
- address registration form ("lakcímbejelentő") signed by the owner(s) or an authorized person
- lease contract for the apartment (It has to specify the landlord's and your personal data: date and place of birth, mother's maiden name, permanent address, landlord's ID number, your passport number. The contract has to be signed by two witnesses.)
- 1 passport-size photo
- the administrative service fee charged for the issue of a registration certificate is HUF 18,000 payable by credit card at the Immigration
 office
- proof of funds to cover your expenses
- certification of valid medical insurance coverage in Hungary
- school certificate in Hungarian from the secretariat of your college /university.

Please see below for how to reach the Immigration Office.

Application for extension of residence permit for citizens of Non-EU countries

You are required to submit your application for extension of residence permit to the Immigration Office at least 30 days prior to the expiry of your present one.

Documents required for extension of residence permit:

- passport valid for at least 3 more months longer than the period you are applying for (about 15 months)
- application form (Application for Residence Permit + INSET 14 Purpose of Study or Student Mobility)
- address registration form ("lakcímbejelentő") signed by the owner(s) or an authorized person
- lease contract for the apartment (It has to specify the landlord's and your personal data: date and place of birth, mother's maiden name, permanent address, landlord's ID number, your passport number. The contract has to be signed by two witnesses.)
- 1 passport-size photo
- the administrative service fee charged for the issue of a registration certificate is HUF 10,000 payable by credit card at the Immigration office
- proof of funds to cover your expenses
- certification of valid medical insurance coverage in Hungary
- school certificate in Hungarian from the secretariat of your college /university.

Please see below for how to reach the Immigration Office.

How to reach the Immigration Office in Budapest

The Immigration Office is located at the Twin Office Center Office Building, Szegedi út 35-37, 1135 Budapest (13th district), Hungary. Within the building, the Immigration Office is located at the Ground Floor, Clients' Service II. ("II. sz. Kirendeltség")

Office hours:

Monday	8:30 am to 1:00 pm
Tuesday	1:00 pm to 5:00 pm
Wednesday	8:30 am to 12:00 noon
Thursday	8:30 am to 1:00 pm
Friday	8:30 am to 12:00 noon
E-mail: bp2@ba	h.b-m.hu (It is possible to book an appointment in advance.

To get there, please take buses number 20E, 30, 30A or 32 from the Keleti Railway Station ("Keleti pályaudvar") and get off at the bus stop named 'Szegedi út'.

REDUCTION OF TUITION FEE

1. Students may apply for a reduction after completing the first semester of the first academic year if their semester weighted average results were above 4.51. From the third semester the reduction is granted under an extra condition: from the end of the second semester, all their semester weighted average results have to be continuously above 4.51, including the weighted average of the second semester. The reduction is 10% of the tuition fee with average results above 4.51 and 15% with average result of 5.00.

Students may apply for a reduction after completing each semester on condition they meet the above requirements, and in case they have completed all the obligatory semester subjects, and gained minimum 20 credits in each semester.

No reduction is given in case of exemption from one or more subjects (except from PE).

No reduction is given during retaken semesters on account of subjects already completed.

Students eligible for the tuition fee reduction pay with 10-15% reduced tuition fee in the next semester.

Application deadlines:

first semester:	until the 15th of September
second semester:	unitl the 15th of February

2. Students taking just either one normal or one exempted "FM" course (regardelss plus how many exam courses "CV") in a semester pay 50% of their semester tuition fee. Signing up solely for one or more exam courses "CV" also entitles for the 50% reduction. (Note: The permission can be granted upon the student's written request that has to be handed in at the English Secretariat before starting the semester!)

3. Tuition fee for the 6th year:

In case the student completes all the rotations regardless whether the 1 week Transfusion course is completed at Semmelweis University or abroad, he/she has to pay 80% of the tuition fee valid in the academic year. The relevant acceptance letters should be handed in latest until December 15, 2020. Otherwise the student is not entitled for the reduction!

Please write a letter of request addressed to the Director of the Directorate of International Studies when applying for the 20% reduction!

HOW TO GET A CERTIFICATE WHICH PROVES THAT THE DIPLOMA ISSUED BY SEMMELWEIS UNIVERSIT IS IN CONFORMITY WITH THE EU REQUIREMENTS, AND A CERTIFICATE OF GOOD STANDING

Compiled by The National Healthcare Service Center (Állami Egészségügyi Ellátó Központ; ÁEEK)

This brochure aims to briefly summarize the procedures of the ÅEEK that are needed to access the healthcare profession granted by your diploma, either in Hungary or abroad.

After graduation your University has 30 calendar days to report the diploma details of the newly graduated students to the ÁEEK's Department of Registration in order to get them listed in the National Basic Register of the Healthcare Professionals. (The register is publicly available: https://kereso.enkk.hu/)

Once you have your diploma listed in the Basic Register, you should decide if you intend to

- leave Hungary and work abroad (see point A) OR
- stay and work in Hungary (see point B)

We hope you find the information provided in this publication to be informative and helpful.

National Healthcare Service Center Directorate General of Human Resources Development

A) I INTEND TO WORK ABROAD

If you intend to work abroad, your Hungarian diploma has to be recognised by the Host Country's competent authority and thereafter you will be required to get further registrations or licences depending on the host country's regulation.

It is highly recommended to contact the host country's authority first to get detailed information on the recognition procedure, including the list of the necessary documents and the confirmation if licence to practice (operational registration) in Hungary is needed or not.

Amongst the requested documents there can be multiple certificates that are issued by the **National Healthcare Service Center (ÁEEK)**. The most frequently requested certificates are the certificate of conformity and good standing.

The procedure takes maximum 30 calendar days. Normally the certificates can be issued between 8-15 calendar days. Your patience is highly appreciated.

(You can visit the ÁEEK's website for further information on all types of certificates:

www.enkk.hu (switch to the English menu / Department of Recognition and Monitoring)

CERTIFICATE OF CONFORMITY

It attests that your diploma (in medicine, dentistry, pharmacy, nursing or midwifery) satisfies the training requirements laid down in European Parliament and Council Directive 2005/36/EC on the recognition of professional qualifications.

CERTIFICATE OF GOOD STANDING

It attests that the professional

- has a clean criminal record, and is not under the effect of a non-appealable sentence imposed for a criminal offence suspending the health care activity concerned on the day of issue of this certificate;
- is not under the effect of a non-appealable sentence imposed for the violation of the professional ethical rules:

- is entitled or not to pursue healthcare activities in Hungary.

The entitlement (right to practice) basically depends on the membership in the professional chamber (Hungarian Medical Chamber (MOK), Hungarian Pharmaceutical Chamber (MGYK), Hungarian Chamber of Health Care Professionals (MESZK) and on the Operational **Registration.****

PROCEDURE IN RELATION TO THE CERTIFICATES

In order to get the necessary certificates (required by the host country's authority), the following documents have to be submitted to the ÁEEK's **Department of Recognition** and Monitoring via e-mail to recognition@aeek.hu (or by post or in person)

- request form (available on www.enkk.hu at Department of Recognition and Monitoring / Certificates for recognition in a foreign country - scanned copy or photo of your passport or ID card,
- scanned copy of photo of any official document that proves your current address in Hungary or abroad (if available)
- scanned copy or photo of your diploma,
- transfer receipt about the fee of the procedure.(15 000 HUF/requested type of certificate)

CONTACT DETAILS OF THE DEPARTMENT OF RECOGNITION AND MONITORING

E-mail:

recognition@aeek.hu

Telephone:

(+36)-1-919-3336 (Mon-Thu: 8.30-16.00; Fri: 8:30-13:30)

Address of personal consultation: 1085 Budapest, Horánszky utca 24. (ground floor)

Opening hours: Tuesday: 8.30-12.00. and 13.00-15.30

Postal address:

National Healthcare Service Center Directorate General of Human Resources Development Department of Recognition and Monitoring 1444 Budapest Pf.: 270.

^{**} From 1st January 2017, if the healthcare professional with foreign citizenship declares that he or she does not intend to pursue healthcare activities in Hungary (currently), he or she can apply for the operational registration without the membership of the chamber. (For further info please see Subsection 3 of point B) or contact the Department of Registration in e-mail: omn@aeek.hu)

Bank account details: Állami Egészségügyi Ellátó Központ 10032000-01490576 From foreign account: National Healthcare Service Center Swift code: HUSTHUHB IBAN number: HU06 1003 2000 0149 0576 0000 0000 Bank: Hungarian National Bank

Please note that the fee of the transfer and the exchange is also your cost!

B) I INTEND TO WORK IN HUNGARY

In order to start working as a health professional in Hungary, the following steps have to be taken:

1. Basic Register (automatic), medical stamp for doctors and dentists (by request)

After the graduation the University has 30 calendar days to report the diploma details of the newly graduated students to the ÁEEK's Department of Registration in order get them listed in the National Basic Register of the Healthcare Professionals.

Once you are registered in the Basic Register, you will have a unique registration number, which can be checked at the public database: https://kereso.enkk.hu/)

In case of doctors and dentists the ÁEEK's Department of Registration *ex officio* notifies the National Health Insurance Fund of Hungary (Nemzeti Egészségügyi Alapkezelő; **NEAK**) about the professionals personal details, address and basic registration number in order to prepare the professionals' medical stamps.

Despite the notification, **the medical stamp will not be prepared unless you apply for it by submitting a request form to the NEAK**. (web: http://neak.gov.hu/; e-mail: neak@neak.gov.hu; stamp request form can be downloaded: http://www.oep.hu/nyomtatvanytar/ - Kérelem az első névre szóló orvosi bélyegző kiállítása iránt)

2. Membership to the competent professional chamber (by request)

Membership of the competent professional chamber is compulsory for those, who are intending to work in Hungary. For the details of the procedure (form, fees, etc.), please contact your chamber:

- doctors, dentists: Hungarian Medical Chamber (www.mok.hu; Magyar Orvosi Kamara)
- pharmacists: Hungarian Chamber of Pharmacists (www.mgyk.hu; Magyar Gyógyszerészi Kamara)
- healthcare professionals (physiotherapists, nurses, midwives, etc.): Chamber of Hungarian Helathcare Professionals (www.meszk.hu; Magyar Egészségügyi Szakdolgozói Kamara)

3. Operational Registration ('működési nyilvántartás') (by request)

In order to provide healthcare services unsupervised, - besides the chamber membership - the professional has to hold a valid operational registration. The application should be submitted to the ÁEEK's **Department of Registration and Training**. Further information can be found on the ÁEEK's website (www.enkk.hu / English menu / Deapertment of Registration and Training) or you can contact our colleagues.

PROCEDURE in relation to the operational registration

For your first operational registration, please be informed that you need to submit the following documents:

- filled out and signed application form

The registration to the Operational Register is only possible upon request, therefore applicants are required to fill out the application form and submit it either by post (as a registered letter) or in person (at our customer service) (Download: www.enkk.hu – Department of registration and training (basic and operational registry/application forms or available at the customer service)

- transfer receipt of the administrative fee

Upon first registration **3.000,– HUF** administrative fee has to be paid by bank transfer to the bank account held by ÁEEK (**bank account number: 10032000-01490576-00000000**).

(The acknowledgment of the payment shall be attached to the application.)

- Either the proof of membership of the chamber (if you are intending to work in Hungary) Or the declaration form for foreign citizens (if you are intending to work abroad and the Hungarian registration is required by the Host Country)

Membership of the competent professional chamber is compulsory for those, who are intending to work in Hungary!

If you are a healthcare professional with foreign citizenship who do not intend to work in the area of healthcare currently in Hungary and the license for the healthcare activity – certificate of the Hungarian operational registration – is only necessary for the recognition of your professional qualification abroad, it is not obligatory to have the membership of the chamber.

As indicated above, healthcare professionals can obtain operational registration without the membership of the chamber, provided that the Hungarian or English version of the Declaration for foreign citizens has been attached to the application form. CONTACT DETAILS OF THE DEPARTMENT OF REGISTRATION AND TRAINING

Address: 1085 Budapest, Horánszky utca 24. (ground floor)

Opening hours: Monday to Thursday 8.30-15.30

E-mail: omn@aeek.hu

Telephone: (+36)-1-411-1146 (Mon-Thu: 8.30-15.30)

4. Working as a self-employed (by request)

If you intend to provide healthcare services as a self-employed, you are required to have an operational licence ('működési engedély') too, for which you can apply at the Policy Administration Service of Public Health of the territorially competent Government Office. (Contact details of the regional offices: http://www.kormanyhivatal.hu/hu/elerhetosegek)

5. Entering a specialist training programme

In case you have plans to enter a specialist training programme in Hungary, for detailed information (such as language requirements, training costs, opportunities for financial support) please contact the Continuing Education Center of your University.

SAMPLE APPLICATION FORM IN ENGLISH AND IN HUNGARIAN

- Attention, forms are informational only, original letterhead documents are to be required from the office of ÁEEK or to be downloaded from their website.

REQUEST concerning the issue of a certificate to be used in the recognition of the diploma, qualification in another country

I'm (name) applying for the following certificate(s) that I need to

get my diploma, qualification recognised in (name of the host country).

