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Monday:  1 p.m. – 3 p.m.  
Tuesday:  1 p.m. – 3 p.m.  
Wednesday: CLOSED  
Thursday:  10 a.m. – 12 p.m.  
Friday:  10 a.m. – 12 p.m.

Student Card:  
Monday:  1 p.m. – 3 p.m.  
Tuesday:  1 p.m. – 2 p.m.  
Wednesday: CLOSED  
Thursday:  10 a.m. – 11 a.m.  
Friday:  CLOSED
SCHEDULE FOR THE 2011/2012 ACADEMIC YEAR
(Faculty of Medicine, Faculty of Dentistry, Faculty of Pharmacy)

Opening Ceremony September 4, 2011

First Semester

| Date of registration | September 5 - 9, 2011 |
| Place of registration | English Secretariat |

**First day of the semester**

- Faculty of Medicine (1st–5th years) September 12, 2011
- Faculty of Dentistry September 12, 2011
- Faculty of Pharmacy (1st–4th years) September 12, 2011

**Last day of the semester**

- Faculty of Medicine (1st–5th years) December 16, 2011
- Faculty of Dentistry December 16, 2011
- Faculty of Pharmacy (1st–4th years) December 16, 2011

5th year Pharmacy:

- **Practical training** July 25, 2011 – September 23, 2011
- **The semester lasts for 5th year Pharmacy** (12 weeks) September 26 – December 16, 2011

**Examination period**

- Faculty of Medicine (1st–5th years) December 19, 2011 – January 27, 2012
- Faculty of Pharmacy (1st–5th years) December 19, 2011 – January 27, 2012

**Extension (retake exam) period**

- Medicine, Dentistry, (1st–5th years), Pharmacy (1st–5th years) January 30 – February 3, 2012

Second Semester

| Date of registration (1st–5th years) | January 30 – February 3, 2012 |
| Place of registration | English Secretariat |

**First day of the semester for 1st–5th years**

- Medicine and Dentistry February 6, 2012

**Last day of the semester for 1st–5th years**

- Medicine and 1st–4th years Dentistry May 18, 2012
- Last day of the semester for 5th year Dentistry May 4, 2012

**Faculty of Pharmacy**

- **First day of the semester (1st–4th years)** February 6, 2012
- **Last day of the semester (1st–4th years)** May 18, 2012

**First day of the semester (practice)**

- for 5th year January 30, 2012

**Last day of the semester (practice)**

- for 5th year May 30, 2012
Examination period for Faculty of Medicine, Faculty of Dentistry
1st – 5th year Medicine May 21 – June 29, 2012
1st – 4th year Dentistry May 21 – June 29, 2012
5th year Dentistry May 7 – June 15, 2012

Faculty of Pharmacy
1st – 3rd year May 21 – June 29, 2012
4th year May 21 – July 13, 2012

Autumn examination period for
1st – 4th year Medicine August 21 – 31, 2012
5th year Medicine (starts earlier) July 2 - 6, 2012
1st – 4th year Dentistry August 21 – 31, 2012
1st – 3rd year Pharmacy August 21 – 31, 2012

Extension (retake exam) period
1st – 4th year Medicine and Dentistry September 3 – 7, 2012
1st – 3rd year Pharmacy September 3 – 7, 2012
4th year Pharmacy July 16 – 20, 2012

Schedule for 6th year Medicine
July 18, 2011 – May 11, 2012

General Board Examination Period
Faculty of Medicine June 11 – 22, 2012
August 21 – 31, 2012
Faculty of Dentistry June 18 – 22, 2012
Faculty of Pharmacy June 1 - 22, 2012
Graduation Ceremony for Dentistry July 7, 2012 (Saturday)
Graduation Ceremony for Pharmacy June 30, 2012 planned (Saturday)

Holidays
Spring (including Eastern) holidays April 2 – 6, 2012

No lectures or seminars
National/Public holidays:
October 21, 2011 from 9.30 a.m. (Friday)
November 1, 2011 (Tuesday)
November 5, 2011 Dies Academicus (Saturday)
March 14, 2012 from 10.30 a.m. (Wednesday)
March 15, 2012 (Thursday)

Research Students’ Conference: February 15 - 16, 2012
(Wednesday, Thursday)
for Medicine 2nd – 6th year,
for Dentistry 2nd – 5th year
on February 15 for Pharmacy 2nd – 5th year

Faculty Day: April 20, 2012 (Friday)
for the students of the three faculties

Please note that during the autumn examination period and in the extension (retake exam) periods only a limited number of dates will be given and in the extension (retake exam) periods students may sit for repeated examinations only!
The Examination and Studies Regulations of the Faculty of Medicine, the Faculty of Dentistry and the Faculty of Pharmacy under the credit system

NOTE: The translation does not contain the items which refer to the local regulations!

Article 1

The effect and scope of the Examination and Studies Regulations

3. Knowledge of the content of the Regulations and compliance with them is obligatory for all educators, researchers, students and administrators participating in education directly or indirectly.

Article 2

The fundamentals of the credit system

1. The obtaining of a credit means the completion of 30 hours of work by the student. Hours of work include both classes of teacher-student contact and individual hours of work by the student.
2. Credit may only be granted for subjects that are evaluated through a five-scale or a three-scale grade. Credits may only be expressed in whole numbers.
   Article 58 point 7 of the AHE (Act on Higher Education)
   For acquiring knowledge of subjects including the same material credit can be granted just once.
3. A credit may be obtained only by obtaining a pass (2) in case of a five-scale grade or an acceptable (“megfelelt”) in case of a three-scale grade. The number of credits received does not depend on the evaluation of the student’s knowledge if the performance of the student is accepted. However, a credit is only valid if the criteria of the present regulations are met.
4. In any semester, credit points obtained up to the level of ten percent in excess of the required amount may go on the student’s record. In case the total number of credits for obligatory subjects, obligatory electives, elective and dropped courses in the previous given semester exceed the total number of credits that may be taken, the number of credits in excess may be accounted for in the following semester(s) as benefits the student.
5. It is mandatory to collect a set number of credits from different groups of subjects within the time-limit set for obtaining an undergraduate level or master’s degree and it is also necessary to meet certain criteria. The student may progress in accordance with his or her individual schedule with regard to the pre-studies rules and other regulations and using the options.
6. A criterion is a compulsory task set among studies and graduating criteria for which no credit is given (EG: traineeship).
7. At Semmelweis University a degree may be obtained in a period shorter than 2 semesters in accordance with the pre-studies regulations.
Article 3

The curriculum

1. The detailed educational and studies requirements of the program are set in the curriculum.
   The completion of the compulsory subjects is mandatory for everyone participating in the degree course; they may not be substituted.

6. A pre-requisite is the verified meeting of a certain or some material of another subject, module or group of subjects that is needed for understanding the material of a subject. A course may only be taken if the student has completed all subjects and criteria defined as pre-requisites prior to taking the course.

9. A module includes several subjects of the degree course built on each other (e.g. basic module, core material module).

Article 5

The periods of studies

1. During the semester students attend classes and complete tasks related to the subject. The length of the semester is at least 13 weeks. The length of the lessons (lectures and seminars) is 45 minutes.
   In the 9th semester of the Faculty of Pharmacy the length of the semester is 12 weeks to which 8 weeks professional training is added.

2. The exam period is for taking exams; the exam period designated to the autumn semester is six weeks long plus one week retake exam period, and, in case of the spring semester, 8 weeks are provided – 6 weeks in May and June and 2 weeks in the summer break before the beginning of the autumn semester. The one-week time retake exam period falls in with the one-week registration period straight before starting the autumn and the spring semester.
   During the exam period the meeting of requirements related to the semester may only be met in exceptional cases.

3. The period of professional training:
   Faculty of Medicine: The weekly number of hours of summer training and training for sixth-year students is 35. In addition every two weeks a 24-hour duty is required.
   Faculty of Pharmacy: The weekly number of hours of summer training is 35 and of professional training preceding the General Board Examination is 40.

Article 7

The legal relationship of students and the university; obligation to register

Government Decree 79/2006 (April 5)

Article 24

(1) The student (in cases defined by the regulations of the institute of higher education) is entitled to cancel his or her registration made under Article 40 Section 3 of the act on higher education in the month following the beginning of the term. In case the student does not request the suspension of his or her studies by this deadline, his or her semester must be considered as active, even if he or she fails to participate in any class or to fulfill any requirements. In case the student suspends his or her studies, the given semester must be considered a passive semester.
1. A person who is admitted or transferred to Semmelweis University may establish a legal relationship as a student with the university.

2. Prior to commencing their studies, students are required to take an oath.

3. A student entitled to commence his or her studies is obliged to register for the very first term of his or her studies. By registering the student declares that he or she is aware of the relevant rules of the University and Faculty and will comply with these.

4. Registration and applications for suspending or resuming studies must be made in the period specified by the Faculties.

5. The registration must be made by completing a registration form and by registering through the student information system. An application to continue studies must be made by registering through the student information system. In both cases, submitting of the lecture book is required in the Dean’s Office.

The lecture book must include:
   a) the subjects specified as obligatory in the order specified by the Dean’s Office,
   b) the obligatory electives,
   c) the elective courses,
   d) the name of the instructor,
   e) the codes and credits of the subjects, the number of hours and the exam requirements.

6. In case the student has an accident or becomes ill or under any other reasonably unforeseeable circumstances, the student may cancel his or her application to continue studies.

7. The registration for courses means the registration for lectures and seminars of a subject. It is conditional on meeting the relevant pre-requisites.

8. A student studying abroad temporarily is obliged to register for continuing his or her studies in the relevant semester.

9. In case the student is obliged to pay the expenses of his/her studies, it is a condition of registering and continuing studies to comply with this obligation.

10. The student is obliged to report any change to his/her data registered in the student information network without delay. There is no legal remedy available for any negative consequence arising out of such failure to report any change. Failing to report any change the student can be fined for that.

11. In case the student continues his/her studies in the given period, he/she is entitled to
   a) register subjects in accordance with the progress of studies and take exams of these subjects,
   b) visit the facilities of the University available for students (library, cultural and sport facilities)
   c) use the services of the students’ representatives
   d) be a member of the Research Students’ Scientific Association (TDK),
   e) use a student card that certifies his/her status as a student,

Article 8

Suspension of studies

Article 50 of the AHE
(1) The legal relationship of the student can be suspended for maximum two semesters continuously in case the student reports it in the preceding semester. Such a request can be asked for on divers occasion earliest after the completed first semester.
1. The student is obliged to report in the period designated for this purpose through the student information system in case he/she does not intend to perform his/her obligations as a student in the next period of studies.

2. When the legal relationship of the student and the University is suspended,
   b) the student card of the student may not be validated

3. By request the person admitted may be allowed to delay the commencement of his/her studies by a maximum of 2 years. The student is obliged to declare such an intention in a written form addressed to the English Secretariat. When the period of delay expires, the student is obliged to register even if he or she receives no reminder. In case he/she misses this registration, he/she will lose the right to commence studies.

**Article 9**

**The termination of the legal relationship between the student and the University**

Article 76 of the AHE

(1) The legal relationship terminates if
   a) the student is transferred to another institute of higher education (as of the day of transfer)
   b) the student declares that he/she wishes to terminate the legal relationship (as of the day of such declaration)
   d) following the entire period of studies (as of the day of the first final exam period)
   h) the student is excluded by a disciplinary resolution (as of the day the resolution becomes final and non-appealable)

(2) The University may terminate the legal relationship of the student by unilateral declaration if
   a) the student fails to perform his or her obligations as specified in the Examination and Studies Regulations and the curriculum regarding the progress of studies,
   b) fails to report for two consecutive semesters,
   c) following the suspension of studies the student fails to resume studies provided always that the student is warned at least twice in writing to fulfill the obligation by the specified deadline and the student has been informed on the legal consequences.

(3) A person whose legal relationship with the University as a student is terminated must be deleted from the student register.

**The legal relationship of the student is terminated by dismissal if**

1. The number of credits obtained by the student from obligatory and obligatory elective courses is lower than 50% of all obtainable credits by the end of the 4th active semester from the first registration,

2. The student has used all available active semesters specified in the regulations but fails to complete his/her studies, or the total of the minimum necessary number of semesters for completing studies and used semesters together exceeds the number of available active semesters,

3. Due to dropping of an obligatory course the student fails to obtain the missing credit points by no later than the two following semesters in which the subject is offered,

4. In case the legal relationship terminates for the reason specified in Section 9/1, and the student is admitted to the University through a new application procedure, he/she may not request that his/her earlier studies be recognized.
Article 10

Re-admittance

1. A student whose legal relationship with the university terminates under Article 76 Section 1 point b of the AHE may request re-admittance in writing from the Faculty Committee of Studies within 3 years from the day the resolution on termination became final.

2. Re-admittance is allowed only once during the term of studies.

3. In case of re-admittance the student is obliged to retake all courses he or she attended but the credits of which he or she has not obtained.

4. In case the student used a special permission before re-admittance that is only available for a student on one occasion, he or she will not be entitled to use this special permission after re-admittance.