(Please put an X before the requested certificates):

certificate of conformity issued for doctors, specialists in medicine, dentists, specialists in dentistry, pharmacists, nurses, midwives (with reference to Article 24., 25., 28., 29., 31., 34., 35., 40-41., 44. of Directive 2005/36/EC)

certificate of acquired rights issued for doctors, specialists in medicine, dentists, specialists in dentistry,

pharmacists, nurses, midwives (with reference to Article 23., 27., 30., 33., 37., 43. of Directive 2005/36/EC)

□ certificate which attests the length of the healthcare activity pursued in Hungary

□ certificate of good standing (Pursuant to Section. 110/A of Act CLIV of 1997)

certificate which attests the level of the qualification (with reference to Article 11. of Directive 2005/36/EC)

□ other

Personal data (Please write with capitals):

Surname: •
Given name: •
Name at birth:
Mother's maiden name: •
Place and date of birth:
Registered address:
Postal address:
Telephone:
E-mail:
Basic register number:

I enclose the following documents (Please put an X before the selected ones):

- □ copy of the passport/ID card
- copy of the proof of evidence concerning the applicant's registered address

□ copy of the diploma/qualification

- □ fee (by postal cheque or bank transfer)
- □ original certificate from the employer or its certified copy (in case of the certificate of acquired rights, or in case of the certificate which attests the length of the healthcare activity pursued in Hungary)
- □ other

I'd like to get the issued certificates (Please put an X before the selected one):

- □ personally
- □ by post
- D by an authorised person (please attach an authorisation)
- □ other way:

Other remarks, requests:

I hereby declare that the information contained in my application are true, and I agree with the use of the aforementioned data by the Center with regards to my application. Furthermore, I authorise the Center to obtain the necessary information from the competent authority in connection with the Certificate of Good Standing.

Date:

signature

APPLICATION

for medical doctors, dentists, pharmacists and clinical health workers

(Kérelem orvosok, fogorvosok, gyógyszerészek és klinikai szakképesítéssel rendelkezők részére)

Before filling out the application please read the instructions first!

(Kérjük az adatlap kitöltése előtt olvassa el a kitöltési útmutatót!)

I. Personal details (*: It is obligatory to fill out)

[Kérelmező adatai (A *-gal jelölt adatok kitöltése kötelező)] **Basic and Operational registration number:** (Alap és működési nyilvántartási szám) *Name (your name in the ID card or passport): [Családi és utónév (személyi igazolványban szereplő név)] *Surname (Vezetéknév): * Given name (Utónév): *Name at birth (Születési név): *Surname (Vezetéknév): *Given name (Utónév): *Mother's maiden name (Anyja születési neve): * Place and date of birth (Születési hely, idő): *Sex (Neme): * Nationality (Állampolgársága): * During the health activity I would like to use: (Az egészségügyi tevékenység során használt név) { } My name (Családi és utónév) { } My name at birth (Születési név) * I would like to use the title 'Dr': { } Yes (Igen) { } No (Nem) (Doktori címemet használni kívánom) * Registered address (Lakóhelv): * Mailing address (if it is different from the registered address): (Levelezési cím (amennyiben a lakóhelytől eltér)) Retired (Nyugdíjas): { } Yes (Igen) { } No (Nem) * E-mail address (E-mail c(m): Phone number (Telefonszám):

The subject of the application

(A kérelem tárgya)

The applicant's qualification (A kérelmező szakképzettsége):

{ } Medical doctor (Orvos) { } Pharmacist (Gyógyszerész)

{ } Dentist (Fogorvos) { } Specialist in clinical psychology (Klinikai végzettség)

{ } Other specialist training (Egyéb)

The subject of the request (*Please put an X before the requested case*):

(A kérelem tárgya (a megfelelőt kérjük x-elni))

{ } First registration (Első felvétel)

- { } Renew the operational registration (Megújítás)
- { } Registration of the new qualification (*Új szakképesítés felvétele*)

{} Extend the operational registration (prolongation because of child-raising allowances, incapacity due to illness, etc.) (Meghosszabbítás)

- { } Registration after cancellation (Törlést követő újrafelvétel)
- { } Change in personal details (Adatváltozás bejelentése)
- {} Replace the card of the operational registration (Működési nyilvántartási igazolvány pótlása)
- {} Declaration of pursuing the health activity with supervision (*Felügyelet bejelentése*)
- {} Cancellation from the operational registration (Működési nyilvántartásból történő törlés)

I present my application in the following qualification(s):

(Kérelmemet az alábbi szakképesítés(ek) tekintetében terjesztem elő)

II. Details of the qualification(s)

(Szakképesítés adatok)

Diploma

1) Title of the Diploma (Diploma megnevezése):

Number of the diploma (number/year) (Diploma száma): Issuing body: (Kiállító szerv) Place and date of issue: (Kiállítás helye, ideje) Language of the training: (Képzés nyelve) Nostrificated, recognised by: (Honosító/elismerő intézmény) Number of recognition, nostrification: (Honosító/Elismerő határozat száma) Place and date of recognition, nostrification: (Honosítá/Elismerés kiállításának helye, ideje)

2) Title of the Diploma (Diploma megnevezése):

Number of the diploma (number/year) (Diploma száma): Issuing body: (Kiállító szerv) Place and date of issue: (Kiállítás helye, ideje) Language of the training: (Képzés nyelve) Nostrificated, recognised by: (Honosító/elismerő intézmény) Number of recognition, nostrification: (Honosító/Elismerő határozat száma) Place and date of recognition, nostrification: (Honosítás/Elismerés kiállításának helye, ideje)

Specialist qualifications (Szakvizsgák adatai)

 Name of the qualification (Szakvizsga megnevezése): Number of the qualification (number/year) (Szakvizsga száma): Issuing body: (Kiállító intézmény)
 Place and date of issue: (Kiállítás helye, ideje)
 Language of the training: (Képzés nyelve) Nostrificated, recognised by: (Honosító/elismerő intézmény) Number of recognition, nostrification: (Honosító/Elismerő határozat száma) Place and date of recognition, nostrification: (Honosítás/Elismerés kiállításának helye, ideje)

2) Name of the qualification (Szakvizsga megnevezése):

Number of the qualification (number/year) (Szakvizsga száma): Issuing body: (Kiállító intézmény) Place and date of issue: (Kiállítás helye, ideje) Place and date of issue: (Kiállítás helye, ideje) Nostrificated, recognised by: (Honosító/elismerő intézmény) Nostrificated, recognised by: (Honosító/elismerő intézmény) Place and date of recognition, nostrification: (Honosítás/Elismerés kiállításának helye, ideje)

3) Name of the qualification (Szakvizsga megnevezése):

Number of the qualification (number/year) (Szakvizsga száma): Issuing body: (Kiállító intézmény) Place and date of issue: (Kiállítás helye, ideje) Place and date of issue: (Kiállítás helye, ideje) Nostrificated, recognised by: (Honosító/elismerő intézmény) Place and date of recognition, nostrification: (Honosítás/Elismerés kiállításának helye, ideje)

4) Name of the qualification (Szakvizsga megnevezése):

Number of the qualification (number/year) (*Szakvizsga száma*): Issuing body: (*Kiállító intézmény*) Place and date of issue: (*Kiállítás helye, ideje*) Place and date of issue: (*Kiállítás helye, ideje*) Nostrificated, recognised by: (*Honosító/elismerő intézmény*) Nostrificated, recognised by: (*Honosító/elismerő intézmény*) Place and date of recognition, nostrification: (Honosítás/Elismerés kiállításának helye, ideje)

III. Membership of the Chamber

(Kamarai tagság)

I have membership *(Rendelkezem kamarai tagsággal)*: { } Yes (Igen) { } No (Nem) If yes, the name of the Chamber *(Kamara megnevezése)*: If yes, the beginning of the membership *(Kamarai tagság kezdete)* If yes, the end of the membership: *(Kamarai tagság vége)*

If no: I am a health worker with foreign citizenship and I do not intend to work in the area of health in Hungary, the permission for the health activity – certificate of the Hungarian operational registration – is only necessary due to the recognition of professional qualification abroad. I attach the declaration for foreign citizens about working out of Hungary to the application form.

(Külföldi állampolgársággal rendelkező egészségügyi dolgozó vagyok és az egészségügyi szakképesítés megszerzését követően egészségügyi tevékenységet Magyarországon nem kívánok folytatni, az egészségügyi tevékenység végzésére való jogosultság igazolása kizárólag a szakképesítése külföldön történő elismerése miatt szükséges. Ennek megfelelően kérelmemhez csatoltam a "Nyilatkozat külföldi állampolgrok részére" elnevezésű nyomtatványt)

IV. Details of the language exam(s):

(Nyelvvizsgák adatai)

1. Language:

(Nyelv) Level (Szint): { } basic (*alap*) { } intermediate (*közép*) { } advanced (*felső*) Type (Típus): { } A { } B { } C { } General (*Általános*) { } Professional (*Szakmai*) Issuing body: (*Kiállító szerv*) Issuing place and date: (*Kiállítás helye, ideje*) Number: (*Száma*)

2. Language: (Nyelv)

Level (Szint): { } basic (*alap*) { } intermediate (*közép*) { } advanced (*felső*) Type (Típus): { } A { } B { } C { } General (Általános)
{ } Professional (Szakmai)
Issuing body:
(Kiállító szerv)
Issuing place and date:
(Kiállítás helye, ideje)
Number:
(Száma)

3. Language:

(Nyelv) Level (Szint): {} basic (alap) {} intermediate (közép) {} advanced (felső) Type (Típus): {} A {} B {} C {} General (Általános) {} Professional (Szakmai) Issuing body: (Kiállító szerv) Issuing place and date: (Kiállítás helye, ideje) Number: (Száma)

V. Declarations

(Nyilatkozat)

1. I apply for that the National Healthcare Service Center

(Kérem, hogy az Állami Egészségügyi Ellátó Központ (a továbbiakban: ÁEEK) a kérelmemben foglaltak alapján) {} make my first registration into the Operational Registration; (regisztráljon a működési nyilvántartásba) {} renew my operational registration; (újítsa meg a működési nyilvántartásomat {} make the registration of my new qualification (a kérelemben megjelölt szakképesítés tekintetében bocsásson ki működési nyilvántartási igazolványt) {} extend my 5-year-period registration; (hosszabbítsa meg a működési nyilvántartásomat) {} registrate me again in the Operational Registration after cancellation; (törlést követően ismételten regisztráljon) {} change the informations and my datas in the operational registration database; (adatváltozásomat rögzítse a működési nvilvántartásba) {} replace my stolen, missing or spoiled card of operational registration; (pótolja az elveszett, ellopott vagy megrongálódott működési nyilvántartási igazolványomat) {} put into the operational registration database that I am pursuing the health activity with supervision; (rögzítse a nyilvántartásba a felügyelet melletti tevékenységgyakorlást) {} cancel me from the operational registration.

(töröljön a működési nyilvántartásból)

2. I hereby declare that I have clean criminal record and that I am not under the effect of a non-appealable sentence imposed for a criminal offence suspending the health care activity.

(Felelősségem tudatában kijelentem, hogy nem állok olyan bűncselekménnyel kapcsolatban büntetett előélethez fűződő hátrányos jogkövetkezmények hatálya alatt, amely miatt egy évet meghaladó végrehajtandó szabadságvesztésre ítéltek, illetve nem állok az egészségügyi tevékenység folytatását kizáró foglalkoztatástól eltiltás hatálya alatt.)

3. I contribute to the National Healthcare Service Center verifies permanently the informations which mentioned previously in point 2. The National Healthcare Service Center has national and exclusive competence to demand informations from the authority of criminal registration.

(Hozzájárulok ahhoz, hogy az ÁEEK hatósági ellenőrzés keretében a 2. pontban foglalt tények fennállására vonatkozó adatokat a működési nyilvántartásban szereplésem időtartama alatt folyamatosan ellenőrizze. Tudomásul veszem, hogy az ÁEEK a hatósági ellenőrzés céljából adatot igényelhet a bűnügyi nyilvántartási rendszerből.)

4. I hereby declare that

{} I am not under the effect of any decree declaring that I am unfit to pursue the healthcare activity permanently (due to my health condition),

{} I am not under the effect of any auhtority's decision forbiding me to pursue the health care activity.

(Felelősségem tudatában kijelentem, hogy

{ } nem állok (egészségügyi állapotom miatt) az egészségügyi tevékenység folytatására véglegesen alkalmatlanná nyilvánító határozat hatálya alatt,

{ } nem állok az egészségügyi tevékenység gyakorlásától eltiltó hatósági határozat hatálya alatt.)

5. I contribute to the National Healthcare Service Center verifies the datas which have been declared by me in the application form.

(Hozzájárulok, hogy a kérelmemben általam, vagy a munkáltatóm által szolgáltatott adatokat az ÁEEK ellenőrizhesse.)

6. I hereby declare that out of Hungary

{} I have never worked and I am not working in the area of health;

{ } I worked in the area of health;

{} I am working now in the area of health

and according to the law of the foreign country I have clean criminal record and I am not under the effect of a nonappealable sentence imposed for a criminal office suspending the health care activity.

(Felelősségem tudatában kijelentem, hogy Magyarországon kívül egészségügyi tevékenységet

{ } nem végeztem és jelenleg sem végzek;

{ } végeztem;

{ } jelenleg is végzek

és az egészségügyi tevékenység végzésének helye szerinti állam(ok) jogszabályai alapján nem állok az egészségügyi tevékenység gyakorlását kizáró vagy korlátozó intézkedés, büntetés, büntetőjogi intézkedés hatálya alatt.)

7. I hereby declare that the informations contained in my application are true and correct at the moment of signing.

(Felelősségem tudatában kijelentem, hogy a kérelemben feltüntetett adatok a valóságnak megfelelnek.)

(Kelt) (hely) (nap/hónap/év)

original signature of the applicant (Eredeti aláírás)

Without the original signature the application is not valid and unacceptable.