Article 11

Transfer

1. A student of another institution of higher education may request transfer to Semmelweis University to a major equivalent to his/her major in case the conditions of terminating the legal relationship of the student do not apply.

2. To the Faculty of Medicine transfer is only allowed from the same faculty of another university following the completion of the basic or pre-clinical module. The request must be submitted by 15 July in every year to the Dean’s Office of the Faculty. The following must be attached to the application: the validated original lecture book, the curriculum of the university, and in case of foreign studies the authentic translation of these if they have not been written in a language that is used for education at this university.

To the Faculty of Dentistry transfer is only allowed from the same faculty of another university following the completion of the basic or pre-clinical module. The request must be submitted by 15 July in every year to the Dean’s Office of the Faculty. The following must be attached to the application: the closed original lecture book, the curriculum of the university, and in case of foreign studies and the authentic translation of these if they have not been written in a language that is used for education at this university.

To the Faculty of Pharmacy transfer is only allowed for students of Pharmacy from other universities, following the completion of minimum two semesters, if the conditions of dismissal or exclusion do not apply. The decision of first instance is be made by the Studies Committee of the affected faculty. Any complaints or comments regarding this decision must be made to the Dean. The Dean’s decision may not be appealed. For the request of the transfer the following must be attached: the validated original lecture book, the curriculum of the previous university, and in case of foreign studies the authenticated translation of these if they have not been written in a language that is used for education at this university. The deadline for the application is 15 July in each year. The Studies Committee must interview the student before making a decision may oblige the student to pass a differential examination based on the opinion of the head of the affected education organizational unit.
3. A condition of transfer is that the adjusted credit index of the applicant student in the two years before the request must be at least 3.51-4.00.

4. At Semmelweis University transfer is possible between faculties, majors and education levels. The minimum requirement for this is the completion of at least 75% of credits obtained in the first four semesters of the sample curriculum if the courses completed are 75% equivalent to the syllabus of the subjects taught at the Faculty and a weighted average of 3.51-4.00 of these subjects.

7. Transfer between majors, faculties and levels of education may only be allowed if the courses completed are 75% equivalent to the syllabus of the subjects taught at the Faculty. Otherwise the transfer is only possible through a regular admittance procedure to the Faculty as provided by law.

8. The new faculty's Credit Committee must decide on the acceptance of courses and on the recognizing of credits obtained at different institutes, majors or levels in accordance with Article 21.

Article 12

Simultaneous (parallel) studies

1. By request, the student of a different major, faculty or institution may study simultaneously at Semmelweis University following a successful procedure of admittance.

2. A student of Semmelweis University may participate in simultaneous studies at another institution, in this case he/she is obliged to notify the dean or director of the Faculty.

Article 13

Guest students

1. Semmelweis University will accept guest students based on the decision of the Studies Committee at the Faculty taking into account the opinion of the Education and Credit Committee.

2. The relevant request must be submitted to the Dean's Office of the Faculty, and the opinion of the head of the affected educational organization must be attached in addition to the syllabus of the new institution regarding the subject.

3. Courses completed as a guest student are acceptable with regard to Article 21.

4. The receiving institution will define the conditions of transfer, the relationship of the guest student with the university and joining the specialization and the studies necessary for acquiring specialization.

5. The student of a different university or faculty may attend the following subjects taught at Semmelweis University (if the head of department agrees) if the student attends similar courses at his or her own university.
   - Anatomy
   - Pathology
   - Forensic Medicine
   - Clinical subjects.

6. A guest student permitted to attend any faculty of Semmelweis University may only commence attending the university at the beginning of the regular period.
Article 16

**Announcing and taking courses**

1. The sample curriculum lists the obligatory subjects for each semester in the order specified for each major.
2. The Dean’s Office of the relevant Faculty based on the recommendation of the education unit announces the list of courses that are obligatory, obligatory elective and elective for the semester in the student information system by no later than the last week of the regular period of the previous semester.
3. The announcement must include the requirements of the courses, the teachers, schedule, the minimum number of students required for launching the course and the maximum number of students accepted. In case more students wish to take the course than the maximum allowed, and they are not ranked based on the order of their registration, the announcement must include the basis of ranking. The organizations responsible for teaching the courses are obliged to make the same announcement as well in addition to the previous announcement.
4. The students must register for the announced obligatory, obligatory elective and elective courses by the end of the previous exam period.
5. The number of students accepted to a course may be limited based on the reasonable capacities of the instructor, the available education materials, the room and other factors, if the students’ representatives agree.
6. The students are entitled to select from the subjects, the instructors and the classes overlapping in time with regard to the requirements of the curriculum. The limiting factors listed in (3) need to be taken into consideration in this case, as well.
7. If the student fails to obtain the credits of a course taken in a given semester, he or she may take it in two later semesters in compliance with regard to the pre-studies regulations and Section 17/16 of the Examination and Studies Regulations. If the instructor of the subject verifies with his or her signature that the student has completed the semester requirements, the student is only required to take the exam next semester. The student may request to obtain the signature again.
8. A subject that is completed with an exam with the necessary number of courses in the semester when it is regularly taken according to the curriculum. In semesters when the subject is not announced regularly, at least the possibility of taking the exam must be provided. In a semester when the course is not announced regularly the student may attempt to pass the exam as many times as he or she has left from the previous semester.
9. In case of obligatory electives and elective courses a selection of at least 1.2 times the amount of credit points must be made available.
10. For the announcement of the subjects the director or the dean is responsible.

Article 17

**Examination of knowledge and practical skills, attendance at classes**

1. The evaluation (grading) of the performance of the student may be.
   a) five-point scale: excellent (5), good (4), fair (3), satisfactory (2), fail (1)
   b) three-level scale: good ("jól megfelelt"), pass ("megfelelt"), fail ("nem felelt meg")
2. When evaluating the work of the students, no difference may be made on the grounds of whether the particular student is fee-paying or state-supported.

3. The examination of knowledge and practical skills may take the following forms:
   a) in the regular period of the semester by written and oral assignments, written classroom tests/mid-terms, evaluation of homework,
   b) practice marks,
   c) semi-final exams,
   d) final exams,
   e) general board exam.

4. At the end of a semester a grade may be given in the form of a(n):
   a) end-of-semester grade on the basis of mid-term test in both theoretical and practical subjects
   b) exam grade
      – solely based on exam performance
      ... by taking into consideration the performance at the exam and mid-term tests.

5. In case the semester grade is established through classroom tests, at least two more opportunities must be provided for re-taking the test. In case the student fails to pass the test even with the retake(s), the student may not receive an end-of-semester signature.

6. Completion of the course that requires an exam is verified by a signature in the lecture book. The exam may not be taken if the student fails to obtain such a signature. The maximum requirement for obtaining such a signature may not be more than 50% of the maximum score of mid-term tests (or a 2.5 average).

7. From a given subject the attendance of a minimum of 75% of lectures and seminars is necessary for the end-term signature. If the instructor requires a lower tolerable absence rate than 25%, opportunities must be provided for supplementing the missed seminars by the beginning of the exam period.

8. The head of the organizational unit (the instructor) is obliged to report to the Dean of the Faculty in the first week of the exam period on which students of his or hers missed more than 25% of lectures and seminars and who will not receive an end-of-semester signature from the instructor. In case the instructor refuses to sign, the English Secretariat will record this information in the relevant box of the student’s lecture book. In case the instructor refuses to sign, the student may not take the exam.

9. A practice mark may be required if the practical application and ability may be measured with regard to the aim of the course. The student is obliged to complete the tasks for a course requiring a practice mark primarily in the regular period of the semester. If the practice performance is evaluated through a five-scale grade, a 1 “failure”, and in case of a three-scale grade, an “unsatisfactory”, results in a retake of the course.

10. A semi-final exam is the testing of the student in a subject over the comprehensive material of a period of education. It is given a five-scale grade.

11. A final examination tests the students in a subject from the material of more than one semester. It may not be taken before obtaining the last semi-final exam or mid-term grade.

12. For a semi-final exam with a practice connected to the lectures or for just-practice courses the head of the educational organization unit (the instructor of the course) may offer a grade based on the performance of the student in the regular period of the semester (grade 4 “good” or grade 5 “excellent”). The student is not obliged to accept the grade offered, and may request to take the exam.
13. The student obtains the credit if he or she receives a better grade than fail (“1” or “unsatisfactory” = “nem felelt meg”).

14. There is no legal remedy available regarding the evaluation or the grade.

15. It is regarded as dropping the course if the student fails to obtain
   a) the end-semester signature,
   b) obtains the signature, but does not show up at the exam and does not attempt to pass the exam in the examination period,
   c) fails to meet the exam requirements (fails the exam) within the framework of the available retakes within the examination period.

16. In case of a course dropped, the credits may not be obtained later than in two later semesters when the course is announced, except in case the student suspends his or her legal relationship with the university in that period.

17. In case of multi-semester courses with the courses built on each other, by the end of the registration period at the latest, and based on the approval of the head of the organizational unit the head of the Faculty (dean or director) may permit the student solely in one subject to take the next semester of the subject if the student has obtained the end-semester signature but failed to meet the exam requirements. Obtaining the exam grade in the next semester, however, is only possible if the student acquires the credit points from the previous semester.

**Article 19**

The order of the exams and final exams; the examination period

1. Exams are to be taken in the examination period. Please, note that taking of an exam before the start of the examination period is not allowed!
   The examination period designated to the autumn semester is 6 weeks long plus one week retake exam period, and, in case of the spring semester, 8 weeks plus one-week retake examination period are provided – 6 weeks in May and June and 2 weeks in the summer break before the beginning of the autumn semester. The one-week time extension period falls in with the one-week registration period straight before starting the autumn and the spring semester.
   In the latter period the departments will provide a limited number of exam dates.

2. In the summer examination period after July 31 and in the extension period, improving the grade of a successful exam is not allowed. In the extension period only exams attempted and failed in the regular examination period can be repeated.

3. The number of exam places provided must be at least twice of the number of students. In the examination period the education organizational units must provide at least 2 exam days per week for an oral exam and 1 exam day per week for a written exam (per course and per class in both cases). Retakes may be made available on the 3rd calendar day following the failed exam at the earliest.

4. Registration for the exam and the order of rescheduling must be regulated by the head of the education organizational unit (the instructor of the course).

5. Absence from the exam must be certified at the head of department or course director within 3 working days. Failing to certify absence or denying it cause registering “absence” = “nem jelent meg” in the lecture book. It reduces the number of exam attempts in the subject concerned.

6. In case of a final examination, it must be conducted by leading instructors (associate professors and professors), but the department chair may allow (by recommendation
of the dean) the participation of senior lecturers. The final examination must be taken before an exam committee consisting of at least two members if the final examination is a retake or if the final exam includes several subjects. The head of the committee may only be a leading instructor.

7. The student may not take the exam without a lecture book.

8. The exam may only be taken if the completion of the end-semester requirements of the exam are verified by a signature. The end-semester signature of the subject is granted by the head of the education organizational unit or the instructor.

9. The oral exams are open and public for any student of the university. This open and public nature may be limited by the dean or the main director.

10. The instructor or the head of the educational organization unit is responsible for announcing and holding the exams.

11. If the exam (which begins by selecting a topic or commencing the practical exam) fails, the examiner is obliged to enter the „fail” mark in the lecture book of the student.

12. The student may attempt to retake the exam twice in the examination period. In each academic year in one subject a third retake can be taken without a special permission – in case of failure a special permission for the fourth retake cannot be granted.

13. The second retake may be attempted only on the exam days announced and only if the student pays the relevant fee. The student may retake the exam before another committee or examiner if he or she request so in writing from the head of the department.

14. The student may improve the grade of a successful exam until the end of the same exam period when the exam for improve was taken. The student must be informed that he or she may receive a lower grade as well. By improving a grade, new credit points may not be obtained. In case of a limited number of places, students with a failed grade will have priority.

15. Within 30 minutes after the end of the written exam students may ask questions concerning the exam from the teacher.

Article 20

The registration and index-numbers of results

1. Results must be recorded in the lecture book and the students’ information system. The lecture book is a public document. The data recorded in the students’ information system are authentic copies of the lecture book information. Any unauthorized recording in the student information system is deemed as forgery of a public document.

3. The student’s admission and registration has to be signed by the Dean of the Faulty.

4. The student is allowed to enter his/her personal data, subject data and requirements and the teacher’s name in the lecture book. The student’s entry must be attested by the head’s of the Dean’s Office/English Secretariat signature.

5. Completion of the requirements has to be entered by the head of department or his/her designated.

6. At the closing of each semester the number of credits and the weighted average of the student must be recorded in the lecture book that has to be attested by the Dean’s signature.
7. Correction in the lecture book can be completed only by the entitled person.
8. Notes and corrections should be signed and dated.
9. The lecture book must be given to the student at termination of the legal relationship except in case of transfer.

Article 21

Accepting substitute and elective courses
1. The acceptance of courses announced at another faculty or institution means deciding whether the given courses can replace other subjects, or are different from them.
2. A course may be replaced by another if at least 75% of the replacement course program (syllabus) is the same as that of the replaced course.
3. A subject is different from another if they are at least 25% different.
4. For meeting a curriculum requirement only such a course may be taken into consideration which is different from any subject already taken into consideration for meeting requirements.
5. Prior to registration or announcing the continuation of studies, the student may request from the Faculty the acceptance of other courses taken or completed at another Faculty or institute of higher education. The Faculty’s Education and Credit Transfer Committee will make the final decision on the acceptance. The Committee will pass a decision within a deadline that allows the student to put together his or her individual schedule for the next semester with regard to the decision.
6. The requests for accepting courses must be addressed to the committee above and submitted at the Dean’s Office with the opinion of the head of the competent education organizational unit and the syllabus of the accepting institute regarding the subject.
7. At Semmelweis University the faculties accept the credit point values of courses announced by the other faculties mutually. Any course announced at Semmelweis University can be chosen by the students as an elective course under condition the prerequisite of the subject allows it.
8. In case of accepting subjects completed earlier, the time available for completing studies will decrease by one semester after each 30 credit points accepted.
9. If the relevant credit points can be linked to the replacement course, the grade received for the replacement course will be accepted. If it includes more grades, the rounded average of these will be taken into consideration.

Article 22

Professional training programs
1. The student is obliged to complete the professional training programs based on the syllabus of the Faculty at the organization units of the Faculty or the accredited education institutes of the Faculty.
2. The dean or director of the Faculty may allow the completion at other universities in the country and their education hospitals, or in a foreign health institute if a statement of acceptance is provided. The student is obliged to submit the certificate
of completion issued by the accepting institute at the Dean’s Office before registration.

3. The monitoring of the professional training courses will be organized and controlled by the head of the organization unit responsible for teaching the course. The head is obliged to send a report on the lessons drawn from the professional training program to the Dean by the 15th of September each year.

4. In case of professional training courses no signature may be granted if the student is absent 25% of the time or more.

5. The compulsory professional training is evaluated by either “completed” or “not completed”. The latter has a suspending effect, the student may not continue the studies as long as the professional training program is not completed. At the Faculty of Pharmacy the professional training preceding the General Board Examination has to be evaluated with the three-level scale: excellent (5), satisfactory (3), unsatisfactory (1).

Article 23

Leaving (pre-degree) certificate – Absolutorium

Article 60 of the AHE (4) The obtaining of the leaving certificate is a prerequisite of the General Board Examination. The leaving certificate is issued to a student that completes studies, examination, professional training and other requirements (except for the language exams and the preparation of the thesis) and obtains the necessary credits. The General Board Examination may be taken in the exam period following the obtaining of the leaving certificate under the legal relationship with the University, or, later, following the termination of the legal relationship, without a deadline, under effective training requirements. The studies and examination regulations may require further conditions for passing the General Board Examination after seven years have passed from issuing the leaving certificate.

1. Until the leaving certificate is obtained (in case of a state-financed program) the student may receive a maximum of 2 more active semesters for basic or masters programs each and in case of an undivided degree program, a maximum of 4 active semesters in addition. Until the final certificate is obtained, the number of passive semesters may not exceed 2 semesters in case of a basic or masters program and 4 in case of an undivided program.

2. The leaving certificate is signed by the dean or director of the faculty. The leaving certificate certifies qualification and not professional knowledge.

Article 24

The diploma work

1. In all kinds of programs the student is required to prepare a diploma work for the diploma. The aim of the diploma work is to enable the student by the individual research of the scientific field to improve his or her skills in seeing the significant items, the method of researching literature and express opinions compactly and accurately.

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2. The preparation of the diploma work is guided by a supervisor and sometimes a consultant. A supervisor may be an instructor or researcher of the faculty or, if the dean allows, an external expert. A consultant is a university researcher instructor or an external expert who helps the student’s work. If an external supervisor is applied, an internal consultant is required. When elaborating the topic, basic and up-to-date works related to the topic need to be used.

3. The schedule of announcing and approving diploma work topics:
   The head of the organizational unit prepares a list of topics and indicates the names of the consultants. The list of topics is made public at least four semesters earlier than the last year of the program by the end of the first exam period of each school year on the notice board of the faculty and on the Internet.

4. Rules of registering for topics:
   The student may select any announced topic. The topic selection may be different from these if the head of the education organizational unit agrees. The student must submit the topic at least a year before concluding the studies at the head of the education organizational unit. If approved, the head will record the topic and provide a consultant. The selected topic discusses a current issue of the given scientific field.

5. The formal requirements of the diploma work:
   The length of the diploma work must be no less than 50,000 characters and no longer than 100,000 (excluding spaces). Font type: Times New Roman, font size: twelve. Tables and references are included in the length, but figures, footnotes and the literature list are not. The diploma work must be submitted in a stitched or bound format in 2 copies. The front must indicate the title, the name, class and group of the student, the time of submitting the diploma work and the name/workplace of the consultant. The student may write the diploma work in a foreign language if the head of department approves.

6. The deadline for submitting:
   The student must consult with the consultant at least three times:
   - first: by no later than 1 October in the final year – The consultant informs the student on the requirements and topic choices,
   - second: by no later than 15 November in the final year - The student reports on the work completed up until that point,
   - third: by no later than 1 January in the final year – the consultant evaluates the results of the student and gives advice on the finalization.
   The diploma work prepared has to be submitted at the department by 15 January in 2 copies.
   At the Faculty of Pharmacy the deadline of submission is March 1 in the year of graduation.

7. The diploma work must be handed over to a referee. The referee must be either an external expert holding a university (or college) degree or a university instructor invited by the head of the organizational unit. The referee and the supervisor will recommend a grade.

8. The diploma work (as part of the compulsory subjects) is evaluated on a five-scale grade. The extent of individual research will be taken into consideration. The defense of the diploma work takes place before a three-member committee of the given unit, the member are the head of the unit (or the deputy), the consultant and an instructor of the unit. The unit may invite an external instructor of the university as a third member.
   In case of a fail, the head of the unit notifies the student and informs him or her about the possibilities of correction.
   A failed diploma work may only be corrected once.
9. The head of the unit hands over a copy of the diploma work to the student after the
defense and the other copy along with minutes of the defense will be kept by the unit.
The diploma work will be kept at the library of the unit for a period of five years. The
minutes will be sent to the Dean’s Office by 1 April at the latest.

10. The obligation of preparing a diploma work may be waived by the dean or the director
upon the recommendation of the unit for the following students:
– who prepare a rector paper as one of a maximum of two authors and receive a first
or second prize,
– who publish a first author paper in a scientific periodical.
The request must be submitted at the at the Dean’s Office by the end of the year
before the final year. If the waiver is granted, the student still has to defend the
paper.

11. The unit will return a copy of the successfully defended diploma work to the student.
The other copy will be kept by the unit in accordance with effective archiving rules.
One of the two copies of filled-out minutes will be sent to Dean’s Office at least 60
days prior to the final exam period, while the other will be kept by the unit.

Article 25

General Board Examination (GBE) (Complex Final Examination)

AHE Article 60
(2) The student concludes the studies in by a General Board Examination in basic, masters and
further specialized education programs.

1. The GBE includes (as defined by the qualification requirements):
   a) a written part
   b) an oral part
   c) a practical exam.

The defense of the thesis is part of the GBE, but is evaluated and conducted
separately.

2. The dean is obliged to specify at least two GBE periods annually. The final exam may
only be taken in such periods.

3. The GBE Committee includes at least two members in addition to the head. The head
and the two members are recognized external experts of the special field and
university professors or associate professors. At least one member must an external
professor. The head of the Committee and the members are appointed by the dean for
one to three years with the approval of the Faculty Council.

4. The student must sign up for the GBE in the Dean’s Office no later than 60 days
before the first day of the final exam period.

5. The Faculty Dean is responsible for organizing the GBE. The number of committees will
be decided based on the number of students registering for the exam in a way that a
committee should have a maximum of 6 students a day.

6. The students must be divided among committees randomly. The division may only be
announced at the Faculty on the day of the exam in the common announcement
method used at the Faculty.

7. The GBE Committee grades the exam subjects in a private discussion. The head of the
committee announces the results after the completion of the GBE.
8. The final grade of the GBE will be based on the arithmetic average of the partial grades.
9. The result of the GBE is established by the committee and records the result in the lecture book of the student.
10. The GBE is passed if all subjects are passed.
11. In case any subject is failed, or a partial exam is given a fail, the student must retake the relevant failed part or subject only.
At the Faculty of Pharmacy: In case a part out of the three (written, practical, oral) following each other of the GBE is a failure, the GBE cannot be continued. Retake must be taken just from the failed one.
12. The GBE may only be retaken twice. A GBE may only be retaken in later GBE periods.
13. No credit is granted for passing the GBE.
14. If the GBE is passed over seven years past the obtaining of the final certificate, the prerequisite of the GBE is the successful completion of the final year of studies.

Article 26

The diploma (final certificate)

1. The credit value of subjects accepted by the university through a credit transfer process or the credit value of a diploma issued by another institute of higher education may not exceed 50% of the credit value required by the qualification requirements.
3. The rector of the university may transfer the right of signing the degree on the relevant Dean of the Faculty.
5. The diploma must indicate the grade of the diploma.
7. The issuing of the diploma supplement is the obligation of the relevant Dean’s Office (English Secretariat).
8. The basis of the grade is the general cumulated and weighted average of grades rounded to the hundredth.
   In case of a five-scale evaluation:
   4.51–5.00: excellent
   3.51–4.50: good
   2.51–3.50: fair
   2.00–2.50: passing
   In case of a three-scale evaluation:
   4.51–5.00: summa cum laude
   3.51–4.50: cum laude
   2.00–3.50: rite

The relevant Faculty’s curriculum defines the list of subjects not ending with a final exam to be taken into consideration when grading the diploma.
9. The method of calculation:

\[ XD = \frac{X_n + D + I + Sz + Gy}{n + 4} \]

Where:
- \( XD \) = the number to be taken into consideration for the diploma grade
- \( X_n \) = the sum of required final exam grades
- \( n \) = the number of required final exams
- \( D \) = the five-scale grade of the diploma work (part of the GBE)
- \( I \) = the result of the written part (part of the GBE)
- \( Sz \) = the result of the oral part (part of the GBE)
- \( Gy \) = the result of the practical part (part of the GBE)

10. By request of the student (and in case the related costs are paid) the university issues a more elegant honorary diploma signed by the rector, the dean and the head of the GBE committee.

Article 27

Special permission

In the course of studies on one occasion the Studies Committee of the relevant Faculty may allow on the grounds of equity the waiver of a section of these regulations that does not prescribe a financial or academic obligation.

Important announcement for the 1st and 2nd year students of Medicine and Dentistry

Addendum to Article 17/17 of the Examination and Studies Regulations

Students may apply for exemption from the prerequisite in Biophysics after the 1st semester, in Chemistry solely after the 1st semester and in Anatomy after the 1st and 3rd semester under the following conditions:

- The student must obtain the semester signature in the relevant subject. (It means that the number of absences cannot exceed 25%).
- The average grade of the mid-terms has to be at least 2.00.
- Recommendation, based on the student’s semester academic achievements, from the practice teacher is required.

If the above conditions are fulfilled, the head of the department may give recommendation towards the Dean of the Faculty and the Academic Program Director. Based on it the final decision is made by the Academic Program Director in accordance with the decision of the Dean of the Faculty.

Note: In Medical Biochemistry and in Medical Physiology (after the 3rd semester) no permission is granted.

GROUP RULE

Please note that in order to follow the “group rule” – namely that you have to attend the same group – your signing up in a group and course will be controlled and continuously rearranged by your registrar at the English Secretariat.
Chapter 5

The procedure of students’ disciplinary and liability cases; the rules applicable to the formation of the disciplinary committee, hearings, evidence, defence, publicity and exoneration

on the basis of the statutory authorisation in Section 21 (4) of Act CXXXIX of 2005 on Higher Education (hereinafter: Act), the Senate of Semmelweis University hereby passes the following detailed procedural rules (the procedural rules include the cited statutory provisions in bold):

GENERAL PROVISIONS

PART 1. THE SCOPE OF THE RULES

Section 1 The Rules apply to any student of Semmelweis University, including students of higher vocational training, college or university-level bachelor courses, master’s courses, undivided courses, advanced training and doctoral courses, regardless of the type of course they attend.

Section 2 Unless otherwise provided by law or agreement, the scope of the Rules also extends to students of foreign nationality.

DISCIPLINARY RULES

PART 2. DISCIPLINARY LIABILITY

Section 3 The professors, researchers, students and employees of the University are required to comply with the relevant laws and the rules of the University and to use the assets in their care and in their use properly and to protect such objects from harm.

Act, Section 70 (1) If the student violates their obligations severely and is personally responsible for the violation, a disciplinary sanction may be applied against the student. Disciplinary sanctions must be imposed in a disciplinary procedure and must be specified in a written decision.

Section 4 No disciplinary sanction is allowed if it is proven in the disciplinary procedure that the student has failed to fulfil their obligations or has violated the rules because they received instructions from a professor or an employee of the University supervising the student and the instructions infringed the law or a rule of the University.