(Eredeti aláírás hiányában a kérelem érvénytelen és elfogadhatatlan)

The application can be sent:

- by post as a required letter to the address 1444 Budapest, P.O. Box 270.;
- by personal at our customer service during the opening hours
- Monday-Thursday: from 8:30 to 15:30
- Friday: from 8:30 to 13:00

Availability:

- Phone: +36-1/411 1146; Fax: +36-1/411-3768
- E-mail: omn@aeek.hu
- Account number: 10032000-01490576-00000000
- Swift code: HUSTHUHB
- IBAN number: HU06 1003 2000 0149 0576 0000 0000

DECLARATION

for foreign citizens intending to work outside of Hungary

Personal details

Basic registration number:
Surname:
Given name:
Name at birth:
Mother's maiden name:
Place and date of birth:
Nationality:

Date: ·····

.....

Signature
EXTRA CURRICULAR FEES

Defined by the current Regulations on Compensation and Benefits of Semmelweis University. It is to be tracked on the website.

IMPORTANT

Registration requirements

Please note that the date of registration for the first semester is between **31 August - 4 September**, **2020** and for the second semester is **between 25 - 29 January**, **2021**. In order to fulfill the registration requirements, you must **pay your tuition fee** and you must bring **the summer practice certificate**.

EXTRA CURRICULAR FEES AFTER GRADUATION

Defined by the current Regulations on Compensation and Benefits of Semmelweis University. It is to be tracked on the website.

STUDENT CARD

How to order a new student card

- To obtain a new student card, you must first have an official photo taken and provide your official signature at "Központi Okmányiroda" (Central Document Office) Address: 13th District, 110 – 112 Visegrádi utca. You must take your residence permit and passport with you to the Központi Okmányiroda.
- 2. There you will be given a NEK (Nemzeti Egységes Kártyarendszer) datasheet. This form has a 16-character identification number in the upper right corner.
- 3. Log on to your Neptun site, go to 'Administration' and click on 'Student Card request' in the drop-down list. A smiley:) will warn you not to add the hyphens when typing in your 16 character NEK identifier into yellow text box!
- 3/a. Click on the grey tab 'Add new' and type your 16 character NEK identifier into the blank called 'NEK azonosító'
- 3/b. then choose 'Demand type'. Check that your permanent (home) address is correct and shows up in the 'Street, number' text box. Please note that you will also need your temporary (Hungarian) address written in the Neptun. This will serve for your temporary, A4-format student card you will receive at the English Secretariat.

The plastic card **takes** about **6-8** weeks to be produced after being ordered from the English Secretariat. You will need to use the **temporary**, **A4-format certificate** until you receive your official card. Please note that the temporary certificate is valid only for 2 month, after which time it must be renewed.

INSURANCE

By paying the tuition fee, and signing the insurance contract during - *or after* - registration, students are entitled to use the services offered under the insurance policy established on September 1, 2017 between Generali Biztosító Zrt and Semmelweis University.

You will receive an information sheet about the details of this insurance policy during the registration itself (or alternatively, you can also acquire the information sheet at the front desk of the English Secretariat, or online through https://semmelweiskft.hu).

Throughout the duration of your studies, this insurance will cover the medical bills of outpatient and inpatient treatments provided by the designated health care service providers, as well as emergency medical care during the active semester(s). Details about terms and conditions found in "Customer information and General Provisions Governing Insurance Policies" as well as in the "Product Information on Generali's Fee-for-Service Health Insurance".

FREQUENTLY ASKED QUESTIONS - FAQ-s

Where can I find the Foreign Students' Secretariat? EOK (Basic Medical Science Center) 37-47 Tűzoltó utca, 1st Floor, room 1.604 What are the Foreign Students' Secretariat's office hours?

15.00 - 15.00
13.00 - 15.30
closed
9.30 - 12.00
10.00 - 12.00

• How do I get my class schedule for the next term?

You can check your schedule in your Neptun under Studies/Class schedule after subject registration.

• How do I get a Student card? - Read detailed information for the students of all faculties - Student Card Request (pdf)

• How many credits do I need to graduate?

General Medicine	360 credits
Dentistry	300 credits
Pharmacy	300 credits

• How many credits do I have to earn per semester?

Please see your semester curriculum in the Calendar. The amount of the required credits are set out by each semester's curriculum under the curriculum schedule.

Attention!

Training and Examination Regulations

Section 26. The certificate of degree (Diploma)

The diploma, the certificate.

1. The credit value of subjects accomplished in other institutions of higher education and recognized by the University in a credit transfer procedure shall not exceed two-thirds of the credits required for the award of the diploma as defined by the qualification requirements.

• How can I apply for the approval of the place of the summer practice?

1. Summer practice at an Institution/Clinic of Semmelweis University

No approval or certificate on completition is needed in this case. The completition is recorded in the Neptun system by the host Institution/ Clinic.ToorganizeyourpracticeandensurethatyouwillbeacceptedyoushouldcontacttherelevantInstitution/Clinincandspeakwithyourtutor. *Please note:* some Semmelweis departments require that you do a special registration via Neptun for their summer practice. About details and departmental regulations, please consult your tutor.

2. Summer practice at an Institution/Clinic outside of Semmelweis University

Approval of such summer practice is needed beforehand, and a certificate on completition must be submitted at registration to the next term. Please contact your registrar for details with specifices.

• When and how do I have to submit the certification on my completed summer practice?

Certificates on a completed summer practice outside Semmelweis University should be submitted to the English Secretariat at the registration to the next term.

Please note: students are not allowed to proceed to the next year unless the form of completion is submitted to the English Secretariat at registration.

Please use the downloadable forms at each Faculty.

Compulsary summer practices by Faculties:

year/Faculty	General Medicine	Dentistry	Pharmaceutcal Sciences
1st	Summer Nursing Practice* (1 month)	Summer Nursing Practice (2 weeks) Summer Dental Laboratory Practice (2 weeks)	-
2nd	("aner ist of zhu year)	-	Summer Practice I. (4 weeks)
3rd	Summer Internal Medicine Practice (1 month)	Summer Dento-Alveolar Practice (1 week)	Summer Practice II. (4 weeks)
4th	Summer Surgery Practice (1 month)	Summer General Dentistry Practice (4 weeks)	-

• How much is the tuition fee per semester?

The tuition fee is determined by the year of enrollment to the Program. Students who complete their studies continually (without failing a year) pay the same tuition fee every year (see the table below). Students who repeat a year due to failure or a passive semester, and students transferred from another university have to pay the tuition fee according to the year of enrollment at the course they are joining. Eg. a student enrolled in 2015/2016 academic year and failed a semester has to pay the tuition fee of those enrolled in 2016/2017.

year of enrollment/ Faculty	General Medicine	Dentistry	Pharmaceutical Sciences
2006.	6 100 USD	5 400 USD	5 400 USD
2007.	6 100 USD	5 400 USD	5 400 USD
2008.	6 100 USD	6 600 USD	5 400 USD
2009.	7 200 USD	8 000 USD	5 800 USD
2010.	8 000 USD	8 000 USD	6 000 USD
2011.	8 200 USD	8 200 USD	6 000 USD
2012.	8 500 USD	8 500 USD	6 000 USD
2013.	8 750 USD	8 750 USD	6 000 USD
2014.	8 750 USD	8 750 USD	6 000 USD
2015.	8 950 USD	8 950 USD	6 000 USD
2016.	9 100 USD	9 100 USD	6 000 USD
2017.	9 100 USD	9 100 USD	6 000 USD
2018.	9 100 USD	9 100 USD	6 000 USD
2019.	9 100 USD	9 100 USD	6 000 USD

• When is my tuition fee due?

Generally:

Fall semesters: 31st of August

Spring semesters: 31st of January

The current deadlines of payment are announced by the registrars before the beginning of every semester.

Rules regarding tuition fee payment and penalty.

- Students have **one month** (counted from the first day of the semester) for paying the tuition fee of the given semester **without penalty.** (*Please note that students cannot get a student certificate, a valid insurance or validation of their student card until their tuition fee is completely settled.*)
- After the semester's first month has passed, the tuition fee can be paid with a default penalty of 500 USD.
- The **latest deadline** for paying the tuition fee and penalty is **the last day of the study period**. (*Please note that students cannot register for any exam until their tuition fee plus penalty are completely settled*.)

• If the above final deadline is missed, i.e. the tuition fee plus penalty are not settled by the end of the study period, the tuition fee for the current semester can no longer be paid, student's status will remain active, but every signature acquired and every grade earned by the student during the semester will be deleted.

Please take the above rules and deadlines seriously as they will be strictly enforced.

• What is my tuition per semester?

All continuing students will remain on the same fee rate as when they first enrolled in the program. Students who take a semester off, failed a year, or transferred from another university has to pay the tuition fee of that specific year they join the program (again).

• How can I ensure full payment of the tuition fee on time by bank transfer?

To ensure full payment, please consider that a transfer fee is usually applied when sending money by bank transfer. When transferring the exact amount for the tuition fee, a transfer fee might be deducted from that amount, rendering your tuition fee deficient. Therefore, please contact your home bank prior to transferring the tuition fee and find out whether the bank deducts a transfer fee from the transferred amount. If yes, please pay the transfer fee in addition to the tuition fee.

Payment by wire transfer:

all payments can be made by wire transfer to Semmelweis University's below bank account. Payments have to be made in USD.

Account details of Semmelweis University are as follows:

Account holder: Semmelweis University

Account Number (IBAN): HU67 1000 4012 1000 8016 0051 4534

Bank name: Magyar Államkincstár (Hungarian State Treasury)

Bank address: Hold utca 4, 1054 Budapest, Hungary

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SWIFT code (BIC): HUSTHUHB
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Correspondent SWIFT code (BIC): MANEHUHB

It is your responsibility to ensure timely and full payment of your tuition fee. It is important for you to keep in mind that checking whether the tuition fee has been paid properly is your responsibility. You are recommended to contact your registrar each term before the payment deadline to find out whether the tuition fee has arrived without any problem.

• Am I eligible for a reduction of the tuition fee?

Tuition fee can be reduced in the following case:

Excellent study record

Students may apply for a reduction if they completed all the obligatory subjects and gained at least 20 credits in the semester, and their weighted average is 4,51 or above continiously started from the first or the second semester of the first year. If the weighted average is 4,51 or above in the first semester a reduction can be granted in the second semester. If the weighted average is 4,51 or above only from the second semester then the reduction can be granted from the third semester. The reduction is 10% for students having a weighted average between 4,51 and 4,99, and it is 15% for students having a weighted average 5,00. Students who have a weighted average below 4,51 during their studies after the first year are no longer eligible for a reduction of the tuition fee. No reduction is given in case of exemption from one or more subjects.

Please write a letter of request addressed to the Academic Program Director when applying for the 20% reduction!

• How do I calculate my average?

Study average means the *weighted average*, which is a way to measure a student's academic success in school. The weighted average is calculated from the grades and the credit points belonging to each subject. For each completed course for the previous semester, the number of credit points must be multiplied with the grade received. All subjects are added up and then this amount is divided by the total number of credits collected in the semester.

Example for one semester:

Anatomy: Basics of Biostatistics and Informatics: Hungarian Medical Terminology I.: Basics of Medical Physics: Medical Chemistry: Basics of Medical Chemistry: Medical Terminology: Physical Education I.	grade of 3 for 9 credits grade of 4 for 3 credits grade of 5 for 4 credits grade of 5 for 3 credits grade of 4 for 6 credits grade of 5 for 3 credits grade of 5 for 2 credits	= 27 = 12 = 20 = 15 = 24 = 15 = 10 none
--	--	--

 $\Sigma: 27 + 12 + 20 + 15 + 24 + 15 + 10 = 123$

Number of credits earned in the semester: 30Weighted average from the first semester: 123/30 = 4.1

• What is the difference between weighted average and cumulative weighted average?

The weighted average and cumulative weighted average are based on grades given for each course taken and the number of credit hours specified for those courses over the specified period of time (one term for weighted average; more or all terms for cumulative weighted average). The difference between the two is that *weightedaverage* is calculated for one semester of the year and *cumulative weighted average* is based on two or more semesters of the individual.

• What if I can't attend an exam or class at the time scheduled?

Students are required by university regulations to present written justification stating the reasons of their absence. Upon returning to school after an absence, students should report to the department's office and present a doctor's note, if their absence was caused by medical reasons. Excuses not provided within 3 days after the missed exam or class will result in the absence being marked as an unexcused absence.

It should be noted that the student will be recorded absent even if s/he is absent for a valid reason such as sickness. In the case of absence with a valid reason, an official document that proves the reason of absence should be provided. The department has the right to reject any document of questionable credibility. If you are sick and cannot take the exam or class, you should telephone your tutor immediately and leave a message for the department office even if this is not the first day of your absence.

• Do I have to pay a fine if in case of my absence from an exam remains uncertified?

Yes. Please see "Extra curricular fees" on the home page.

• How do I pay my missed exam fees online?

Go to Finances/ Payment Transcribe item Payment titles: Service Service type: Missed exam fee (4000 HUF) If you choose to pay by check please visit the Foreign Students' Secretariat to collect your check. The check must be paid at the post office.

• Do I have to pay for exams?

Students have to pay for their second and third retake exam (3rd and 4th exam) for a given subject. Please see "Extra curricular fees" on the home page.

• How do I order a check for my 3rd or 4th exam in a given subject?

Log on to your Neptun account, go to "Finances", choose "Payment", then "Transcribe item". Choose "Retake exam", choose "Semester" then the relevant subject from the list and finally click on "Create item".

You can choose to pay your retake exam fees online via the Neptun system or by check. To pay online you will have to select 'Payment by credit card' from the two payment options offered to you.

If you choose to pay by check please visit the Foreign Students' Secretariat to collect your check. The check must be paid at the post office, the check stub is to be presented on site prior to the exam.

EXEMPTION

• Should I go directly to the department when applying for an exemption?

Yes, except in case of Physical Education, summer practices and First Aid. Physical education medical certificates and certificates/degree proving the completion of summer practices/first aid course must be submitted to the Foreign Students' Secretariat by registration to both semesters each year. For a physical education exemption you must also submit a letter of request describing your problem in a few words and apply for a permission to be exempted from the subject. The request letter must be addressed to the Foreign Students' Secretariat. For other subjects you must first get a blank exemption form from the Foreign Students' Secretariat. Then, you must show the form and certificate of your previous studies to the competent department, which will be reviewed before granting an exemption from the subject. You need to get your exemption form signed and stamped at the department.

Important: the teacher must indicate the grade for the subject on the form. After having the form completed and stamped, you have to return it to the Foreign Students' Secretariat for processing. If everything is OK with the form, your registrar will enter the given grade into the Neptun system and indicate it in your grade book. If you successfully complete the above, you have no further obligations regarding that particular subject.

Approved exemptions must be submitted to the Foreign Students' Secretariat by the start of the semester!

• Can I be exempted from Physical Education if I have a gym membership?

No. You will not be exempt because of your gym membership so please do not apply for an exemption on these grounds.

What is the process of submitting a doctor's note for Physical Education exemption?

If you are requesting an exemption from physical education due to medical complications that inhibit you from partaking in physical activity for an indefinite time; you then must submit evidence to the Foreign Students' Secretariat in Hungarian or in English language from a licensed health care practitioner that documents a diagnosis of a temporary physical or mental disability.

• What do the so-called CV and FM exams mean?

CV and FM are abbreviations. CV stands for the Hungarian term "Csak Vizsga", meaning "Exam only". The term indicates that the student has already received the signature for taking the course, that is, fulfilled the semester requirements and only the exam is missing, which can be taken in the following semester.

FM stands for the Hungarian term "Felmentett", meaning "Exempt". This term also indicates that the subject requirements have been fulfilled and student only needs to take the exam. The student is not obliged to take the course again, however since the subject is offered again, he/she can decide to do so. (Should the student decide to attend the course again, even though he/she has already fulfilled the requirements, the same rules shall apply to him/her as to those attending the class for the first time (Absence, attendance at classes, etc.))

• Do I have to fail a course at least once in order to be allowed to take the CV course in the next term?

No. You can roll over all 3 exam opportunities to the following semester and take them as a CV course.

• How many retake opportunities do I have in a semester and in an academic year?

There are 3 exam opportunities in each subject per semester (1 exam, and 2 retakes) when the subject is offered as a normal or FM course. In the following semester – when the subject is offered as a CV course – only the remaining chances left from the previous semester can be used. There is a special 4th try once a year (the 3rd retake), which may be used exclusively in 1 chosen subject. After using this 4th exam opportunity in one subject, the student shall not have a 4th try in any other subjects; they also will not be granted "special permission" for a 5th opportunity. Please count your remaining exam opportunities carefully!

For example, if you use 2 exam opportunities for Biophysics II in the 2nd semester, you will have only one remaining opportunity for the retake in the following semester (plus the one extra (4th) chance, if you haven't used it already in that specific academic year in another subject).

• What is a prerequisite?

Prerequisites are courses that must be taken before another course. For example, Medical Chemistry is a prerequisite for Medical Biochemistry, Molecular and Cell Biology I.

Students must successfully complete Medical Chemistry before registering for Medical Biochemistry, Molecular and Cell Biology I. Please note that prerequisites are clearly listed in the curriculum.

• What is a corequisite?

Corequisistes are courses that must be taken at the same time as normal courses. Registration for corequisites must be done prior to registration for normal courses in the given term. Corequisites are marked with a star symbol in the Calendar of each semester's curriculum affected (e.g. 3rd and 4th year)

• What do I need to do if I am planning to take a leave of absence?

If you take a semester off you will need to email your registrar and register for a 'passive' semester via the Neptun system during the registration period for the next semester.

For details, please see the Neptun manual/ Registration in the beginning of the Calendar

• What do I need to do if I am returning from a leave of absence?

Contact your registrar for procedures regarding returning from an official leave of absence and check your Neptun account on a regular basis. Make sure your tuition fee is paid by the relevant deadline.

TRANSCRIPT

• What is a transcript? How do I request my transcript?

The transcript is an official statement of all results achieved through study at Semmelweis University as of the date of printing. You cannot have a transcript until all grades are posted in the Neptun student information system by the departments and your grade book is submitted to the Foreign Students' Secretariat with all results. It is the department's responsibility to upload the exam results to the Neptun system.

Transcript requests must be made in writing. To make your request, you may stop by the Foreign Students' Secretariat or send it via e-mail. You can indicate in your request if you would like us to forward the transcript to your email address. Processing of transcript requests takes approximately 5 business days. However, during certain times of the year there will be a slight delay, 2-3 days, due to the heavy volume of requests. The fee for the transcript must be paid for prior to the issuance of the transcript(s). Please be sure to allow sufficient processing time for your request.

Please note: the university may discontinue or suspend this service at any time without notice if the fee for the transcript is not paid.

STUDENT COUNSELLING

The Institute of Behavioural Sciences at Semmelweis University is providing student counselling in English and German as well.

Coming to university can be a very exciting and rewarding time. It can also be a time of change and stress, especially if you study in Budapest, left your home country and have to face a new culture, language and environment. There may be a whole range of difficulties and dilemmas affecting your life and studies.

These may be the result of either past or present experiences. The University Counselling Service is one of the services which are there to help. One way of starting to with things is to see a counsellor. This involves meeting with a trained person to talk about the issues that are important for you.

There are a number of ways in which counselling can help, such as:

- Dealing with a crisis or immediate concern
- Support with longer term difficulties
- Getting access to specialist help
- Referring on to other resources

Counselling is an active process that is designed to give you the time, space and encouragement to explore and understand the issues you bring. The counsellor will be able to help you think about your problems from a different perspective. Their role is to provide you with a secure framework in which to reflect upon your circumstances. The aim is, that in time this will increase your awareness of yourself, your situation, and the choices that are open to you. Coming for counselling can take courage as it involves facing yourself and asking someone else for help.

Counselling provides a safe place, separate from your daily life, where you can explore issues or feelings which are causing you difficulty. The counsellor will aim to relate to you in a supportive and purposeful manner and assist you in the task of finding your own way forward. Your use of counselling remains confidential to the service within the limits agreed with your counsellor.

Emotional and psychological problems encountered by student counselling services include: anxieties about aspects of study including exams and presentations

- general stress and anxiety
- depression
- relationship difficulties
- eating problems
- bereavements and parental separations
- loneliness and homesickness
- lack of self confidence or low self esteem
- managing transitions
- making difficult decisions
- traumatic experiences including rape, assault and abuse
- · difficulties with alcohol or drugs
- issues around sex, sexual orientation and sexuality
- self-injury
- suicidal thoughts
- anger management
- worries about appearance
- any other topic or problem you wish to talk about

Contact:

If you have any question, need to talk to someone on the phone in advance, or want to book an appointment to see a counsellor, just send us an email and we will get back to you within 48h:

Dr. János Kollár

E-mail: studentcounselling@net.sote.hu

Home page: http://behsci.hu/health/student-counselling

Institute of Behavioural Sciences

Nagyvárad tér 4, 20th floor,

1089 Budapest

Appointments are available between Monday and Friday (16-20 o'clock) upon request (via mail)

ERASMUS Program

http://semmelweis.hu/english/education/erasmus/

Office Hours and Contacts

Office Hours

Monday:	9 a.m. – 12 p.m.
Tuesday:	1 p.m. – 3 p.m.
Wednesday:	9 a.m. – 12 p.m.
Thursday:	1 p.m. – 3 p.m.
Friday:	CLOSED

For the efficient and continuous work of the office, we kindly ask that you respect our office hours! In case of an urgent matter, please contact the ERASMUS office either by phone or email, in order to obtain a personal appointment.

Address

H-1085 Budapest, Ülloi út 26. Room 202

Contact Information

Ms. Katalin F. Tóth ERASMUS Institutional Coordinator Tel: (+36 1) 459-1500, ext. 55827 Fax: (+36 1) 459-1588 E-mail: erasmus@semmelweis-univ.hu Ms. Márta Honvéd Coordinator Assistant Tel: (+36 1) 459-1500, ext. 55828 Fax: (+36 1) 459-1588 E-mail: erasmus@semmelweis-univ.hu

SEMMELWEIS ALUMNI

http://alumni.semmelweis.hu/eng/semmelweis-alumni

Mission Statement

Semmelweis Alumni's mission is to help build long-lasting and mutually beneficial relationships between the University and its current students, alumni, faculty and researchers.

Membership

To become a member of Semmelweis Alumni, you need to complete a registration form. Registration is free of charge and memberships remain valid indefinitely.

You may become a member if you meet any of the following criteria:

- You are currently a student at Semmelweis University and have successfully completed at least four semesters;
- You are a former student of Semmelweis University or one of its legal predecessors and successfully completed at least four semesters;
- You are currently a faculty member or researcher at Semmelweis University
- You were formerly a faculty member or researcher at Semmelweis University

INTERNATIONAL STUDENT ASSOCIATION - ISSA

It is an association made up of students from different faculties at Semmelweis University in different years with very different nationalities and backgrounds. Their aim is to give voice to the international student community at Semmelweis University and support them in different methods. Their reach includes but is not limited to the following:

- 1. Organizing international student events two of which is the Freshmen's Day event for the incoming students every year and also the Semmelweis Carnival
- 2. Creating a bridge between the students and staff (teaching and non-teaching) through conducting interviews
- 3. Listening to students concerns through Student Affairs and handling case by case
- 4. Creating a magazine dedicated to international student committee Review which is full of information for the students and also from students
- 5. and many more...

The association is actively working to create a pleasant life for the students at Semmelweis University and give voice to their needs. Our mission statement is as follows:

- **Learning** We compliment and enhance the academic experience.
- Service We are dedicated to serving students and our broader community. We provide good customer service and resources for events/event planning and offer leadership development opportunities.
- Advocates We strive to serve as student advocates.
- Balance We strive for wellness and balance in our activities and events.
- Ethical Decision Making We believe in honesty and integrity during all interactions.
- Stewardship We strive to use all resources effectively and efficiently.
- Community We strive to build a supportive and inclusive office environment/campus community where everyone feels welcome.
- The Student Affairs Committee (SAC) is a student-run organization within ISSA. Our express goal is to improve lines of communication between students and members of faculty, as well as advocate on behalf of students' opinions and interests. The backbone of the Student Affairs Committee is the representatives from each year and faculty (Dentistry, Medicine, Pharmaceutical Sciences). Representatives are responsible to both their classmates and their fellow committee members. They are the first to be approached should any issues arise among students within their year. They then bring these problems to the committee so that the SAC team may resolve them. At times, the representative may be responsible for resolving the problems themselves; at times they will be charged with handing over the responsibility to a higher up. Class reps may also be called on to speak with members of the administration, something they are able to do with confidence and professionalism.

STUDENTS' SCIENTIFIC ASSOCIATION (TDK)

http://semmelweis.hu/english/student-life/clubs-and-organisations/students-scientific-association/

A unique feature of Hungarian universities is that undergraduate students have the opportunity to be involved in top-level scientific research starting in their undergraduate years. To facilitate this, students maintain their own organisation, the Students' Scientific Association (in Hungarian: Tudományos Diákkör – TDK). TDK activities, which include organising scientific conferences, are overseen by the TDK Council. During the last ten years, the number of students involved in scientific research has grown twofold, while the number of lecturers attending TDK conferences has increased threefold. Currently, over 1000 Semmelweis University students pursue science in addition to their regular studies, more than 400 of whom present their research results at the annual TDK conferences.

The University's students often receive great honours at national and international conferences and many of them publish scientific research articles in in international journals as either first or co-authors. Each year, the ten best graduating students receive the "Outstanding TDK Student of Semmelweis University" distinction.

It is pleasing to see that the University is attracting ever more students who had started doing research during their high school years. To encourage the continuation of this practice, the TDK Council promotes the involvement of students in scientific research from their very first year at university.

The TDK Council also promotes close contacts with fellow TDK organisations abroad. Students are sent to international TDK conferences and cooperate with the Hungarian Medical Students' International Relations Committee (HuMSIRC), through whom longer study tours can be organised.

TALENT SUPPORT PROGRAM OF SEMMELWEIS UNIVERSITY

To support the talented and gifted students the Senate of Semmelweis University initiated a Talent Support Program named after the former professor of our University, Ödön Kerpel-Fronius.

Participants of the program will be recruited after a personal assessment interview of the students on the Excellency List organized by the Talent Support Council of the University.

The Excellency List contains not more than the best 5% of the students of the university.

Application for the inclusion in the Excellency List is possible by filling in the Application Form, which can be downloaded from the kerpel. sote.hu/kivalosagi_listara_kerules_szabalyrendszere or kerpel.sote.hu/kivalosagi_lista web-sites.

Applications should be sent electronically to the tehetsegpont.se@gmail.com email address as an attached file until March of each year.

Students on the Excellency List will be called for an interview by the Talent Support Council of the Semmelweis University and approximately half of them will be included to the Kerpel-Fronius Ödön Talent Support Program.

POSTGRADUATE MEDICAL STUDIES AT SEMMELWEIS UNIVERSITY

General information on Ph.D. studies, resident training and postgraduate studies for foreign applicants

In principle, there is no possibility to continue medical (or dental) studies at Semmelweis University with an undergraduate degree obtained at a foreign university, due to the differences in the structure of the curriculum and that of the degree system. It must be noted that **there is no Bachelor level in the medical** (and dental) **education in Hungary** and therefore such foreign degrees do not enjoy automatic acceptance in our country.