Act, Section 70 (4) No disciplinary hearing may be initiated if a period of three months has passed since the violation or a one-month period has passed since the day the violation was recognised. For the purpose of this provision, ‘recognition’ is defined as the case when the circumstance giving rise to a disciplinary hearing becomes known to the person authorised to start the procedure.
Section 5 If a criminal procedure is started against the student, the deadlines specified in Section 70 (4) of the Act will start when the criminal case is closed.

Section 6 A procedural event related to the student (the order of starting a procedure, the issue of summons, a hearing is held, etc.) will interrupt the statute of limitations period. The statute of limitations period will restart from the day of the interruption.

PART 3. DISCIPLINARY SANCTIONS

Section 7 The purpose of imposing a disciplinary sanction is to educate the student and to prevent further violations.

Act, Section 70 (3) When a sanction is imposed, all circumstances of the violation must be taken into account, including but not limited to the number of injured parties, the severity of the violation and its consequences and whether the violation is a repeated violation.

Act, Section 70 (2) Disciplinary sanctions include:
(a) reprimanding;
(b) severe reprimanding;
(c) reduction or withdrawal of benefits and facilities specified in the rules of reimbursements and benefits;
(d) suspension of studies for a specific period (maximum two semesters);
(e) expulsion from the institution of higher education.

Section 8 Under Section 70 (2) (c) of the Act, the following benefits may be withdrawn:
(a) student grants;
(b) bonuses and cash prizes;
(c) the student’s place in a hall of residence.

Act, Section 70 (3) The duration of the disciplinary sanction referred to in (2) (c) above may not exceed six months; the suspension specified in (d) may not be longer than two semesters. Social support may not be withdrawn as a disciplinary sanction under (2) (c). The disciplinary sanctions referred to in (2) (d) and (e) automatically result in a final or temporary withdrawal of benefits and facilities available to students. The student status will be suspended for the term of the sanction specified in (2) (d). The student’s academic performance will have no effect on whether a disciplinary procedure is started or on what sanction is applied.

Section 9
(1) The procedure may be terminated with a warning as an alternative to a sanction if the severity of the violation is moderate with regard to the circumstances of the case (the character of the student, the motives of the violation and the manner of committing the violation in particular) and therefore not even the mildest sanction is required and the educational effect of the warning will suffice.

(2) By issuing a warning, the disciplinary board expresses its disapproval and communicates to the student that their actions were wrong and instructs them not to violate the rules in the future, thus avoiding future disciplinary procedures.
PART 4. DISCIPLINARY PROCEDURE

Act, Section 70 (1) The student may act in person or through a representative authorised through a power of attorney in accordance with Sections 222–223 of the Civil Code.

Section 10 The disciplinary procedure starts after a violation is reported or after a competent person officially learns of the violation.

Act, Section 71 (1) A disciplinary procedure may be started by the head of the institution or the person specified in the rules of organisation and operation.

Section 11
(1) The disciplinary procedure is started by an order of the Dean or the Chair of the Doctoral Council.
(2) If the Dean or the Chair of the Doctoral Council is permanently obstructed in starting the procedure, the deputy appointed for this purpose may initiate the procedure.

Act, Section 70 (5) The student and their authorised representative must be notified of the start of the procedure. The notification must specify the reason for the disciplinary procedure.

Section 12 The official decision on starting the procedure must include the name, address, faculty, major, year and doctoral programme of the student and also a brief description of the alleged violation.

Act, Section 70 (5) The student must be granted a hearing and must be allowed to present their defence and position. If, at the hearing, the student disputes the fact that the violation occurred, or if establishing the facts of the case is required, a trial must be held. If it is the student that has initiated the procedure, the procedure must be started and carried out. If the student's proposed evidence is rejected, the reason for the rejection must be specified in the decision, unless it is established that the student has not violated the rules.

Act, Section 70 (6) If the student violates their obligations during practical education, the disciplinary procedure will still be carried out by the institute of higher education.

Act, Section 71 (2) The disciplinary decision of the first instance is made by the disciplinary committee of the institution, which has at least three members. The students’ representative council will appoint at least one third of the disciplinary committee members.

Section 13 (1) The disciplinary procedure of first instance is conducted by the disciplinary committee of the given faculty or doctoral school of the University.

Act, Section 73 (3) The appeal against the first-instance decision is heard by the head of the institution of higher education or a committee formed by the head of the institution for this purpose.

(2) The appellate decision is made by a committee formed by the Rector of the University.
Section 14 (1) The affected faculty establishes a five-member disciplinary committee consisting of 2 professors and 3 students. The two professors of the disciplinary committee are chosen by the Faculty Council and the Doctoral Council for a 3-year term. The chair of the disciplinary committee is the lead professor appointed by the Faculty Council or the Doctoral Council. The professor members may only be re-appointed once after the expiry of their first term.

(2) The 3 student members of the disciplinary committee will be elected by the Faculty Students’ Representative Council and the Doctoral Students’ Representative Council in accordance with their own rules. The representative councils will notify the Dean or the Chair of the Doctoral Council of the elected committee members. The student members will be elected for 1-year terms.

Section 15

(1) The following persons may not be involved in making a decision in a disciplinary case:
   (a) those who cannot be expected to make an unbiased decision in the given case;
   (b) in the appellate procedure, those who participated in the first instance phase of the procedure.

(2) The members of the disciplinary council must disclose any conflicts of interest to the Dean or the Chair of the Doctoral Council, whichever is applicable. Conflicts of interest in the appellate procedure must be reported to the Rector.

(3) A conflict of interest motion may be brought by the student and their legal representative in any phase of the procedure. The motion must be recorded in the minutes of the procedure.

(4) The decision on the motion will be made in a closed sitting of the committee. A formal decision must be made on the acceptance or rejection of the motion. If the motion is accepted, the disciplinary hearing must be adjourned until a new committee member is appointed.

(5) The rule on excluding a member of the committee due to a conflict of interest must also be applied to the person keeping the minutes.

Section 16 If the student is a student at more than one institution of higher education or at more than one faculty of Semmelweis University (has multiple majors or is a guest student), the institution or faculty with the right to conduct the disciplinary procedure will be the one that the obligation the student has failed to fulfil is related to or the one that has been the injured party of the student’s action.

In this case, the disciplinary committee of the institution or faculty conducting the procedure will notify the other institution or faculty.

Section 17 If it is discovered in the procedure that a crime has likely been committed, the Dean or the Chair of the Doctoral Council must report the case to the authorities.

**Act, Section 71 (3)** If there is a pending criminal procedure in the same case, the disciplinary procedure will be suspended until the criminal case is closed or if the student cannot be heard or tried (as described in Section 70 (5)) in the disciplinary case through no fault of their own.

(5) The disciplinary procedure must be completed within one month unless it is suspended under paragraph (3) above.

Section 18 The suspension of the disciplinary procedure will interrupt the period of the statute of limitations. In this case, the statute of limitations period will restart when the criminal case is closed.
Act, Section 70 (5) The student must be invited to the trial.

Section 19
(1) The student must be summoned to the trial in a written form. The summons must specify the student’s name, the venue and date/time of the hearing and the role the summoned person will have in the procedure. The summoned person must be reminded to bring their proof of identity documents to the hearing. The fact that summons have been issued in writing or orally must be recorded in the case documents.

(2) The student must be informed in the summons that they have the right to submit written materials in defence and can use/select a legal counsel in the procedure. Also, the summons must contain a warning that the student’s absence will not prevent the committee from holding a hearing and passing a decision.

Section 20
(1) The student has the right to use the services of a legal counsel in the procedure.

(2) The rights of the student and the counsel:
   (a) they may have access to the documents of the procedure;
   (b) they may put forward motions and submit comments;
   (c) and they may ask questions of the witnesses and experts.

Act, Section 70 (5) The disciplinary trial may be held even if the student or their authorised representative does not attend the trial in spite of a repeated summons issued in accordance with the applicable rules.

Section 21 (1) The disciplinary trial is conducted by the chair of the disciplinary committee. It is the chair’s responsibility to check if the disciplinary rules are complied with; he or she must keep the trial in order, and make sure that the participants are able to exercise their rights. The chair will also appoint a person to record the minutes of the trial.

Section 22
(1) Students, professors and employees of the University are allowed to attend the trial. Out of public interest or to protect the student’s interest, the disciplinary committee may order a closed hearing or order that a part of the hearing will be closed to the public.
   A closed hearing may be requested by the student or a witness if they render it probable that a public hearing would threaten their legitimate interests.

(2) The disciplinary committee has a quorum if at least three members of the committee are present and at least one of them is a professor.

(3) First, the chair of the disciplinary committee records who is present at the hearing and, if there is no legal obstacle to holding a trial, orders the witnesses to leave the room. Then the chair informs those present of the data on the basis of which the disciplinary hearing is held.
   After this, the committee hears the student’s testimony.

(4) If the chair is not present, the trial is chaired by the other professor member of the committee.

(5) Witnesses or other students tried in the same disciplinary procedure and not yet heard may not be present during the student’s testimony.

Section 23
(1) If at the hearing the student admits their responsibility for the violation, and there is no doubt that the admission of guilt is frank, the trial must only be conducted to establish the circumstances (simplified trial).

(2) If the student refuses to admit their responsibility, evidence must be presented.
(3) The disciplinary committee hears the witnesses and experts if necessary and informs those present of the content of any documents obtained.
(4) The witnesses must be asked whether they have any particular interest in the case and whether they are biased. They must be warned that they must tell the truth and that perjury has consequences under criminal law.
(5) Witnesses not yet heard may not be present during the hearing of a witness. If the testimony of the witness contradicts the student’s or other witness’ statement, the persons making the contradictory statements must be allowed to confront each other to clarify the contradiction.

Section 24
(1) Minutes must be kept of the disciplinary trial. The minutes must be signed by the chair of the disciplinary committee, the committee’s members and the keeper of the minutes.
(2) The relevant contents of the minutes must be presented to those heard at the trial and, after they have read the part that concerns them, they must sign the relevant part. The persons heard at the trial may request the correction or supplementation of the contents of the minutes. If the person refuses to sign the minutes, the reason for the refusal must be recorded in the minutes.
(3) The minutes must be added to the disciplinary case documents.

Section 25
(1) The disciplinary committee will make its decision after the evidence procedure. The decision will be made in a closed session of the committee and will be passed by a simple majority vote (Annex 2). The closed session may only be attended by the chair and members of the disciplinary committee and the keeper of the minutes.
(2) The decision may either impose a disciplinary sanction or terminate the procedure.
(3) The committee’s decision may only be based on the testimonies heard at the trial and the evidence examined directly at the trial. If a fact is not proven beyond doubt, it may not be held against the student.
(4) The introductory part of the decision must specify the case number, the faculty or doctoral school passing the decision and the name of the student against whom the disciplinary procedure has been started, the venue and date of the trial and whether the trial was open to the public.

Section 26
(1) A decision imposing a disciplinary sanction must be made if the disciplinary committee establishes that the student is guilty of a disciplinary offence and believes a disciplinary sanction must be imposed.
(2) The operative part of the decision imposing a sanction must include the following information:
(a) the name and other personal data (date and place of birth, permanent or temporary address, ID card number, year, major and type of course) of the student found guilty in the procedure;
(b) the disciplinary sanction imposed;
(c) reference to the possibility of appeal and the 15-day deadline for lodging the appeal;
(3) The commentary of the decision imposing the penalty must briefly describe:
(a) the facts of the case established by the committee;
(b) a list of evidence and the assessment of the evidence;
(c) whether the act or omission qualifies as a severe violation of the student’s obligations and whether the student is personally responsible for the violation, and the degree of the student’s responsibility;
(d) the aggravating and extenuating circumstances taken into consideration when the penalty was imposed;
(e) reference to the rules on which the disciplinary sanction is based.

Section 27
(1) The disciplinary committee will terminate the procedure if
(a) the student’s actions do not qualify as a disciplinary offence, or it is not the student who has committed the offence;
(b) it has not been proven that the disciplinary offence was committed;
(c) it is not possible to establish that the student was personally responsible for the offence;
(d) the statute of limitation period has expired;
(e) a final and non-appealable disciplinary decision has already been passed regarding the student’s same action; or
(f) the disciplinary committee chooses to issue a warning instead of imposing a sanction.
(2) The operative part of the decision terminating the procedure must include the following information:
(a) the name and other personal data of the student;
(b) the alleged disciplinary offence due to which the procedure has been started;
(c) a statement that the disciplinary procedure has been closed;
(d) the reason for terminating the procedure;
(e) a reference to the fact that a warning has been issued if the committee decided to issue a warning;
(f) a reference to the possibility of appeal and the 15-day deadline for lodging the appeal;
(3) The commentary section of the decision terminating the procedure must describe the facts of the case, the evidence and the reasons due to which the disciplinary committee terminated the procedure. Also, the decision must refer to the item of paragraph (1) on the basis of which the procedure has been terminated (Annex 3).