The general medical education in Hungary is a single, 6-year-long full time course that is divided into three modules: the basic medical sciences module (2 years), the preclinical module (1 year) and the clinical module (2 years). The sixth year of education is an internship year. After successfully completing the sixth year and passing all the exams, medical students in Hungary obtain the Doctor of Medicine (MD) degree.

Against this background, **holders of Bachelor-level degrees are not entitled to study at Semmelweis University as postgraduate students.** However, one may sit for the entrance examination for the first academic year and after being accepted and enrolled, one may ask for exemptions on the documented previous studies and examinations of his/her Bachelor-level course.

For further information on our English language undergraduate programmes please visit the website at http://semmelweis.hu/english/educa-tion/english-language-program/

Those who already hold a **Doctor of Medicine** (MD) degree and wish to continue their studies in order to obtain **a Ph.D. degree**, may send an application to the School of Doctoral Studies. For further information please visit http://phd.semmelweis.hu/en/

School of Ph.D. Studies

Office: 1085 Budapest VIII. Üllői u. 26. fszt. 9. Phone: +36 1 266-7483 és +36 1 266-2343 Fax: +36 1 317-4888 (only fax!) Office hours: *Monday*: closed *Tuesday, Thursday, Friday*: 8.30-12.00 *Wednesday*: 13.00-16.00

Those persons who hold a **Doctor of Medicine** degree obtained at a non-Hungarian university and wish to join a medical **Residency Training** at Semmelweis University have to go through a special application procedure. Please note that **a good command of the Hungarian language is a precondition to join the Residency Training**. Further information can be obtained from

http://semmelweis.hu/english/education/continuing-education/

Directorate of Continuing Education

Phone: +36-1-210-1784, +36-1-459-1446 Address: 1091 Budapest, Üllői út 25. (City Corner Office Block) Mailing address: 1085 Budapest Üllői út 26. E-mail: szakestovabbkepzes@semmelweis-univ.hu

Postgraduate Courses at Faculty of Dentistry

Address: 1088 Budapest, Szentkirályi u. 47. VII/751. Phone: 36 1 266 7006 E-mail: szkepz@dent.semmelweis-univ.hu Office hours: Thursday: 09.00-11.00

Postgraduate Courses at Faculty of Pharmaceutical Sciences

Address: 1092 Budapest, Hőgyes Endre u. 7-9. B Phone: + 36 1 266 8411 E-mail: szakkepzes@pharma.semmelweis-univ.hu Office hours: Monday, Tuesday, Thursday: 13.00 - 15.00 Wednesday: 10.00 - 13.30 Friday: 09.00 - 12.00

Group of Unprompted Instructors

We are happy to announce, that from this year the famous Spring Training of IÖCS (Instruktor Öntevékeny Csoport – Group of Unprompted Instructors) is open for international students as well. It is one of the oldest student association of the university, and certainly the one with most members. We help organising most of the biggest events for Freshmen like the Summer Camp and the Ball, we also take a huge part in the Carnival and many others. It is a strictly non-profit organisation; our greatest reward is the time and fun we spend together. What can you expect from the spring training?

- Meetings every other week, where you will learn about the association, our structure and programs, you can improve your social skills, get to know an immense amount of new people and form a strong group together.
- Teambuilding games, workshops.
- Spend a weekend together with every newcomer in the organisation at the end of the training, it's a lot like a mini Freshmen's Camp.
- Eventually you will be an Instructor, you can take part in all of our events, work together and welcome the freshmen at the university so we can help them finding their way in this big community.

Lóránt Csehi (csehi.lorant@iocs.hu)

FACULTY OF HEALTH SCIENCES



Faculty of Health Sciences

Brief History of the Faculty of Health Sciences

The University's second largest Faculty is the Faculty of Health Sciences. The Faculty started its first academic year in 1975 with the aim of training highly accomplished, skilled, committed and open-minded health care professionals. This was the first higher-level school in Hungary that trained dietitians, health visitors, physiotherapists, public health and epidemiology inspectors, vocational teachers and paramedics. During the past years both the structure of education and the curriculum have undergone changes in the spirit of modernization. The Faculty continuously expands the range of its Hungarian and English language training programmes. The Faculty offers study rooms, lecture halls, specialist laboratories, demonstration rooms and a public library that are all equipped with state-of-the-art technology, as well as a great variety of opportunities for an active student life, and a motivating environment to prospective students. Following graduation, students of the Faculty can immediately be involved in different areas (ex.: health care, tourism, education, sociology) and they are able to improve their close and broad environment.

Facts and Figures

The Faculty of Health Sciences celebrated its 40th anniversary in 2015. Since its foundation, more than 30.000 students graduated from the Faculty and today about 3.200 students are studying at this institution. The Faculty is very proud of its library containing more than 50.000 volumes.

During the last four decades the Faculty has developed extensive international relations, and as a result we have connections with about 50 higher educational institutions throughout Europe, Asia and America. Annually, more than 30 students and staff members have the opportunity to take part in short- and long-term exchanges in the framework of the Erasmus+ programme in our partner institutions.

The Faculty's Asian relations have also been largely extended by establishing a fruitful relationship with Shanghai Jiao Tong University School of Medicine (SJTU), moreover, with Heilongjiang University of Chinese Medicine (HLJUCM) that launched its off-campus BSc Traditional Chinese Medicine training at our Faculty. In the framework of the program, students study in Hungary during the first 4 years, while they can get acquainted with the science of Chinese Medicine at the Chinese university in the last year.

We are also proud of having operated our bilingual (Italian and English) BSc Physiotherapy training in Lugano, Switzerland since 2009. Over 250 students participate in our programme there. The extent of our international relationships is growing on a daily basis and we accept several groups of students from different countries on our 2-3 weeks advanced programmes mainly from the USA, China and Japan. In these programmes many opportunities are provided to our students to participate in and to build international professional connections.

Leadership, Dean's Office

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Dean	College Professor Dr. Gabriella Dörnyei PhD
Vice Deans	College Professor Dr. István Vingender PhD – Academic Affairs College Professor Dr. Zoltán Balogh PhD – Clinical Relations

Director of the English Language Programmes

Professor Alán Alpár MD, PhD, Vice Rector Responsible for International Training Programmes

Dean's Office

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- e-mail: kaman.eva.maria@se-etk.hu

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Ms. Orsolya Neszt	 Administrator
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-ax: +(36-1)486-5913	room: 129

Information about the BSc and MSc programmes

Training system

Hungary, as a member of the European Union, belongs to the unified European Higher Education Area, which in principal follows the multi-cycle (bachelor, master and doctorate) training system. In this system it is much easier for students, lecturers and researchers to travel and build international relations, moreover, as citizens of the European Union they can continue their studies and plan their future as employees or entrepreneurs in any of the member states.

These opportunities open up a wider field for non-European citizens studying in Hungary as well, since the possibilities of internal mobility inside the unified Europe are based on the training channels and close relationships between countries, in the labour market and among institutions.

Programmes of the Faculty

I. Bachelor of Science (BSc) Programmes

1. Nursing and Patient Care BSc Programme

Specialized programmes: Physiotherapy (Hungarian, English), Nursing (Hungarian, English), Midwifery (Hungarian, English), Dietetics (Hungarian, English), Paramedics (Hungarian), Voice, speech and swallowing therapy (Hungarian)

Physiotherapy

Physiotherapists act as autonomous practitioners who are able to perform functional examinations, identify impairments, functional limitations, abilities and disabilities by using clinical decision-making processes. Physiotherapists treat patients with therapeutic exercises, manual techniques and other therapeutic modalities as the professionals' chief task is to improve the functions of the musculoskeletal system. The therapists develop movement therapies and apply electrotherapeutic treatment, therapeutic ultrasound, and various manual and massage treatments for the sake of healing and rehabilitation or for the prevention of health damage. Graduates take part in healing locomotor (orthopaedic, rheumatologic, traumatologic), cardiovascular, obstetrical, gynaecological, neurological and psychiatric disorders. Prevention and health promotion belong to the specialists' profession, too. Physiotherapists plan, explain, carry out, and adapt an examination-based treatment, draw conclusions from the examination as a whole and rank the main problems according to priority.

Qualification

Physiotherapist

Nursing

The occupation of nurses is a vocation that is pursued for the sake of health preservation, promotion and patient healing. Nurses observe patients in the hospital and continuously monitor their needs, take part in disease prevention and act as active contributors to the process of the patient's recovery and rehabilitation. They help patients absorb and understand the information on their health status. Nurses holding a BSc degree can organise, manage and supervise all their internal medical, surgical, obstetric-gynaecological, psychiatric, intensive nursing and primary care tasks in every area of health care. They are responsible for conducting the healing-nursing activities prescribed by the physician, and help the patient and the physician perform certain examinations. Graduates of the special needs of the patient and the person cared for, prepare nursing diagnoses and perform the tasks professionally on the basis of priorities, participate in planning, developing and implementing health care and social services.

Qualification

Nurse

Midwifery

Midwives fulfil caring and nursing tasks during pregnancies, in the postpartum period and on the occasion of gynaecological problems. Their responsibilities are to monitor pregnancies, labours and the postpartum progress while cooperating with other health care professionals in order to achieve the best possible outcome for each family. From the start of the parturition, midwives prepare and continuously support and encourage the woman during labour, monitor the process of deliveries and the mother-infant connection, assess and register their observations. Midwives individually assist deliveries, take care of the pro-

tection of the perineum and of the treatment of the woman and the new-born baby during the post-delivery period. Graduate midwives look after, nurse and care for female patients and perform the required specialised treatment. State of the art skill laboratories help the preparation of the students for their future profession.

Qualification

Midwife

Dietetics

Dietitians deal with the questions of human nutrition and possess knowledge about healthy diet and diseases caused by unhealthy nutrition. Graduates are able to practise diet therapy independently, or perform dietetic and catering tasks as members of a therapist team. The specialist's tasks include individual and group counselling, preventing nutrition related chronic and non-contagious diseases, organising diet plans according to the client's sensitivity and disease type. They manage catering units: lead the catering service, organise catering work procedures, and establish appropriate and acceptable conditions for catering. Dietitians play an important role in teaching how to lead a preventive and healthy life as they can also develop and implement programmes for health promotion.

Qualification

Dietitian

Paramedics

Graduates are able to approach professionally and safely patients or victims in prehospital emergency care (oxyology), able to perform triage, on an individual basis and during a catastrophic event. On the scene, paramedics familiarise themselves with the nature of the emergency, examine the patient, and make a primary diagnosis. They stabilise and care for the patient, decide on the possibilities of leaving the patient on the scene. Paramedics observe and monitor the patient during transport, communicate appropriately with the patient and his/her relatives, complete the necessary interventions, and provide psychological support for the suffering patient. Paramedics holding a B.Sc. degree also complete standby on-call duties, organise teamwork in the system of emergency care within health institutions, teach First Aid, and participate in the further training of emergency nurses and ambulance car drivers. Paramedics work in close alliance with the control staff, ambulance assistants, physicians, and health care professionals of hospital emergency care.

Qualification

Ambulance Officer (Paramedic)

Voice, speech and swallowing therapy

Voice, speech and swallowing therapists perform diagnostic and therapeutic tasks in otolaryngology, phoniatrics, neurology, paediatrics, geriatrics and rehabilitation units as well as in outpatient services and can treat certain functional disorders in private practice. Their responsibilities include the functional examination and therapy of phoniatrics, articulation, speech-language abilities, nutrition intake (chewing, swallowing). Graduates are able to treat the disorders of two fundamental functions of human life: the disorders of communication and of food intake. They are able to contribute to the rehabilitation of persons suffering from these functional disorders, thus enabling them to manage their social responsibilities and to integrate into society. Graduates are able to participate in preventive, curative, nursing and rehabilitating professional work on any level of the health care and/or social care system.

Qualification

Voice, speech and swallowing therapist

2. Health Care and Disease Prevention BScProgramme

Specialized programmes: Health Visitor (Hungarian, English), Public Health Care Inspector (Hungarian)

Health Visitor

The health visitor is present in the families' life during the most important steps of life: during pregnancy, reception of the new-born baby, formation of family life and at the time of enrolment to nursery and elementary school. Graduates are able to provide counselling concerning family planning and parenthood, help and provide nursing care to the pregnant woman, and perform screening tests. After childbirth, the health visitor teaches the mother the ways of breastfeeding and her tasks related to the child. They monitor the health condition and development of neonates, provide community health care for children (aged 3-18), aid in the prevention of behavioural disorders and bad habits, solve the problems of teenagers and direct them to the appropriate professional. Health visitors give mental hygiene support to families and organise vaccinations. Health visitors take part in planning, organising and conducting health development and promotion programmes for individuals and communities. They perform their duties either independently or in cooperation with doctors and other medical experts.

Qualification

Health Visitor

Public Health Care Inspector

A public health inspector deals with epidemiological tasks that consist of the organisation of public health investigations and the analysis of data retrieved during the investigations. Graduates of the speciality are able to perform public health related municipal activities, conduct appropriate municipal supervision based on current regulations, initiate, plan and manage epidemiological tasks, analyse, interpret, use and critically apply the results of epidemiological examinations, process and realize local and central health policies in order to improve the health status of the population. Public health supervisors plan and realize nosocomial surveillance, monitor the health status of the population, plan, organize, realize and evaluate preventive programmes.

Qualification

Public Health Supervisor

3. Medical Diagnostic Analysis B.Sc. Programme

Specialized programmes: Optometry (Hungarian, English), Radiography (Hungarian)

Optometry

Optometrists are able to utilise their optic, optometric, measuring and clinical knowledge gained during the training programme, conduct the examination and correction of the eye individually and prescribe optical aids (eyeglasses, contact lenses) with the aim of attaining the optimal visual acuity in patients. The professionals are able to estimate the refractive medium, refractive ability, errors of refraction, the way eye muscles function, and the ability of heterophoria and convergence. Professionals examine binocular vision, the chamber of the eye, crystalline lens, vitreous humour and the eye fundus with the help of a slit lamp, and they estimate ocular tension. Optometrists utilize their clinical and nursing knowledge during their daily activities, actively participate in improving the culture of vision of individuals, communities and the population. Through examinations, the optometrist recognises and evaluates the disorders of the eye and so contributes to the immediate receipt of specialised care.

Qualification

Medical Diagnostic Analyst (Optometrist)

Radiography

Medical diagnostic analysts individually operate modern diagnostic imaging appliances (e.g. X-ray, ultrasound, computer tomography /CT/) while keeping the related regulations and procedures. They process, evaluate and archive diagnostic imaging information, establish a daily contact with patients and prepare them for diagnostic imaging therapies. The specialists observe patients during examinations, perceive pathological situations, participate in therapeutic examinations, recognize health damaging effects as results of radiological interventions, and other technological errors, and they prevent them.

Qualification

Medical Diagnostic Analyst (Radiographer)

4. Health Care Management BSc Programme

Specialized programme: Health Tourism Management (Hungarian)

Health Tourism Management

Graduates of the training take part in organising and managing health promotion activities, prepare projects that aim at developing health tourism and strengthening international cooperation, and they participate in the implementation of tourism development programmes of the European Union. The health care manager is a versatile professional who is proficient both in health care processes and in the field of tourism. Their acquired knowledge comprises information on health, tourism and business, therefore they are not only able to see through, organise and coordinate the operation of health care institutions but with appropriate business knowledge they are able to market and manage them, too. The speciality provides the necessary knowledge to create health tourism, health preservation, curative and rehabilitation programmes.

Qualification

Health Care Manager (Health Tourism Management)

Traditional Chinese Medicine BSc Programme – in cooperation with Heilongjiang University of Chinese Medicine

Heilongjiang University of Chinese Medicine organizes its Traditional Chinese Medicine BSc training programme in Hungary at Semmelweis University Faculty of Health Sciences.

The programme based on traditional Chinese medicine is a unique training in Hungary as it is a 5-year bachelor training programme. In this framework, students study in Hungary during the first 4 years, while they can get acquainted with the science of Chinese Medicine at the Chinese university in the last year. Students who successfully complete the programme receive the BSc degree of the university of Harbin.

Qualification

Bachelor of Chinese Medicine - Accupuncture, Moxibustion and Tuina

II. Master of Science (MSc) Programmes

Physiotherapy MSc Programme

Master's level physiotherapists develop therapeutic procedures and protocols based on their extensive national and international knowledge and skills, recognise and analyse physical, anatomical, physiological and pathological factors affecting physical ability and capacity. They participate in solving scientific problems in physiotherapy, and finding new skills and knowledge in their expertise. The specialists perform scientific evaluation of the effectiveness of physiotherapeutic methods, organise and realise clinical research in physiotherapy, publish new scientific results and act as leaders in hospital units of physiotherapy, apply fundamental regulations and quality control principles in the management of health institutions and private enterprises. The promotion of health education on local, community, national and international levels also belongs to the tasks of a physiotherapist.

Qualification

Physiotherapist

Languages Hungarian, English

Nursing MSc Programme

Master's level nurses characterise the health status of the population, formulate problems, priorities and aims in public health. They conduct research and analyse technical literature, interpret the results of modern statistical methods, perform tasks of organisation and management related to the nursing process. They are able to perform human resource management tasks related to nursing. Planning budget and writing tenders, planning, realising and evaluating programmes, and establishing co-operation between institutions and individuals belong to the tasks of nurses, too. The health care professionals are acquainted with the role and the possibilities of the improvement of health sciences in the life of society, and they are able to characterise the health status of the population. Master's level nurses formulate problems, priorities and aims in public health, they take part in solving the scientific problems of nursing, in finding new and constructing ideas about the profession and in the promotion of their practical usage.

Specialisations within the Nursing MSc programme

Emergency Nursing (Hungarian) Geriatric Nursing (Hungarian) Community Nursing (Hungarian, English)

Qualification

Nurse

Languages Hungarian, English

Nutritional Sciences MSc Programme (Joint training of Semmelweis University and Szent István University)

Nutritionists develop quality food, functional food, food supplements, special nutrients, eco products and organic food. They develop food industrial innovations, determine food qualities considering hygienic aspects, take part in professional and counselling tasks in the field of nutrition sciences and catering. Master-level dietitians determine the composition of food and diets for healthy people and those with different diseases, perform innovative research and development work preferred by the support system of the European Union. Master's level dietitians are able to understand and solve professional problems assertively, come up with reform ideas, and carry out innovative activities. The nutrition specialist plans and compiles healthy diets in the field of health industry, wellness, medical tourism and hotel industry. Nutritionists promote the achievements of nutrition science in order to improve public health figures, work as highlyqualified nutritionists, researchers, advisors and health educators.

Qualification

Nutritionist

Language

Hungarian

Teacher of Health Sciences and Health Care MSc Programme

Master's level health care teachers are capable of educating people about healthy lifestyle using their knowledge gained in the fields of health sciences and pedagogy. For the sake of improving the quality of life of people, professionals plan, develop and adopt prevention programs in the specialist training, suggest problem solving and up-to-date life models in accordance with the altered health statuses. They give advice on career orientation, career choices and career planning. While applying health education methods, the teachers are able to recognize those negative effects that arise from harmful environment or poor social situation and lifestyle. In specialised health related interpersonal relationships, their activity is characterised by high communication standards and didactic preparedness. Master's level health care teachers possess the ability to educate, and to demonstrate good example while teaching, moreover, they are able to recognize the relationship and development opportunities between the training institutions, the economy, the labour market and the social environment.

Qualification

Teacher of Health Sciences and Health Care

Language

Hungarian

III. Postgraduate specialist training courses

Addictology Counselling (Hungarian) Special Translation and Interpretation in Health Sciences (Hungarian) English Language Medical Communicator (Hungarian) Podiatrist (Hungarian)

DEPARTMENTS

Department of Nursing

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Background

The Department was founded in 1975 as a part of the College of Health Care of the Postgraduate Medical School (now Semmelweis University Faculty of Health Sciences). It was the first college in Hungary to award degree to health care teachers in 1977. Academic level training of nurses began with part-time courses in 1989/90; since 1990/91 a full-time course has been offered as well. The College of Health Care was also the first to introduce a four-year baccalaureate certificate programme in nursing. The Masters-level programme in nursing was introduced in Academic Year 2002/2003.

Education

BSc in Nursing is an eight-semester programme, either a full-time or part-time, which provides students a general knowledge of science related to nursing, health and social sciences. The Nursing BSc programme is based on the Directive 2005/36/EC of the European Parliament and the one of the European Council of 7 September 2005 on recognition of professional qualifications. Our programme has been running in English since the 2011/2012 academic year.

MSc in Nursing is a three-semester part-time programme based on a former bachelor degree in nursing. During their studies, students learn the planning of nursing in all areas of health care, the organisation of the nursing work, the teaching of the basics of nursing and health care, the organisation of research projects in nursing, and the supervision of quality assurance in nursing care.

Research

The previous members of the Department's staff supported projects such as the development of a nursing curriculum with the introduction of distance education methodology into nursing training programmes (in collaboration with Columbia University, School of Nursing (USA) in 1995-98 and a Hungarian-Canadian nursing programme for a methodology and model of prior learning assessment and recognition (PLAR) of nurse-candidates (Douglas College, Canada) in 1999-2000.

In co-operation with the Chamber of Hungarian Health Care Professionals, the present members of the Department performed investigative research into the Hungarian situation with regard to needles-stick injuries in 2006, 2008, 2013, 2018 among health care professionals. The objectives of the study were twofold: to reveal the trend in the extent to which health workers

are affected, and to draw the attention of economic and education decision-makers to the importance and prevalence of the issue.

The other research program aims to explore from an international perspective the meaning of care from the point of view of nurses and patients and to find common and shared definitions between these partners of caring. In addition, it aims to identify the relationship between nurse caring and patient satisfaction and to clarify the opinion of nurses and patients on individual-ized nurse caring. In this study (2008-2014), participants from 6 EU countries: Cyprus, Czech Republic, Finland, Greece, Hungary and Italy united their efforts in order to achieve the aims of the study. Europe faces severe population ageing in the near future. A new positive vision of ageing and promotion of possibilities in older age is needed. The challenge is how to transfer this vision into practice. Higher Education Institutes and associations agreed to launch a project. Funding was received from Lifelong Learning Program-Erasmus Academic Networks for a project for the years 2013-2016.

Department of Clinical Studies in Obstetrics and Gynaecology

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Background

The Department of Clinical Studies in Obstetrics and Gynaecology was founded in 2014. Earlier, the training of midwives was performed by the Division of Midwifery of the Department of Nursing. Academic level training of nurses began through parttime courses in 1989/90; since 1990/91 a full-time training programme is offered as well. Additional programmes have been introduced in recent years, including the training of midwives (2002) and a masters-level programme in nursing (2003). The English language midwifery training programme was introduced in the 2011/12 academic year.

Education

The BSc midwifery training programme can be completed on either a full-time or part time track. Those who receive a midwifery degree upon successful completion of this program are able to carry out communicational/informational/documentation activities, provide a safe and hygienic environment, complete general midwifery tasks, and provide first aid, complete tasks related to antenatal care, conduct deliveries, care for female patients, and care for the new-born and the postpartum mother. The Midwifery BSc programme is based on the Directive 2005/36/EC of the European Parliament and of the European Council of 7 September 2005 on the recognition of professional qualifications. Duration of the training: 8 semesters, number of credits: 240 ECTS.

Research

Members of the Department's staff support projects and conduct research in different fields of health care and health care education, e.g.: health behaviour of practising midwives, simulation education and curriculum development, and the impact of maternal depression on pregnancies and early attachment.

Department of Physiotherapy

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Background

Underwater therapy equipment was used in the Császár baths as early as 1891. The first physiotherapy training in Hungary, which was more of an artistic movement therapy, was started by Alice Madzsar in 1912. The need for physiotherapy arose during the time of the Poliomyelitis epidemic, resulting in the foundation of a proper physiotherapy school in Budapest in 1955. At this time, the training was two years long, the duration of studies increased to four years only in 2000.

Education

The Department's aim is to train physiotherapists who can be valuable members of a health care team of prevention, care and rehabilitation. The Physiotherapy undergraduate programme consists of 240 credits, which corresponds to the requirements of a Bachelor's degree. The Department also offers the Master's Programme for another 90 credits in 3 semesters. Each term consists of courses corresponding to 30 credits. Courses are divided into theoretical and practical units, each unit covering a particular field of physiotherapy. At the B.Sc. programme the supervised clinical practice takes place from the 1th to the 7th semester (two to three weeks), and in the 8th semester (12 weeks) at a variety of medical centres. The physiotherapy programme comprises an independent graduate project corresponding to 1152 clinical practice hours, which is equal with 48 credits. The Master's programme's last semester can be divided into two halves. At the beginning the students have theoretical and practical and practical courses and in the last 8 weeks they attend specialised clinical practice and scientific research.

Successful completion of the programme requires that students:

- acquired sufficient knowledge and skills to be able to work independently as physiotherapists;
- acquired knowledge and skills of physiotherapeutic methods of assessment and treatment, as well as knowledge of the connection between science and long-established experience;
- developed their self-recognition and capacity for empathy, thereby paying attention to ethical considerations;
- and familiarised themselves with conditions in society which affect people's health, and gained an ability to initiate and take part in the health-promoting and preventive efforts.

Biomechanical Lab

The biomechanical lab is equipped with the latest technology. With these modern pieces of equipment we can perform dynamic and kinematic measurements to demonstrate the discrepancies of musculoskeletal, neurological and other problems, moreover, we can compare the physiological and pathological movement patterns. The use of these devices helps us to test the validity of traditional physiotherapy examination methods, as well as measuring the effectiveness of the therapies by objective data. In addition, our laboratory with the new visual stimulation biofeedback equipment can be used not only to analyse the walking but to correct and develop it. So now it is suitable for therapeutic interventions.

Both the BSc and MSc programmes' curriculum include subjects that instruct the students how to use these devices for their thesis, dissertation research and for projects in the Students' Scientific Association.

Research

Some areas of research interests at the Department:

- the biomechanical characteristics of standing stability and balance maintenance, testing by biomechanical equipment and therapeutic possibilities with physiotherapy;
- examination of posture with ultrasound-based 3D movement analyser equipment, correction of posture by physiotherapy;
- treatment of incontinence with complex physiotherapy methods;
- effects of positive end-expiratory pressure in cystic fibrosis;
- conservative therapeutic options of the knee-instabilities;
- chest physiotherapy in cystic fibrosis with the specific features of childhood;
- clinical features of paraneoplastic syndrome in the musculoskeletal system;
- the effect of exercise in cardiac rehabilitation;
- the effect of exercise in musculoskeletal rehabilitation;
- gait analysis according to the ultrasound- based 3D method.

Division of Physical Education

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The Division of Physical Education teaches the 4-semesters long criteria subject, the Physical Education (PE) for each full-time BSc student. PE classes enable students to several opportunities for sport (swimming, volleyball, handball, basketball, football, floorball, conditioning, aerobic) in different locations (gym, swimming pool).