Section 28
(1) The chair of the disciplinary committee will announce the disciplinary decision made at the closed session.
(2) When the decision is announced, the operative part of the decision (which is put in writing at the closed session) must be read out and the commentary of the decision must be summarised orally.
(3) When the decision has been announced, the chair of the disciplinary committee will inform those entitled to lodge an appeal to make sure their appeal is filed before the deadline specified in the decision. After this, the chair closes the trial.
(4) The disciplinary decision must be delivered in a written form to those affected but not present.

Section 29
(1) The full decision must be put in writing within 8 days of the day it is announced.
(2) The written decision is signed by the chair of the committee in the required number of copies.
(3) The student and their legal counsel must be delivered a written copy of the decision even if it has been announced in their presence.
(4) The disciplinary committee may not modify a decision that has already been announced. However, minor corrections irrelevant to the merits of the case (misspelt names, numbers, arithmetical and other typographical errors) may be made.

Section 30
(1) The first instance decision may be appealed by the student or their legal counsel.
(2) The person entitled to appeal the decision may lodge the appeal immediately after the decision is announced, may waive the right of appeal or may request time to consider whether to appeal a decision. In the latter case, the deadline for lodging the appeal is 15 days from the day the decision is delivered to the person. If the deadline for filing an appeal is missed, the person may file an appeal within an additional period of 8 working days if they can present a proper reason for the delay.

(3) The written appeal must be submitted to the Dean’s Office or the Doctoral School’s Office but it must be addressed to the disciplinary committee of first instance.

(4) The appeal will automatically suspend the execution of the decision.

Section 31
(1) The disciplinary committee will forward the appeal and the case documents to the person authorised to make the appellate decision without delay when the deadline for appeal expires.

(2) The person authorised to make the appellate decision will make a decision on the appeal within 15 working days from the day they receive the appeal.

(3) As a general rule, the person authorised to make the appellate decision will make the decision on the basis of the documents available. If it is necessary to present evidence, the person authorised to make the appellate decision may summon the affected parties, hear their testimony or obtain other evidence. In the latter case, the deadline for making the appellate decision is 30 days.

(4) The person authorised to make the appellate decision must contact the Faculty Students’ Representative Council or the Doctoral Students’ Representative Council and ask for the relevant Council’s opinion.

(5) The person authorised to make the appellate decision
   (a) upholds the first instance decision;
   (b) modifies the first instance decision; or
   (c) quashes the decision and orders that a new procedure of first instance be conducted.

(6) If the appeal is filed late or is not lodged by the person entitled to appeal the decision, the person authorised to make the appellate decision will reject the appeal.

Act, Section 73 (7) The student may request a judiciary review of the appellate decision within 30 days of the day the student is notified of the appellate decision. The decision may be reviewed by the court if it is against the law or violates the provisions regulating the students’ legal status. The judicial review procedure is regulated by Chapter XX of Act III of 1952 on Civil Procedure. The court has the right to modify the decision. The court will make a decision in the case without delay.

Section 32
(1) The abovementioned rules applicable to decisions of first instance will apply mutatis mutandis to the content and the delivery of the appellate decision (see sections 25 to 29 above). The affected person must be informed in the appellate decision of the possibility of requesting a judicial review.

(2) The disciplinary committee will be responsible for making sure the decision is delivered. The disciplinary committee will also send a copy of the decision to the Dean and the Chair of the Doctoral Council for information purposes.

Section 33 (1) The decision may only be executed when it is final and non-appealable.

Section 34 (1) The decision will become final and non-appealable when
   (a) the persons entitled to appeal the decision declare that they do not wish to file an appeal or withdraw the appeal;
b) the deadline for appeal expires and no appeal is filed;
c) the person authorised to make the appellate decision has upheld the decision of first
instance or has rejected the appeal.

(2) The appellate decision will become final and non-appealable when it is announced.
(3) A clause must be added to a final and non-appealable decision stating that it is final and may
be executed. The day it became final and non-appealable must also be shown in this clause.
(4) The final and non-appealable decision must be registered in the records and a copy of the
decision must be added to the student’s personal file.
(5) The chair of the disciplinary committee will also send a copy of the final and non-appealable
decision to the Dean and the Chair of the Doctoral Council.

PART 5. EXONERATION FROM THE DISCIPLINARY SANCTION

Section 35 The student will be exonerated automatically (i.e. without a specific request and a
decision) and the negative consequences will no longer apply to the student
(a) in the case of reprimanding, three months have passed since the day the decision
became final and non-appealable;
(b) when the period specified for the reduction/withdrawal of benefits and facilities has
expired;
(c) when the period of suspension has expired.

Section 36 If the disciplinary sanction specified in Section 70 (2) (e) of the Act is applied against
the student, the student may ask to be exonerated. If such a request is made, it is accepted or
rejected by an ad-hoc committee consisting of the Dean or the Chair of the Doctoral Council, a
professor appointed by the Dean or the Chair of the Doctoral Council and a student representative
delegated by the Faculty Students’ Representative Council or the Doctoral Students’
Representative Council.

Section 37 In the case of expulsion, the disciplinary committee of the first instance may exonerate
the expelled student at the student’s request if three years have passed since the day the decision
of the first instance was passed.

TORT LIABILITY RULES

PART 6. THE STUDENTS’ LIABILITY FOR DAMAGE

Act, Section 72 (1) If the student causes damage in relation to fulfilling their obligations
as a student to the institution of higher education or to the entity organising the practical
education, they will be liable to pay damages under the Civil Code with the exception
specified in the Act on Higher Education.

Section 38 For the purpose of these rules, damage includes any decrease in the value of
Semmelweis University’s assets and the costs required to reduce or eliminate the material losses
(reasonable costs) if these have been caused by the student’s illegal and imputable conduct
(actions or omissions).

Section 39 The University will be required to prove that damage has arisen, the extent of the
damage, that the damage has been caused by the student’s conduct, and the student’s personal
responsibility for the damage.
Act, Section 72 (2) If damage is caused by negligent conduct, the amount of damages to be paid by the student may not exceed 50% of the monthly amount of the national minimum wage effective on the day the damage is caused.

Section 40 The damage is deemed to have been caused by negligence if the person responsible can see the potential negative effects of their conduct but carelessly believes that they will not occur, or if the person responsible for the damage is unable to see the potential negative effects because they fail to pay attention or fail to act with due care as expected in the given circumstances.

Act, Section 72 (2) If the damage is caused intentionally, the student must pay full compensation for the damage.

Section 41 Damage is caused intentionally if the person responsible for the damage wants to produce the negative effects of their conduct or does not mind such negative effects.

Section 42 If more than one student cause the damage together, they will be jointly and severally liable to the University for the damage and, among themselves, will be responsible for a share of the compensation in proportion of how imputable their conduct was.

Act, Section 72 (3) If the student receives assets from the University on the basis of a list or certificate of receipt and must return these or otherwise account for them but there is a deficiency or the assets are damaged, the student will have full responsibility for the damage caused provided that the assets are in their custody or are used/handled by them exclusively. The student will be exempt from liability if the deficiency has been caused by a reason beyond the student’s control.

Section 43 The student will be exempt from liability if the student can prove that they have acted in a manner that can be considered reasonable in the given circumstances.

Section 44
(1) The student’s liability under tort is established by the disciplinary committee in a procedure conducted by the committee. The procedure is the same as the disciplinary procedure.
(2) If damage is caused but no disciplinary offence is committed, and the person required to pay damages accepts their liability in writing and the amount of damages (i.e. the factual and legal bases of the damages are clear), or if the damage caused by negligence does not exceed HUF 10,000, the disciplinary committee will conduct a simplified tort procedure.

Section 45 If the damage is caused intentionally, the committee will conduct a single procedure that will include both the disciplinary and the tort case and will make one decision in the disciplinary case and one in the tort case.

PART 7. THE UNIVERSITY’S LIABILITY FOR DAMAGE

Act, Section 72 (4) The institution of higher education, the hall of residence and the organiser of practical education will have full liability to the student for any damage caused to the student in relation to the student’s legal status, admission into the hall of residence or practical education, regardless of any personal responsibility. The rules of the Civil Code will apply with the exception that the institution of higher education, the hall of residence and the organiser of practical education will only be exempt from liability
if they can prove that the damage has been caused by a reason beyond their control. Damages need not be paid if they have been caused by the injured party’s conduct beyond the other party’s control.

Section 46 (1) If the student suffers damage under Section 72 (4) of the Act, they may formally demand compensation from the Dean or the Chair of the Doctoral Council. The letter of demand must include the student’s data, the description of the facts of the case (as verified by witnesses and/or other evidence) and the amount of damages claimed (in HUF).

(3) The Dean or the Chair of the Doctoral Council will have discretionary powers to decide on the damage claim on the basis of the Financial Director’s recommendation if the amount demanded does not exceed HUF 100,000. If the damage claim exceeds this amount, the Dean or the Chair of the Doctoral Council will request the disciplinary committee to conduct a procedure.

Part 8. ASSESSING THE VALUE OF DAMAGED OR LOST ASSETS

Section 47

(1) If an event of damage occurs, the event must be recorded in the form of minutes as soon as possible, regardless of whether the student has caused it or suffered it.

(2) When an asset is damaged, the value loss remaining after repair (due to amortisation) and the repair costs must be taken into consideration in the course of calculating the amount of the damage.

(3) If the asset is destroyed, rendered unusable or cannot be located, the retail price on the day the damage occurs must be used to establish worth. If the retail price cannot be established, the purchase value should be used.

(4) No lost profits can be taken into account when the damage is assessed.

(5) Damages should be paid in cash, unless it is reasonable to provide the compensation in kind (i.e. the asset can be repaired or replaced).

(6) If it is likely that the compensation will exceed HUF 10,000, the Financial Director’s opinion must be obtained before the amount is assessed.

PART 9. ENFORCING THE CLAIM FOR DAMAGES

Section 48 The following forms/templates must be used for the purpose of enforcing claims for damages:

Annex 4: The student’s notification of a hearing in a tort case
Annex 5: Decision on the claim for damages

Section 49 The decision issued on the basis of the minutes of the tort procedure contains the name and personal data of the person causing the damage, the description of the damaged, lost or destroyed asset, the amount of damages payable, the manner of providing compensation and the deadline for providing compensation (Annex 5).

The person responsible for the damage may be allowed to pay in instalments if this is reasonable due to their financial situation. A copy of the decision on the damages must be sent to the Financial Director. The minutes must be signed by the chair of the tort committee and the keeper of the minutes.
Section 50 If the deadline for the payment of the compensation expires and no payment is made, the person responsible for the damage must be sued in court and the documents of the case must be sent to the Legal Department for this purpose.

Section 51 The statute of limitations is three years. If the damage has been caused by a crime, the statute of limitations is five years, unless the statute of limitations of the particular crime is longer. In the latter case, the statute of limitations for the damage claim will expire when the statute of limitations for the criminal case expires.

Section 52
(1) The Civil Code will apply to all financial liability-related issues not regulated above.
(2) A judicial review of the final tort decisions may be sought in court.

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:

Students who are found at exams possessing forbidden items, including electrical devices, such as mobile phones, ipods, etc. will automatically and immediately be discharged 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. 2011/12/1) and the curriculum, then select “Subject list of the chosen curriculum” under „Subject type” to display compulsory and alternative subjects. The option “Other optional subjects” may be used if the institution concerned manages its optional subjects separated from the curricula. If you do not find any subject in this list, this only means that at your institution these optional subjects are also integrated into the curriculum. 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 “Registated 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 /Pharmacy/ and TF, 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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Dr. Margit Pataki, Dr. Veronica Kovács
Assistant professor: Dr. Noémi Csoszánzskzi, Dr. Gabriella Filiczki,
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Dr. Zoltán Jenővári, Dr. László Jökúti, Dr. Zoltán Karádi,
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Dr. Péter Lukovich
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Tutor: Dr. Gábor Telkes

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Dr. Katalin Károlyházy, Dr. Mercédesz Linninger,
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Dr. Adrienne Györfi, Dr. Zsuzsanna Tóth
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                    Dr. Krisztina Ludányi
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Dr. Éva Szökő (course director)
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Assistant lecturer: Olivér Éliás

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Dr. Mariann Szabó Dinya (tutor), Zoltán Sára, Zoltán Ádám Tamus

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Director and tutor: Dr. Kálmán Kiss

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Phone/fax: 262-5529, 264-1408

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Fencing Hall
Budapest, V. Semmelweis u. 2.
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Tutor: Alexandra Bakó

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Senior Lecturer: Dr. József Geges Ph.D.
Science secretary: Éva Juhász
Head of the computer-system: Péter Szluka

Information on language courses

Hungarian is a compulsory subject. Students of Medicine and Pharmacy study Hungarian (Hungarian Medical Terminology) for 5 semesters, whereas for students of Dentistry the subject is compulsory for 6 semesters (Hungarian Medical terminology in semesters 1-4 and Hungarian Dental Terminology in semesters 5-6).

Students who are in their 1st year:
At the end of the first semester students are required to take an exam (written and oral). Students have 4 classes a week, are expected to write minimum 2 tests during the semester and are granted 4 credits for the successful completion of the exam.
In semester 2 students take 4 classes a week, are required to write minimum 2 tests and are granted 2 credits for the successful completion of the semester.
Students who are in their 2nd year:
In semesters 3-4 students take 4 classes a week, are required to write minimum 2 tests and are granted 2 credits for the successful completion of the semester.