Apart from the PE course, therapeutic swimming that is highly demanded by our students is also launched as a selective subject in each semester.

Colleagues of the Division participate in the operation of the Student Sport Association (DSE). Primarily, the Association provides student participation in the university's system of sport competitions.

Department of Dietetics and Nutrition Sciences

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Background

Education of dietetics in Hungary dates back to the 1920s and was initiated by Aladár Soós. The Department of Dietetics was founded in 1975 as part of the newly established College of Health Care (now Semmelweis University Faculty of Health Sciences). The main task of the Department is the undergraduate and graduate training of dieticians while providing courses on nutritional sciences and dietotherapy for other health professionals educated at the Faculty. The Department of Dietetics and Nutrition Sciences is responsible also for the training of Masters of nutrition and food sciences. The programme is carried out in collaboration with Szent István University.

Education

Over the last 40 years, as many as 2000 dietitians completed their studies here. The undergraduate training course consists of eight semesters, with a total number of 240 ECTS, of which 40% is devoted to theoretical training and 60% to practice. During the education students are taught about each scope of dietetic practice such as clinical, administrative and public health/ community dietitians. Graduate students can be employed in different areas of public health nutrition and nutritional research fields. Postgraduate training programmes are also available for dietitians.

In the 2009/2010 academic year a new training program, the Master of Nutrition and Food Sciences was launched. Students are taught by experienced teachers who are recognized as experts in the field of nutrition and food technology as well as in research methodology. The duration of the training is 4 semesters with a total number of 120 ECTS. Graduate students can be employed in different areas of public health nutrition and nutritional research fields.

Postgraduate training programmes are also available for dieticians. Graduating as Masters of nutrition and food sciences allows students to continue their studies at PhD level at Semmelweis University Doctoral School in the Health Sciences Researches programme.

The Department of Dietetics and Nutrition Sciences has collaborative partnership with the European Federation of the Associations of Dietitians (EFAD).

Research

The Department has been involved in several projects sponsored by, for example, the EU: the "Ageing Nutrition" project (2004-06, organised by the Department), the "PORGROW" project (2004-06), furthermore, the Department participated as partner institution in the thematic network called DIETS1, "Dietitians Improving the Education and Training Standards (2006-09)" and DIETS2, 'Dietitians ensuring education, teaching and professional quality' (funded by the EACEA 2010-13). The Department is involved in the preparation of the Hungarian version of EPODE Project collaborating with the Association of Hungarian Dieticians (2014).

Members of the Department's staff are involved in the PhD education as tutor teachers.

Research area:

- Food production by fermentation for patients with food allergy and intolerance
- Nutrition Science Analysis and Diethoterapic Interventions
- Innovation in public catering
- Disease Specific Nutrition Therapy and Communication Method
- Examination of the nutrition and nutritional status of the elderly

Fields of scientific interest are:

- Investigation of biologically active component of vegetable and fruit during cultivation, post harvesting, food technology and food preparation
- Determination of mycotoxin contamination in foodstuffs
- Monitoring of allergen contamination of equipment, tools and food preparation process
- Role of food labelling in order to improve informed and safe food choice of people with special dietetic needs
- Monitoring of different groups' nutritional status and nutrient intake for the purpose of health preservation and to identify risk factors of diet-related diseases
- Assessment and analysis of the fluid consumption habits, attitudes and product choice preferences and education of theme for the purpose of health preservation
- Teaching correct dietary habits in children's catering, development of eating behaviors
- Members of the Department's staff are actively involved in the boards of various professional organizations in the field of nutrition, such as Hungarian Society of Nutrition, Association of -Hungarian Dieticians, Hungarian Food Allergy and Food Intolerance Databank, College of -Health Dietetics and Human Nutrition Council, National Association of Catering Managers.
- Moreover, they hold positions in the editorial boards of several professional periodicals.

Department of Oxyology and Emergency Care

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Background

Oxyology – the science of rapid intervention as described by the famous Hungarian physician Aurel Gabor - is a specialisation that has been recognized since 1975. The main task of the Department of Oxyology and Emergency Care is the training of paramedics at the highest possible level. It is our mission to qualify health care providers not only for the National Ambulance Services but also for the national emergency departments. The department is also responsible for the first aid teaching at the Faculty of Medicine in English and German language, and for first aid at the Faculty of Dentistry.

Besides theoretical and practical BSc trainings we offer postgraduate specialist trainings for qualified nurses and paramedics, and regular accredited courses in different areas of acute care for physicians and nurses. We have been participating in the training of the Doctoral School of the Faculty with an independent research subject since 2009, while regularly offering advanced education for the students of Semmelweis University's School of PhD Studies.

The Department manages its tasks with four full-time members and a number of highly qualified consulting teachers. Practical teaching is organized with the co-operation of the National Ambulance Service, hospital practices are completed in accredited teaching hospitals.

Education

- Regularly provides vocational and postgraduate trainings.
- Is closely connected with the new University Emergency Centre where practical teaching takes place.
- Has an established relationship with the University of Massachusetts, Department of Emergency -Medicine in the area of research and development.
- Members of the Department participate in numerous professional and societal organizations of acute care and hold leading positions in the Society of Emergency Medicine and Oxyology.
- The leader of the Department is an active Examiner in Emergency Medicine for the European Board of Emergency Medicine.
- Students can join the PhD School offering participation and thesis work on "Point-of-care technologies in emergency medical care".
- An MSc training programme targeting the intrahospital emergency care has been started resulting in the qualification of advanced practice nurses (APN), those capable health care professionals who work in the emergency departments under the supervision of the lead physician.

- We have launched a monthly meeting named OxyNox for trainee and graduate paramedics. This event is held in the Vas utca building where a well-known representative of prehospital care is invited as guest speaker followed by case discussions from everyday practice.
- The Paramedic Day is organised each May, where students demonstrate their practical skills during a competition.

Research

PhD research topic:

- Point of Care technologies in emergency medical care.

Students' Scientific Association research topics:

- Acute Coronary Syndrome;
- First aid training;
- Position and activities of paramedics in the Emergency Department;
- Care of the multiple injured patients;
- Shock management;
- Mental aspects of rescue/emergency work;
- Complex cardiopulmonary resuscitation;
- Communication in emergency situations;
- Role players and standardized patients in HiFi simulation.

Department of Family Care Methodology

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Background

Academic level training of health visitors (similar to district or family nurse) started in 1975 in Hungary.

Education

The aim of this eight-semester programme is to train health visitors who can give assistance to children and pregnant women in social care and in the prevention of illnesses. Practical training takes place under clinical and real-life circumstances (e.g. in hospitals and district consulting rooms).

The basic subjects (e.g. anatomy, physiology, pathology, biology) are followed by special studies in paediatrics, nursing, obstetrics, sanitation and nursing methodology. Pedagogy, psychology, health education, social sciences and information sciences are integrated into the curriculum. After submitting a thesis, students are tested in theoretical, practical and professional skills before attaining their diploma. Upon completion of the programme health visitors are entitled to work in municipal primary health care facilities, or in schools and in the area of primary preventive medical services. They can perform their duties either independently or in cooperation with doctors and other medical experts.

Research

- Preventive/visiting nurse system in Europe
- The characteristics of childhood onset depression according to depressive symptoms, co-morbidities and quality of life
- Influence of smoking during pregnancy on preterm-birth and low birth-weight
- Connection between childhood obesity, IDDM and physical activity

Department of Epidemiology

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Head of Department

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Background

As the legal successor of the Department of Public Health, the Department for Epidemiology is the newest institutional unit of the Institute for Health Promotion and Clinical Methodology. The overall duty of the Department is to provide appropriate training for health practitioners in the field of public health and carry out different research projects. Our aim is to equip students with the knowledge and skills to make valuable contribution to public health. The Department offers undergraduate degree programmes at BSc level and a master programme will be introduced in the near future.

Courses of disease prevention and health promotion are available in English for full time students of physiotherapy. The Department for Epidemiology offers a widerange of research topics with professional assistance for students, and they also contribute to the improvement of our doctoral degree programme.

A well-equipped laboratory belongs to the Department for laboratory practices of microbiology and infection control investigations.

Education

Within epidemiology, students are taught both general and specific aspects of pest control and disinfection techniques, including insect and rodent control. Following the fourth and sixth semesters, students take part in four-week practice sessions, and during the eighth semester they participate in a thirteen-week practicum.

Research

Infection Control Centre

In order to prevent nosocomial and healthcare associated infections, the Department forms an infection control centre in collaboration with external public health partners.

The key elements of active laboratory surveillance system:

- molecular biology methods for comparison/characterization of strains isolated from different sources;
- monitoring infections;
- computer data analysis of bacterial isolates including antimicrobial-resistance patterns.

Burial customs and funeral practices

- Treatment of dead persons according to the law and the process of mourning
- Dead people from a public health and cultural historical view
- Characteristics and forms of burial from an intercultural perspective

Research Projects for the Students' Scientific Association

- Epidemiology and prevention of infectious diseases
- Epidemiology of diseases of civilization
- Profile of secondary prevention in Hungary and in the EU
- Appropriate food hygiene practice, infestation of food, food poisoning
- Probiotics and their effects on the human body
- The impact of climate change on food safety
- Research on natural antimicrobial proteins

Department of Clinical Studies

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Background

The tasks of the Department of Clinical Studies are: instruction of clinical knowledge in the frame of the bachelor and master degree programmes of the Faculty of Health Sciences, and participation in health sciences programmes of Semmelweis University's School of PhD Studies as consultant or reviewer.

Education

- The Department's educational activities include:
 - transmission of evidence-based, modern, medical-clinical knowledge, and familiarization with the etiology and pathomechanism of different diseases;
 - enabling students to recognize the signs of diseases, evaluate symptoms, and complete adequate patient care based on competences;
 - providing basic pharmacological knowledge, therapeutic possibilities and effects, side effects, therapeutic responses;
 - helping students to gain insights into the clinical significance of most important laboratory, radiological and endoscopic examinations, into the methods of clinical problem-solving, and into the pharmacological basis of medical therapy;
 - preparation for the assistance in advanced diagnostic and therapeutic methods, the understanding of current medical science, and the acquirement of the competences required for health practitioners;
 - the development of the solid approach of prevention-remedy-nursing-care-rehabilitation.
- The Department actively participates:
 - in the preparation of student-focused didactical strategies;
 - in the development of new subjects and training programmes;
 - in the preparation of textbooks and lecture books;
 - and in special didactical and applied clinical researches.
Research

- Hemostasis changes in pregnancies
- Diagnosis and therapy of thrombophilias
- The methodology of teaching clinical knowledge
- Fitting the level of higher education to the European Qualification Framework
- Development of validation processes in higher education
- Family planning, family care
- Social and cultural background of health care employees
- The support of parents expecting their first child; application of the APP model (PhD research)
- Family planning and maternity plans of Health Visitor and Police Officer students
- Anaesthesiology and Intensive therapy patient security/safety, monitoring
- Clinical nutrition and its management with pharmaceutical aspects
- Risk screening, nutritional assessment, oral nutrition support, enteral and parenteral nutrition,
- Parenteral nutrition compatibility and incompatibility
- Methods of examination of TPN emulsions, physicochemical stability of TPN
- Role of nutrition team

Department of Clinical Ophthalmology

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Head of Department

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Background

The education of optometry started in 1992 in Hungary at the College of Health Care (now Semmelweis University Faculty of Health Sciences). The Department of Clinical Ophthalmology was established in 2008. Prior to this, the education of optometry belonged to the tasks of the Department of Clinical Studies. The Department is responsible for training optometrists. This includes developing the curriculum of the optometry training, organising clinical and optical trainings for students, and keeping connection with educators and institutions who participate in the practical training.

The training is the one and only optometry training in Hungary and runs as a part time training programme. The undergraduate training programme consists of eight semesters and 240 ECTS with a total number of 1062 of contact hours and 6138 individual hours, of which 40% is devoted to theoretical training and 60% to practice.

Graduate training programmes are also available after completion of the basic training.

Research

The Department conducts scientific research activities in two ways:

- 1 In cooperation with the Department of Ophthalmology at the University in the following fields:
 - Femtolaser in the surgery of cataracts;- Development of a new intraocular lens in surgery of cataracts.
- 2 The Department's individual scientific work is carried out in the following fields:
 - Correction of presbyopia with contact lens;- Screening of the visual acuity and ametropia of children of age 7 to 14;
 - Contact lens related dry eye; Contact lens wearing in childhood;
 - Computer Vision Syndrome and its connection with ametropies.

Department of Imaging and Medical Instrumentation

Address

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Head of Department

Associate Professor Dr. Attila Doros MD, PhD

Contact person

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Background

The Department of Imaging and Medical Instrumentation conducts teaching, scientific and supplemental activities. The Department is responsible for the education of imaging diagnostic analyst specialists corresponding to the task of training highly qualified radiographers who are experienced in every sub-field of radiology.

In the four-year part-time BSc education, the first three basic semesters are followed by specialist courses (Conventional radiology, US, MRI, Nuclear Medicine, Interventional therapy, Radiation therapy).

Students attaining the degree are able to use imaging tools to plan and perform examinations on their own, and to process and apply the obtained information.

Teaching is performed by leading radiologists and radiographers, mainly of Semmelweis University and of large teaching hospitals. Practical training takes place in these hospitals as well.

The Medical Engineering group teaches "Basics of Biophysics and Medical Technology" and "Info-Communication" to dietitian, nurse, health visitor, physiotherapist, paramedic/ambulance officer and public health supervisor students.

The Department continuously produces innovative books, image collections and other teaching materials necessary for the education. For this purpose, the Department works in collaboration with the other 3 similar departments in the country to harmonize the teaching materials and the requirements.