Students in their 3rd year:
At the end of semester 5 (semester 6 for Dentistry students) students are required to take the final exam and are granted 2 credits for the successful completion of the exam. The final exam is a prerequisite for starting the fourth year. For students of Medicine and Pharmacy, in semester 5 Hungarian (Hungarian Medical terminology) is compulsory with 4 classes per week, students are required to take the final exam at the end of the semester and will be granted 2 credits for the successful completion of the exam. The final exam is a prerequisite for starting the fourth year. For Dentistry students, Hungarian (Hungarian Dental Terminology) is compulsory in semesters 5-6 with a practical course grade and 2 credits at the end of semester 5. At the end of semester 6 students are required to take the final exam and will be granted 2 credits for successfully completing the exam. The final exam is a prerequisite for starting the fourth year. Medical terminology is compulsory in the first semester of the first year with 2 lessons per week and 2 credits for the semester.

ATTENTION TO ALL STUDENTS

Please note that any violation of the Academic and Examination Rules of Semmelweis University (such as using unadmitted aid at examinations or the sound suspicion of any kind of cheating) will cause automatic discharge from the University.

Decision of the Senate of Semmelweis University in May, 2008
(Provisional) SCHEDULE OF THE NEW CURRICULUM for years 1 – 5 (the 6th year is not included): introduction was from the 1st year of the 2010/2011 academic year onwards
### BASIC MODULE

#### STUDY PROGRAMME

**First year**

<table>
<thead>
<tr>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
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<tbody>
<tr>
<td>Medical Chemistry</td>
<td>3,00</td>
<td>3,50</td>
<td>6</td>
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<td>Anatomy, Cell, Histology and Embryology I.</td>
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<td>6,00</td>
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<td>Medical Sociology (or in the 2nd sem.)</td>
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<td>1,33</td>
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<tr>
<td>Hungarian Medical Terminology I.</td>
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<td>4</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Medical Terminology (Latin)</td>
<td>–</td>
<td>2,00</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td><strong>Total Number of Credit Points from Obligatory Subjects</strong></td>
<td></td>
<td></td>
<td><strong>26</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Obligatory elective subjects**

| History of Medicine | 2 | – | 2 | pract. mark | – |
| Information Retrieval Science in Library                                           | 2 | – | 3 | pract. mark | – |

### Elective Subjects

- **History of Medical Professionalism**: 2,5
- **Basics of Medical Chemistry**: 2
- **Jewish Medical Ethics I.**: 2

4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory electives and electives after the 3rd year curriculum.
# First year

## 2nd semester

<table>
<thead>
<tr>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry, Molecular and Cell Biology I.</td>
<td>3,00</td>
<td>4,00</td>
<td>7</td>
<td>semi-final</td>
<td>Medical Chemistry</td>
</tr>
<tr>
<td>Anatomy, Cell, Histology and Embryology II.</td>
<td>3,00</td>
<td>6,00</td>
<td>9</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology I.</td>
</tr>
<tr>
<td>Medical Biophysics</td>
<td>2,5</td>
<td>3,00</td>
<td>6</td>
<td>semi-final</td>
<td>Basics of Biostatistics</td>
</tr>
<tr>
<td>Introduction to Clinical Medicine</td>
<td>0,00</td>
<td>2,00</td>
<td>2</td>
<td>semi-final</td>
<td>Medical Communication</td>
</tr>
<tr>
<td>Medical Communication</td>
<td>1,00</td>
<td>1,00</td>
<td>2</td>
<td>semi-final</td>
<td>Introduction to Clinical Medicine</td>
</tr>
<tr>
<td>Nursing Practice (in summer)</td>
<td>–</td>
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<tr>
<td>Physical Education II.</td>
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</tr>
<tr>
<td>Hungarian Medical Terminology II.</td>
<td>–</td>
<td>4,00</td>
<td>2</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology I.</td>
</tr>
<tr>
<td><strong>Total Number of Credit Points from Obligatory Subjects</strong></td>
<td></td>
<td></td>
<td><strong>28</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Obligatory elective subjects

| Introduction to Medical Informatics                      | –        | 1          | 1             | pract. mark | –                                                 |
| Medical Profession                                       | 0.67     | 1.33       | 2             | pract. mark | –                                                 |
| History of Medical Professionalism                       | 2.5      | –          | 2             | pract. mark | –                                                 |
| Jewish Medical Ethics II.                                | 2        | –          | 2             | pract. mark | Jewish Medical Ethics I.                          |
| Work within the union of * research students             |          |            |               |             |                                                   |

* Previous semester’s average result at least good (4). Good or excellent grade in the related subject.

4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory electives and electives after the 3rd-year curriculum.

---

Faculty of Medicine
### STUDY PROGRAMME

#### Second Year

<table>
<thead>
<tr>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy, Cell, Histology and Embryology III.</td>
<td>3,00</td>
<td>4,00</td>
<td>7</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology II.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Biochemistry, Molecular and Cell Biology I.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Medical Biophysics</td>
</tr>
<tr>
<td>Medical Physiology I.</td>
<td>6,00</td>
<td>5,00</td>
<td>11</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology II.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Medical Biophysics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Biochemistry, Molecular and Cell Biology I.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Medical Biophysics</td>
</tr>
<tr>
<td>Biochemistry, Molecular and Cell Biology II.</td>
<td>3,00</td>
<td>3,00</td>
<td>6</td>
<td>semi-final</td>
<td>Biochemistry, Molecular and Cell Biology I.</td>
</tr>
<tr>
<td>Physical Education III.</td>
<td>–</td>
<td>1,00</td>
<td>–</td>
<td>signature</td>
<td>–</td>
</tr>
<tr>
<td>Hungarian Medical Terminology III.</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology II.</td>
</tr>
</tbody>
</table>

**Total Number of Credit Points from Compulsory Subjects**: 26

<table>
<thead>
<tr>
<th>Obligatory elective subject</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Clinical Medicine</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Profession</td>
</tr>
</tbody>
</table>

*4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory electives and electives after the 3rd year curriculum.*

**Total Number of Credit Points from Obligatory elective / Elective Subjects**: 4
## STUDY PROGRAMME

### Second Year

#### 4th semester

<table>
<thead>
<tr>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy, Cell, Histology and Embryology IV.</td>
<td>1,00</td>
<td>2,00</td>
<td>3</td>
<td>final</td>
<td>Anatomy, Cell, Histology and Embryology III. Physiology I.</td>
</tr>
<tr>
<td>Medical Physiology II.</td>
<td>6,00</td>
<td>5,00</td>
<td>11</td>
<td>final</td>
<td>Anatomy, Cell, Histology and Embryology III. Physiology I.</td>
</tr>
<tr>
<td>Biochemistry, Molecular and Cell Biology III.</td>
<td>3,00</td>
<td>3,00</td>
<td>6</td>
<td>final</td>
<td>Biochemistry, Molecular and Cell Biology II.</td>
</tr>
<tr>
<td>Internal Medicine - Propedeutics I.</td>
<td>1,00</td>
<td>2,00</td>
<td>3</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology III. Physiology I.</td>
</tr>
<tr>
<td>Physical Education IV.</td>
<td>–</td>
<td>1,00</td>
<td>–</td>
<td>signature</td>
<td>–</td>
</tr>
<tr>
<td>Hungarian Medical Terminology IV.</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology III.</td>
</tr>
</tbody>
</table>

Total Number of Credit Points from Compulsory Subjects 25

<table>
<thead>
<tr>
<th>Obligatory elective subject</th>
<th>4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory electives and electives after the 3rd year curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Clinical Anatomy</td>
<td>2</td>
</tr>
<tr>
<td>Anatomy of Diagnostic Imaging</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Number of Credit Points from Obligatory elective / Elective Subjects 4
## OBLIGATORY ELECTIVE AND ELECTIVE SUBJECTS – SCHEDULE OF THE BASIC AND PRE-CLINICAL MODULES

### OBLIGATORY ELECTIVE SUBJECTS

#### 1st semester

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Developmental Biology I.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>exclusively from the 2nd year</td>
</tr>
<tr>
<td>Information Retrieval Science in Library</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>pract. mark</td>
<td>–</td>
</tr>
</tbody>
</table>

#### 2nd semester

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Introduction to Clinical Anatomy</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Anatomy, Histology, Embryology III.</td>
</tr>
<tr>
<td>Developmental Biology II.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Developmental Biology.</td>
</tr>
<tr>
<td>Anatomy of Diagnostic Imaging</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Anatomy, Histology, Embryology III.</td>
</tr>
<tr>
<td>Information Retrieval Science in Library</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>pract. mark</td>
<td>–</td>
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## ELECTIVE SUBJECTS

### 1st semester

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem based medical physiology</td>
<td>2,5</td>
<td>–</td>
<td>4</td>
<td>pract. mark</td>
<td>Medical Physiology II. with a grade of 4 (good) or 5 (excellent)</td>
</tr>
<tr>
<td>Traditional Chinese Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>For 3rd, 4th &amp; 5th year students only</td>
</tr>
<tr>
<td>Basic Cell Biology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td></td>
</tr>
<tr>
<td>Work within the union of research students (TDK munka)</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>pract. mark</td>
<td>at least a grade of 4 (good) in the relevant, completed subject</td>
</tr>
<tr>
<td>Bases of Medical Physics</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Jewish Medical Ethics I.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>History of Medical Professionalism</td>
<td>2,5</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Basics of Medical Chemistry</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>pract. mark</td>
<td>–</td>
</tr>
</tbody>
</table>

### 2nd semester

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Physiology of Respiration and Respiratory Diseases</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
</tr>
<tr>
<td>Traditional Chinese Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>For 3rd, 4th &amp; 5th year students only</td>
</tr>
<tr>
<td>Basic Genetics</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Jewish Medical Ethics II.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Work within the union of research students (TDK munka)</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>pract. mark</td>
<td>at least a grade of 4 (good) in the relevant, completed subject</td>
</tr>
<tr>
<td>Clinical Cardiovascular Physiology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
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</tbody>
</table>
### PRECLINICAL MODULE

#### STUDY PROGRAMME

**Third Year**

<table>
<thead>
<tr>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operative Surgery</td>
<td>1,00</td>
<td>1,50</td>
<td>2</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV. Physiology II.</td>
</tr>
<tr>
<td>Pathophysiology and Clinical Lab. Diagnostics</td>
<td>1,50</td>
<td>3,00</td>
<td>5</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV. Physiology II. Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>Microbiology I.</td>
<td>2,00</td>
<td>2,00</td>
<td>4</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV. Physiology II. Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>Pathology I.</td>
<td>3,00</td>
<td>4,00</td>
<td>7</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV. Physiology II. Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>Basic Immunology</td>
<td>2,00</td>
<td>2,00</td>
<td>4</td>
<td>semi-final</td>
<td>Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>Internal medicine - propedeutics II.</td>
<td>1,00</td>
<td>3,00</td>
<td>4</td>
<td>semi-final</td>
<td>Internal medicine - propedeutics I.</td>
</tr>
<tr>
<td>Disaster Protection &amp; Civil Defence</td>
<td></td>
<td></td>
<td></td>
<td>Signature</td>
<td></td>
</tr>
<tr>
<td><strong>Total Number of Credit Points from Compulsory Subjects</strong></td>
<td></td>
<td></td>
<td><strong>26</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory electives and electives after the 3rd year curriculum.

| Total Number of Credit Points from Obligatory elective / Elective subjects: | 4 |
|------------------------------------------------------------------------------|
| AOKLEK228 5A Hungarian Medical Terminology V. | – 4 2 final | Hungarian Medical Terminology IV. |
### Third Year

#### 6th semester

<table>
<thead>
<tr>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathophysiology and Clinical Lab. Diagnostics II.</td>
<td>1.50</td>
<td>3.00</td>
<td>4</td>
<td>final</td>
<td>Pathology I. Pathophysiology and Clinical Lab. Diagnostics Basic Immunology</td>
</tr>
<tr>
<td>Microbiology II.</td>
<td>2.00</td>
<td>2.00</td>
<td>4</td>
<td>final</td>
<td>Pathology I. Pathophysiology and Clinical Lab. Diagnostics Microbiology I.</td>
</tr>
<tr>
<td>Pathology II.</td>
<td>3.00</td>
<td>4.00</td>
<td>7</td>
<td>final</td>
<td>Pathology I. Pathophysiology and Clinical Lab. Diagnostics Microbiology I.</td>
</tr>
<tr>
<td>Internal Medicine I. (Metabolism, endocrinology, toxicology)</td>
<td>1.50</td>
<td>3.00</td>
<td>5</td>
<td>semi-final</td>
<td>Internal medicine - propedeutics II. Pathophysiology and Clinical Lab. Diagnostics II. Pathology II.</td>
</tr>
<tr>
<td>Genetics and genomics</td>
<td>2.00</td>
<td>2.00</td>
<td>4</td>
<td>semi-final</td>
<td>Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>Medical Psychology</td>
<td>1.00</td>
<td>2.50</td>
<td>3</td>
<td>semi-final</td>
<td>Medical Sociology Medical Communication</td>
</tr>
<tr>
<td>Internal Medicine practice (summer, 4 weeks)</td>
<td></td>
<td></td>
<td></td>
<td>pract.mark</td>
<td>Internal medicine - propedeutics II.</td>
</tr>
<tr>
<td>Disaster Protection &amp; Civil Defence II.</td>
<td></td>
<td></td>
<td></td>
<td>signature</td>
<td></td>
</tr>
<tr>
<td><strong>Total Number of Credit Points from Compulsory Subjects:</strong></td>
<td></td>
<td></td>
<td>27</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**4 credit points from obligatory elective/elective subjects** must be collected in each semester. See the detailed list of obligatory electives and electives after the 3rd year curriculum.

| Total Number of Credit Points from Obligatory elective / Elective subjects: | 4 |
### STUDY PROGRAMME

#### Fourth Year

<table>
<thead>
<tr>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology and Pharmacotherapy I.</td>
<td>2,50</td>
<td>2,50</td>
<td>5</td>
<td>semi-final</td>
<td>Physiology II. Brachemistry, Molecular and Cell Biology II. Pathophysiology and Clinical Lab. Diagnostics II.</td>
</tr>
<tr>
<td>Public Health (I.)</td>
<td>1,00</td>
<td>2,50</td>
<td>4</td>
<td>semi-final</td>
<td>Pathology II. Pathophysiology and Clinical Lab. Diagnostics II. Microbiology II.</td>
</tr>
<tr>
<td>Internal Medicine II. (nephrology, immunology, rheumatology)</td>
<td>1,50</td>
<td>3,00</td>
<td>4</td>
<td>semi-final</td>
<td>Internal Medicine I. Pathology II. Pathophysiology and Clinical Lab. Diagnostics II.</td>
</tr>
<tr>
<td>Medical Imaging</td>
<td>1,00</td>
<td>1,00</td>
<td>2</td>
<td>semi-final</td>
<td>Medical Biophysics Anatomy, Cell, Histology and Embryology IV.</td>
</tr>
<tr>
<td>Surgery I.</td>
<td>2,00</td>
<td>1,50</td>
<td>3</td>
<td>semi-final</td>
<td>Operative Surgery Pathophysiology and Clinical Lab. Diagnostics II.</td>
</tr>
<tr>
<td>Otorhinolaryngology</td>
<td>1,00</td>
<td>2,00</td>
<td>3</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV. Operative Surgery Surgery I.</td>
</tr>
<tr>
<td>Dermatology</td>
<td>1,50</td>
<td>2,50</td>
<td>4</td>
<td>semi-final</td>
<td>Pathophysiology and Clinical Lab. Diagnostics II. Internal Medicine I. Pathophysiology and Pharmacotherapy I.</td>
</tr>
<tr>
<td>Oral Surgery and Dentistry</td>
<td>1,00</td>
<td>1,00</td>
<td>2</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV. Operative Surgery Surgery I.</td>
</tr>
<tr>
<td>Bioethics - Medical Ethics</td>
<td>1,00</td>
<td>1,00</td>
<td>2</td>
<td>semi-final</td>
<td>Medical Sociology Medical Communication</td>
</tr>
</tbody>
</table>

**Total Number of Credit Points from Compulsory Subjects**: 29

**Obligatory elective / Elective subjects**

At least 4 credit points from the obligatory electives/electives must be collected in each semester. See the detailed list of them after the fifth year.

**Total Number of Credit Points from Obligatory elective / Elective Subjects**: 4
## Fourth Year

### 8th semester

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology and Pharmacotherapy II.</td>
<td>2.50</td>
<td>2.50</td>
<td>5</td>
<td>final</td>
<td>Pharmacology and Pharmacotherapy I. Microbiology II. Internal medicine - propedeutics II.</td>
</tr>
<tr>
<td>Public Health II.</td>
<td>1.00</td>
<td>2.50</td>
<td>3</td>
<td>final</td>
<td>Public Health (I.)</td>
</tr>
<tr>
<td>Pulmonology</td>
<td>1.00</td>
<td>2.00</td>
<td>3</td>
<td>semi-final</td>
<td>Pathology II. Internal medicine - propedeutics II.</td>
</tr>
<tr>
<td>Internal Medicine III. (cardiology)</td>
<td>1.00</td>
<td>2.00</td>
<td>3</td>
<td>semi-final</td>
<td>Internal Medicine II. Microbiology II. Pharmacology and Pharmacotherapy II.</td>
</tr>
<tr>
<td>Surgery II.</td>
<td>2.00</td>
<td>2.00</td>
<td>4</td>
<td>pract.mark</td>
<td>Surgery I. Pharmacology and Pharmacotherapy I.</td>
</tr>
<tr>
<td>Orthopaedics</td>
<td>1.00</td>
<td>2.00</td>
<td>3</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV. Pathology II. Surgery I.</td>
</tr>
<tr>
<td>Radiology</td>
<td>2.00</td>
<td>2.00</td>
<td>4</td>
<td>semi-final</td>
<td>Medical Biophysics Anatomy, Cell, Histology and Embryology IV. Pathology II.</td>
</tr>
<tr>
<td>Psychotherapy in medical practice</td>
<td>1.00</td>
<td>1.00</td>
<td>2</td>
<td>semi-final</td>
<td>Medical Psychology Medical Communication Internal medicine - propedeutics II.</td>
</tr>
<tr>
<td>Surgery practice (in summer)</td>
<td></td>
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</tr>
<tr>
<td>Disaster Protection &amp; Civil Defence IV.</td>
<td></td>
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<tr>
<td><strong>Total Number of Credit Points from Compulsory Subjects</strong></td>
<td></td>
<td></td>
<td>27</td>
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</tbody>
</table>

### Obligatory elective / Elective subjects

At least 4 credit points from the obligatory electives/electives must be collected in each semester. See the detailed list of them after the fifth year.

| Total Number of Credit Points from Obligatory elective / Elective Subjects | 4       |
# SEMMELWEIS UNIVERSITY / FACULTY OF MEDICINE

## CLINICAL MODULE

### STUDY PROGRAMME

**Fifth Year**

<table>
<thead>
<tr>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Medicine IV. (gastroenterology, oncology)</td>
<td>1,50</td>
<td>3,00</td>
<td>4</td>
<td>semi-final</td>
<td>Internal Medicine III. Pharmacology and Pharmacotherapy II. Radiology</td>
</tr>
<tr>
<td>Surgery III.</td>
<td>1,00</td>
<td>1,00</td>
<td>2</td>
<td>semi-final</td>
<td>Surgery II. Surgery practice (in summer) Anaesthesiology</td>
</tr>
<tr>
<td>Obstetrics and Gynecology I.</td>
<td>2,00</td>
<td>1 week internship</td>
<td>4</td>
<td>pract. mark</td>
<td>Pathology II. Pathophysiology and Clinical Lab. Diagnostics II. Surgery II.</td>
</tr>
<tr>
<td>Paediatrics I.</td>
<td>2,00</td>
<td>3,00</td>
<td>5</td>
<td>semi-final</td>
<td>Pathology II. Pharmacology and Pharmacotherapy II. Internal Medicine III.</td>
</tr>
<tr>
<td>Neurology I.</td>
<td>2,00</td>
<td>1,50</td>
<td>3</td>
<td>pract. mark</td>
<td>Anatomy, Cell, Histology and Embryology IV. Pathology II. Internal Medicine III</td>
</tr>
<tr>
<td>Psychiatry I.</td>
<td>1,50</td>
<td>2,00</td>
<td>3</td>
<td>semi-final</td>
<td>Pharmacology and Pharmacotherapy II. Neurology I.</td>
</tr>
<tr>
<td>Health Law, Accident Insurance</td>
<td>1,00</td>
<td>1,50</td>
<td>2</td>
<td>pract. mark</td>
<td>General Public Health II.</td>
</tr>
<tr>
<td>Emergency Medicine - Oxyology</td>
<td>1,50</td>
<td>1</td>
<td>1</td>
<td>semi-final</td>
<td>Internal Medicine III. Surgery II.</td>
</tr>
<tr>
<td>Urology</td>
<td>1,00</td>
<td>2,00</td>
<td>3</td>
<td>semi-final</td>
<td>Surgery II. Radiology</td>
</tr>
<tr>
<td>Basics of Family Medicine</td>
<td>1,00</td>
<td>1,00</td>
<td></td>
<td>semi-final</td>
<td>Internal Medicine III. General Public Health II.</td>
</tr>
<tr>
<td>Anaesthesiology and Intensive Therapy</td>
<td>1,50</td>
<td>1,00</td>
<td>2</td>
<td>semi-final</td>
<td>Surgery II.</td>
</tr>
</tbody>
</table>

| Total Number of Credit Points from Compulsory Subjects: | 29 |

Obligatory elective / Elective subjects: At least 4 credit points from the obligatory electives/electives must be collected in each semester. See the detailed list of them after the fifth year.

| Total Number of Credit Points from Obligatory elective / Elective subjects: | 4 |
### Fifth Year

<table>
<thead>
<tr>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Medicine IV. (haematology, infectology)</td>
<td>2,00</td>
<td>3,00</td>
<td>5</td>
<td>semi-final</td>
<td>Internal Medicine IV. Neurology II. Forensic Medicine</td>
</tr>
<tr>
<td>Traumatology</td>
<td>1,00</td>
<td>2,00</td>
<td>3</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV. Radiology Surgery II.</td>
</tr>
<tr>
<td>Obstetrics and Gynecology II.</td>
<td>2,00</td>
<td></td>
<td>2</td>
<td>semi-final</td>
<td>Obstetrics I.</td>
</tr>
<tr>
<td>Paediatrics II.</td>
<td>2,00</td>
<td>3,00</td>
<td>5</td>
<td>pract. mark</td>
<td>Paediatrics I.</td>
</tr>
<tr>
<td>Neurology II.</td>
<td>2,00</td>
<td>1,50</td>
<td>4</td>
<td>semi-final</td>
<td>Neurology I.</td>
</tr>
<tr>
<td>Psychiatry II.</td>
<td>1,50</td>
<td>2,00</td>
<td>4</td>
<td>pract. mark</td>
<td>Psychiatry I.</td>
</tr>
<tr>
<td>Forensic Medicine</td>
<td>1,00</td>
<td>2,00</td>
<td>3</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV. Genetics and genomics Pathology II.</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>2,00</td>
<td>2,00</td>
<td>4</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV. Internal Medicine III. Surgery II.</td>
</tr>
</tbody>
</table>

**Total Number of Credit Points from Compulsory Subjects:** 31

**Obligatory elective / Elective subjects:** At least 4 credit points from the obligatory electives/electives must be collected in each semester. See the detailed list of them after the fifth year.

**Total Number of Credit Points from Obligatory elective / Elective subjects:** 4
# Obligatory Elective and Elective Subjects – Schedule of the Clinical Module

## Obligatory Elective Subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibiotic Therapy and Infectology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>Anesthesia and Intensive Care</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Exclusively for the 5th year</td>
</tr>
</tbody>
</table>

## Elective Subjects

### 1st semester

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem based medical physiology</td>
<td>2,5</td>
<td>–</td>
<td>4</td>
<td>pract. mark</td>
<td>Pathophysiology and Clin. Lab. Diagnostics final</td>
</tr>
<tr>
<td>Sleep Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td></td>
</tr>
<tr>
<td>Clinical Physiology of Respiration and Respiratory Diseases</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
</tr>
<tr>
<td>Organ Transplantation</td>
<td></td>
<td>2</td>
<td>2</td>
<td></td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>Clinical Oncology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>Clinical Genetics</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>Clinical Immunology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>Health Informatics</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>Traditional Chinese Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>Ultrasonography</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>Jewish Medical Ethics I.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>History of Medical Professionalism</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Subject</td>
<td>Lectures</td>
<td>Practicals</td>
<td>Credit Points</td>
<td>Examination</td>
<td>Prerequisite</td>
</tr>
<tr>
<td>--------------------------------------------------------------</td>
<td>----------</td>
<td>------------</td>
<td>---------------</td>
<td>-------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Medicinal, Epidemiological, and Social Aspects of Drug Abuse</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>Clinical Cardiovascular Physiology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
</tr>
<tr>
<td>Clinical Endocrinology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>Clinical Hematology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>Organ Transplantation</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>Family Surgery</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Surgery I.</td>
</tr>
<tr>
<td>Neonatology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>Emergency in Surgery</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Surgery I.</td>
</tr>
<tr>
<td>Tropical Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>Ultrasonography</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>Jewish Medical Ethics II.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
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</tbody>
</table>
# STUDY PROGRAMME – New!