An emphasized task of the Department is the graduate teaching of radiographers including the organisation of courses.

Research

The professors of the Department have leading positions in associations of radiology, radiography and medical technology inside and outside Hungary, and they are in the editorial boards of various scientific papers. The focus of the researchers is on clinical decision support, medical informatics, self-monitoring, on developing an immersive learning environment, or a virtual learning environment. Significant focus is put on emergency care systems, on the reduction of supply times and on successful cooperation with emergency departments.

Moreover, the Department joined the European Association of Radiographers.

Department of Applied Psychology

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Acting Head of Department

Professor Dr, Ildikó Baji PhD

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The main task of the Department is to offer basic psychological knowledge for all departments of the Faculty of Health Sciences in four modules which are as follows:

- Basics of Psychology theoretical course including general psychology, developmental psychology, theories of personality.
- Social Psychology theoretical course including group dynamics, social phenomena, attitudes, prejudices, attributes, stereotypes.
- Communication and Personal-Development We use structured exercises to develop skills in the following fields: enhance group cohesion, basic communication skills, assertive communication, emphatic communication, stress managing methods, conflict management, and profession-specific communication strategies.
- *Health Psychology* Health psychology is the field within psychology devoted to understanding psychological influences on how people stay healthy, why they become ill, and how they respond when they do get ill. It focuses on health promotion and maintenance; prevention and treatment of illness; the ethology and correlates of health, illness, and dysfunctions; and improvement of the health care system and the formulation of health policy. Health psychologists' fields of work: behavior risk factors/"pathogens" (possibilities of intervention for correction of risk behavior) behavior health preservation / "immunogenic". Making research of what are the views, opinions, attributes of health and illness among everyday people. Communication, cooperation, decision-making (health professional patient interaction). The environment of treatment (how the work environment influences the health worker). Psychology of patients with chronic diseases (disabled, dying).

Division of Applied Pedagogy

Another task of the Department is promoting the basic knowledge of theoretical and practical health education and prevention for students in BSc and MSc trainings; emphasising the pedagogical aspects of patient-care; improving the indispensable skills in counselling and education in paramedical professions; teaching methods of health promotion, and the possibilities of development of health culture, lifestyle and health behaviour.

Research

Since the Department's scope is necessarily broad, staff members have been participating in research activities of various psychological fields:

- Nutritional and sport habits of students;
- Stress among the Professional helpers;
- The exploration of the learning attitude among 19-26 years old students;
- The relationship between burn out, emotion regulation and empathy among health professionals;
- Assessment of ethical and legal issues regarding professional tasks of doctors and nurses working in perinatal centres from the point of view of dilemmas related to the beginning and the end of life

Department of Addictology

Address

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Head of Department

Professor Dr. József Rácz MD, PhD, DSc

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Background

The Department of Addictology coordinates the educational and research activities of the Faculty related to addictive disorders. Some of our fields are the symptomatology, therapy, and prevention of addictive problems. Addiction medicine is present at every specialization of our Faculty; secondary topics like intravenous drug-use, models of preventive medicine are especially practical and optional courses. Our students are involved in many of our research programs in collaboration with other institutions in Hungary or abroad. The new fields of addiction medicine like gambling and Internet-addiction are also present in our teaching and research activities.

We have close contacts with therapeutic and rehabilitation institutions in Hungary, preventive and outpatient centers (Blue Point Center).

Education

Our Department coordinates the "Addiction Counsellor" specialization, which is the first and only opportunity to study addiction counselling in our country. The most important specialists of this field are our invited teachers. Our counsellors are also taught economics and management, which are necessary for their everyday work as coordinators of therapeutic and financial processes. They are also able to organize preventive courses on alcohol and illegal drug abuse fields.

Research

Our research interests include the application and adaptation of counselling methods in the health and social care of alcohol and drug abusers, the analytic epidemiological study of deviant behaviour, biological and ethic sides of human behaviour, the social background of medical organizations, and researches about the newest therapeutical approaches for intravenous drug users and dependent patients as well as the qualitative and quantitative approaches in the study of hidden substance users (epidemiological, qualitative and quantitative studies on the users of new psychoactive substances).

Department of Morphology and Physiology

Address

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Head of Department

College Professor Dr. Gabriella Dörnyei PhD

Contact person

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Background

The Department of Morphology and Physiology as a unit of the Institute of Basic Health Sciences has been operating at Semmelweis University Faculty of Health Sciences since its foundation in 1975. The Department participates in the education of the full time English language physiotherapy BSc program since 2005. The full time English language training of nurses and midwives was introduced in the 2011/2012 academic year.

Education

The Department's educational tasks include the teaching of core and optional subjects to students participating in the full- and part time trainings of the Faculty, as well as to students taking part in the Master's level programmes, in the doctorate courses and in vocational trainings. Members of the Department's staff contribute to different medical and health care research projects, too.

The Morphology Working Group teaches Anatomy and Applied Biology, whilst the Physiology Working Group teaches Physiology-Pathophysiology, Chemistry and Biochemistry in the first, second and third semesters. The following optional subjects are offered in English language:

- Biology of stem cells;
- From classical genetics to epigenetics;
- Chapters of venous circulation and hemodynamics;
- The genetic basis of muscle disorders;
- Functions of hormone receptors: scientific research and clinical practice, health and disease,
- Applied sport physiology and sport health sciences.

Research

The main research areas of the teaching staff are as follows:

- Maintaining of functional abilities and prevention of falls among older adults;
- The examination of decreased function due to low back pain with validated, self-reported questionnaires;
- The examination of posture balance and talent parameters of high school student age group;
- Signalling pathways and autophagy in cancer;
- Stem cells: prospects and challenges;
- Statistical analysis of Hungarian twin data;
- Signal transduction pathways in maternal-fetal interactions in normal and complicated pregnancies;
- A possible model of venous varicosity in rats;
- Effects of hormones on vascular remodelling;
- Roles of G protein-coupled receptor signalling in the vascular function;
- Roles of physical activity in prevention of chronic diseases;
- Signs of cardiovascular sport adaptation;
- Gerontokinesiology translational animal models: organization of motor control and cognitive functions,

- Walking assessment and dementia prediction;
- Prevention of falling and fracture in elderlies;
- Movement/sport nutrition;
- Active and passive exercise (experimental and human studies);
- Bariatric and metabolic surgery in rats;
- Neurocardiological aspects of exercise-driven rehabilitation in rats,
- Survey of environmental factors influencing ADHD symptoms among elementary school children.

Department of Social Sciences

Address

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Head of Department

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Background

The Department of Social Sciences belongs to the Institute of Basic Health Sciences, furthermore it has a specialised unit, the Division of Foreign Languages and Communication. The role of the Department is to support all students to recognize and to prepare for the social, cultural and economic embeddedness of their future health care professions. Our Department offers theoretical and practice-oriented knowledge – discussing general and special health care related problems – in the fields of Sociology, Social Anthropology, History of Health Sciences, Law, Ethics, Scientific Research Methods, as well as Medical Economy and Management. These modules – as essentials in health care labour market – are to improve conscious employee competencies and social responsibility. Our Department actively participates in an extended Europe-wide network, CO-HEHRE, by delegating one of the council members for its management who serves as vice president of the organization. The members of the Department of Social Sciences occupy leading positions in several professional and social organizations and take part in their work (Hungarian Association of Medical History, Public Body of Hungarian Academy of Sciences, Hungarian Sociological Association, American Anthropological Association, The European Association for the History of Medicine and Health (EAHMH), Hungarian Association of Sport Studies). Furthermore, our colleagues have a hand in the edition of different scientific journals, such as Development and Financing, Central European Studies, Kaleidoscope – Journal of History of Culture, Science and Medicine, and the newly initiated Developments of Health Sciences.

The Department takes part in the educational development of all BSc and MSc programmes of the Faculty and in the elaboration of curricular directives. As a participant of full time and part time trainings in Nursing and Patient Care, Health Care and Disease Prevention, and Medical Laboratorial Diagnostic Imaging programmes, the Department is responsible for teaching the following subjects: Health and Society, Introduction to Health Care Economics, Health Care Management, Health Care Law, Bioethics and Professional Ethics, Philosophy of Health, Thesis Methodology. Additionally, the Department has been organising the Health Care Project Manager postgraduate course (in Hungarian) since 2008, which enables graduates of the course to successfully (project) manage tasks and situations in every area of the health system. As a result of an educational cooperation between Semmelweis University Faculty of Health and Public Services, Semmelweis University Faculty of Health Sciences and the Budapest Metropolitan University, the Health Care Management BSc started in Hungarian language (with Health Tourism Management speciality) in a form of part time programme in September 2014. The programme is supervised by the Faculty of Health and Public Services (the programme supervisor is Dr. Miklós Szócska). Our Department is involved in the coordination and teaching work related to the programme.

The Health Care Management BSc programme enables graduates of the course to successfully design and construct client-centred health tourism programs, to analyse statistical data related to tourism, and to coordinate touristic and health touristic projects with the implementation of knowledge about the system of health care and touristic institutions.

One of the main concerns of the Department is to provide adequate and flexible knowledge in the most suitable ways, therefore we devote special attention to the innovation of our methods of instruction. To keep a continuous interdisciplinary discussion about this topic, we have organized five 'Professional Days on Teaching and Research Methodologies' so far. Most of our staff have experience in teaching abroad, which has broadened our perspectives and made us more conscious about the approaches we apply.

Research and professional forums

With the aim of building networks of knowledge relating to social sciences and health, the Department of Social Sciences highly engaged with the creation of forums for interdisciplinary and inter-professional discussion. As a result, the Department hosted various professional days and conferences in the past years.

As a result of this work, in 2016 the Department organized the 5th Professional Day and Conference on Patient Rights. The next edition of this bi-yearly event was in the fall of 2018. The aim of the conference was to examine the current ethical and legal issues arising in the everyday practice of health care with the involvement of a wide circle of scientific and professional audience. The highlighted topics of the conference are the ethical and legal questions of health care for children, the dilemmas related to informed consent and communicational gaps during health care delivery, the questions of legal liability in emergency care and the opportunities for implication patients' rights during health care delivery.

In 2018, the Department gave place for the Professional Day on Health Tourism. The programme of the event put emphasis on the facilitation of discussion about the opportunities, weak points, results and possible legal regulation of health tourism.

With the initiation of the Faculty of Health Sciences, Department of Social Sciences a conference has been organized since 2017 with the title of 'Harmful/Protective Society'. The conference is a fruit of cooperation between three organizational units of Semmelweis University: the Faculty of Medicine Institute of Behavioural Sciences, the Faculty of Health and Public Service, Institute of Mental Health and the Faculty of Health Sciences Department of Social Sciences. The primary aim of the conference is to build a scientific community for those researchers who work on better understanding of the interconnectedness of health and society. The programme of the conference represents the results of ongoing research projects in the fields of Medical Sociology and Sociology of Health, with the emphasis on the mental, physical, and social dimension of health. Furthermore, the participants may share their experiences about challenges of teaching social sciences in health care training programs.

Main research areas of the Department include: labour migrants in the health care sector; health and social care of migrants and minorities in Europe; comparative analysis of archive sources, legal sources on health care of the 18-19th centuries; epistemology of interpretive anthropology; developing intercultural competences; minority education and its effects on cultural

connectedness; comparative analysis of dentistry business income producing capability; typology of ancient votive uterus-representations; analysis of the archival sources related to the birth-control and the midwife training; ethical and legal dilemmas in the practice of perinatal intensive care from the point of view of the beginning and the end of life; the socio-economic status of nurses and its sociocultural context; modern pedagogical approaches of Hungarian health promotion by peer education (TANTUdSZ Programme).

Our department provides external review and evaluation for the Healthy Diversity project, which is an international consortium of 7 different organisations aiming at developing training materials for health care professionals in VET sector.

Division of Foreign Languages and Communication

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Head of Division

Language teacher Ms. Katalin Zöldi Kovács PhD

Contact person

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Background

The Division of Foreign Languages and Communication is a unit of the Department of Social Sciences.

Education

The main tasks of the Division of Foreign Languages and Communication are to plan and develop the principles and system of language education at the Faculty of Health Sciences; to teach Medical Latin, Health Care Terminology, English and German for Healthcare Purposes to full-time and part-time students. Students with a B2 language certificate also receive language training; they can choose from various competence-based courses. The Division offers a wide variety of elective courses (from Interpreting medical diagnoses and prescriptions through Abstract writing to Computer-aided translation) to provide opportunity for further language development.

The Division coordinates the postgraduate Medical Translation and Interpreting programme as well as the English Language Medical Communication program.

The Division of Foreign Languages and Communication is also responsible for teaching Medical Terminology and Hungarian as a Foreign Language to foreign students enrolled in the English and German programs of the Faculty of Medicine, and the English programs of the Faculty of Pharmacy and the Faculty of Health Sciences.

Our division functions as a teaching practice venue for teacher trainees of Hungarian as a foreign language of Károli Gáspár University of the Reformed Church in Hungary.

All our courses are supplemented by textbooks/seminar notes compiled by our teachers and an online language learning program specially designed for teaching Health Care Terminology and Language for Healthcare Purposes.

The Faculty is a test venue for the state accredited Professional Language Certification (PROFEX).

The members of the Division also take part in the work of various professional associations, such as the Hungarian Association of Applied Linguists and Language Teachers and the National Association of Teachers and Researchers of Languages for Specific Purposes (SZOKOE).

Research

The Division's research interests include the origins of the functional approach in Hungarian linguistics, linguistic identity, logical relationships in health care translations, and exploring the terminological awareness of health science students.