## First year

### 1st semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKFIZ005_1A</td>
<td>Bases of Biostatistics and Informatics</td>
<td>1,5</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>AOKOBI001_1A</td>
<td>Medical Chemistry</td>
<td>3</td>
<td>3,5</td>
<td>6</td>
<td>semi-final #</td>
<td>–</td>
</tr>
<tr>
<td>AOKANT003_1A</td>
<td>Anatomy, Histology, Embryology I.</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>AOKHUM0004_1A</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOKLEK228_1A</td>
<td>Hungarian Medical Terminology I.</td>
<td>–</td>
<td>4</td>
<td>4</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVLEK229_1A</td>
<td>Medical Terminology (Latin)</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOKTS009_1A</td>
<td>Physical Education I.</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>signature</td>
<td>–</td>
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### Obligatory elective subjects

<table>
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<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOVGEN083_1A</td>
<td>Basic Cell Biology</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>pract. mark</td>
<td>(Detailed curriculum in the 3rd year)</td>
</tr>
<tr>
<td>AOVNE1263_1A</td>
<td>History of Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVWKP088_1A</td>
<td>Information Retrieval Science in Library</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>pract. mark</td>
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</table>

### Elective Subjects

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOSNE1246_1A</td>
<td>History of Medical Professionalism</td>
<td>2,5</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Only for first year</td>
</tr>
<tr>
<td>AOVFIZ090_1A</td>
<td>Bases of Medical Physics</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVVOM093_1A</td>
<td>Basics of Medical Chemistry</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>pract. mark</td>
<td>–</td>
</tr>
</tbody>
</table>

See the rest of the elective courses after the third year’s curriculum.

---

4 credit points from obligatorie elective/elective subjects must be collected each semester. See the detailed list of obligatory electives and electives after the 3rd year curriculum.
# STUDY PROGRAMME

## First year

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKFIZ012_1A</td>
<td>Medical Biophysics</td>
<td>2,5</td>
<td>3</td>
<td>6</td>
<td>semi-final</td>
<td>Bases of Biostatistics and Informatics</td>
</tr>
<tr>
<td>AOKOBI010_1A</td>
<td>Medical Biochemistry, Molecular and Cell Biology I.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>semi-final</td>
<td>Medical Chemistry I.</td>
</tr>
<tr>
<td>AOKANT003_2A</td>
<td>Anatomy, Histology, Embryology II.</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>semi-final</td>
<td>Anatomy, Histology, Embryology I.</td>
</tr>
<tr>
<td>AOKOMS218_1A</td>
<td>First Aid</td>
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<td>1</td>
<td>0</td>
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<td>–</td>
</tr>
<tr>
<td>AOKLEK228_2A</td>
<td>Hungarian Medical Terminology II.</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology I.</td>
</tr>
<tr>
<td>AOKTS009_2A</td>
<td>Physical Education II.</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>signature</td>
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</tr>
<tr>
<td>AOKNSG014_1A</td>
<td>Summer Nursing Practice</td>
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<td>–</td>
<td></td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>AOKMASG006_1A</td>
<td>Medical Sociology</td>
<td>0,66</td>
<td>1,33</td>
<td>2</td>
<td>semi-final</td>
<td>(detailed curriculum in the 2nd year)</td>
</tr>
<tr>
<td>AOKMASG007_1A</td>
<td>Medical Communication</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>–</td>
</tr>
</tbody>
</table>

### Obligatory elective subjects

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOVINF244_1A</td>
<td>Introduction to Medical Informatics ***</td>
<td>–</td>
<td>1</td>
<td>1</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVCSA248_1A</td>
<td>Medical Profession ***</td>
<td>0,67</td>
<td>1,33</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
</tbody>
</table>

### Elective Subjects

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOSNEI246_1A</td>
<td>History of Medical Professionalism</td>
<td>2,5</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
</tbody>
</table>

4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory electives and electives after the 3rd year curriculum.

** Previous semester’s average result at least good (4). Good or excellent grade in the related subject.

*** The subjects must be taken in this semester like the other compulsory subjects!

# The grade influences the qualification of the Diploma.
BASIC MODULE

STUDY PROGRAMME – Old! In 2011/12 exclusively for those who did not complete the subjects in 2009/10 and 2010/11

First year

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOFIZFIZ_1A</td>
<td>Medical Physics and Statistics I.</td>
<td>2,5</td>
<td>2,5</td>
<td>5</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>AGENBIO_1A</td>
<td>Medical Biology I.</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
<td>–</td>
</tr>
</tbody>
</table>

# The grade influences the qualification of the Diploma.

First year

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOFIZFIZ_2A</td>
<td>Medical Physics and Statistics II.</td>
<td>2,5</td>
<td>2,5</td>
<td>5</td>
<td>final #</td>
<td>Medical Physics and Statistics I.</td>
</tr>
<tr>
<td>AOOBIKEM_2A</td>
<td>Medical Chemistry II.</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>final #</td>
<td>Medical Chemistry I.</td>
</tr>
<tr>
<td>AGENBIO_2A</td>
<td>Medical Biology II.</td>
<td>1,5</td>
<td>2</td>
<td>3</td>
<td>semi-final #</td>
<td>Medical Biology I.</td>
</tr>
</tbody>
</table>
LIST OF TEXTBOOKS

10. Laboratory Manual; Medical Chemistry and Biochemistry. Bp. Semmelweis Kiadó

Recommended textbooks:

ANATOMY, HISTOLOGY AND EMBRYOLOGY

First Semester

Department of Human Morphology and Developmental Biology
Faculty of Medicine, Semmelweis University
English Language Course

Anatomy: Osteology, arthrology. Muscles, vessels and nerves of the upper and lower limbs. (The topics of the lectures are: general osteology, arthrology. myology; clinical anatomy of the vertebral column, pelvis and foot). Skull.


Embryology: Basic principles of the human development, introduction to the clinical embryology. Spermatogenesis, oogenesis, fertilization, morula, blastula, formation of germinal layers, axes, molecular basis of right-left asymmetry, Hox genes, formation of the placenta, placenta. Factors inducing congenital anomalies. Development of the limbs, trunk and the skull.

Credits: 9
Lectures: 3 hours/week
Laboratory: 6 hours /week

Gross anatomy class: 4 hrs/week
Histology class: 2 hrs/week

Detailed weekly curriculum

<table>
<thead>
<tr>
<th>WEEK</th>
<th>LECTURE</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Anatomy</strong></td>
<td><strong>Histology</strong></td>
</tr>
<tr>
<td><strong>Week 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>The cell membrane.</td>
<td></td>
</tr>
<tr>
<td><strong>Week 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>The nucleus.</td>
<td>Bones of the upper limb.</td>
</tr>
<tr>
<td>5.</td>
<td>Cellular organelles on the exocytotic pathway (ribosomes, ER, Golgi), secretion.</td>
<td>Demonstration and dissection of the joints of the upper limb.</td>
</tr>
<tr>
<td>6.</td>
<td>Cytoskeleton: Microtubules and cellular organelles related to the microtubules, their cell biological significance.</td>
<td></td>
</tr>
<tr>
<td><strong>Week 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Association of cells (cell adhesion), cell connecting structures, Structure of the epithel cell.</td>
<td>Muscles of the ventral surface of the upper limb. Branches of the brachial plexus innervating the upper limbs</td>
</tr>
<tr>
<td>9.</td>
<td>Cell biology of cell division (mitosis) and cell cycle, chromosomes.</td>
<td></td>
</tr>
<tr>
<td>LECTURE</td>
<td>LAB</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td><strong>Week 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Connective tissue fibers and their formation.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Week 5 | |

| Week 6 | |
| 16. Mitochondrium, peroxisome. | Review of the upper limb |
| 17. Cartilage. Bone tissue. | Connective tissue II. |
| 18. Ossification, bone growth, nuclei of ossification. | **MID-TERM TEST.** |

| Week 7 | |

| Week 8 | |

| Week 9 | |
| 27. Formation of the placenta. Fetal membranes. | |

<p>| Week 10 | |
| 30. Formation of primary tissues. Homeobox genes | |</p>
<table>
<thead>
<tr>
<th>Week 11</th>
<th>LECTURE</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>32. Pelvis, diameters of the pelvis. Statics of the pelvis.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. Development of the limbs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 12</th>
<th>LECTURE</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>34. Clinical anatomy of the joints and muscles of the lower limb (hip, knee) I</td>
<td>Internal and external base of the skull.</td>
<td>Blood vessels</td>
</tr>
<tr>
<td>36. Development of the vertebral column and the trunk.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 13</th>
<th>LECTURE</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>38. Clinical anatomy of the joints and muscles of the lower limb II. (ankle joint, joints of the foot, structure of the foot. Mechanism of walking.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 14</th>
<th>LECTURE</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>41. Clinical anatomy of the organs of motion.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42. Development of the skull</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SEMMELEWS UNIVERSITY / FACULTY OF MEDICINE**
Second Semester

Department of Human Morphology and Developmental Biology
Faculty of Medicine, Semmelweis University
English Language Course

Subject: Muscles of the neck, chest, abdomen, diaphragm, pelvic diaphragm. Gross anatomy and development of the heart. Development of the great arteries and veins. Congenital anomalies of the heart and great vessels. Fetal circulation. Blood vessels of the thoracic and abdominal cavity. Lymphatic drainage of these regions. Gross anatomy, histology, development, clinical anatomy and congenital anomalies of the digestive, the respiratory, the urinary, and the reproductive system.

Credits: 9
Lecture: 3 hours/week
Laboratory: 6 hours/week (Anatomy: 4 hrs/week, Histology: 2 hrs/week)

Detailed weekly curriculum

<table>
<thead>
<tr>
<th>LECTURE</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topic</td>
<td>Anatomy</td>
</tr>
<tr>
<td>Week 1</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Histology of the lymphatic organs, thymus, tonsils, mucosal lymphatic tissues</td>
</tr>
<tr>
<td>2.</td>
<td>Histology and blood circulation of the spleen</td>
</tr>
<tr>
<td>3.</td>
<td>Development of the face.</td>
</tr>
<tr>
<td>Week 2</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Tongue, teeth. Development of the tooth.</td>
</tr>
<tr>
<td>Week 3</td>
<td></td>
</tr>
<tr>
<td>Week 4</td>
<td>Lectures</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>12.</td>
<td>Pericardium, topography and clinical anatomy of the heart.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 5</th>
<th>Lectures</th>
<th>Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>Conducting system, innervation and blood supply of the heart. Anatomical base of the heart attack</td>
<td>Opening of the pericardium. Dissection of cardiac vessels and cardiac chambers.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 6</th>
<th>Lectures</th>
<th>Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.</td>
<td>Gross anatomy of the stomach - parts, topography, peritoneal relations, blood supply.</td>
<td>Respiratory system II. Conducting system of the heart.</td>
</tr>
<tr>
<td>18.</td>
<td>Development of the veins, early development of the heart.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 7</th>
<th>Lectures</th>
<th>Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.</td>
<td>Development and congenital anomalies of the heart and great blood vessels.</td>
<td>Review.</td>
</tr>
</tbody>
</table>

**MID-TERM TEST.**

<table>
<thead>
<tr>
<th>Week 8</th>
<th>Lectures</th>
<th>Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.</td>
<td>Fetal circulation, perinatal changes in circulation.</td>
<td></td>
</tr>
<tr>
<td>Week 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Gross anatomy of the kidney (capsules, blood supply, renal hilum) and the ureter.</td>
<td>Hepatoduodenal ligament, coeliac trunk, Liver.</td>
<td>Liver, bladder</td>
</tr>
<tr>
<td>29. Histology of the testis and the epididymis.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. Development of the digestive tract, development of the foregut, hindgut, the liver and the pancreas.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>32. Female reproductive tract - overview, histology of the ovary and the uterus. Uterine cycle.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>35. Pelvic diaphragm. Birth canal</td>
</tr>
<tr>
<td>36. Pronephros, mesonephros, and metanephros.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>38. Lymphatic drainage of the head, neck, chest cavity, abdomen and pelvis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>41. Clinical anatomy. Image analysis II.</td>
</tr>
<tr>
<td>42. Migration of germ cells, sex determination, development of the gonads.</td>
</tr>
</tbody>
</table>
## Lectures

1. The place of anatomy, histology and embryology in the medical curriculum, their nomenclature
2. Structure of the limbs (bony skeleton, joints, muscles, groups of muscles, fasciae, fascial compartments, arteries, superficial and deep veins, nerves, innervation of the muscles and the skin
3. Animal tissues, epithelial cells, simple epithels
4. Stratified epithelia
5. Types and composition of joints (general arthrology)
6. Features of the skeletal musculature (general myology)
7. Shoulder joint and the muscles acting upon it
8. Bones and joints of the hand
9. Glandular epithelium
10. Muscles of the hand
11. Connective tissue, cells
12. Connective tissue: fibers; types of the connective tissue
13. Blood, hematopoesis
14. Supporting tissue
15. Bone formation
16. Vertebrae, sacrum, vertebral column
17. Superficial and deep muscles of the back
18. Thorax, pectoral and intercostal muscles

## Dissecting room

- Behaviour in the dissecting room. Bones and joints of the shoulder girdle and the arm. Demonstration: shoulder joint
- Dissection of the shoulder and elbow joints.
- Dissection of the joints of the upper extremity. Dissecting of the upper extremity: removal of the skin, fascia brachii and antebrachii
- Muscles of the shoulder region, flexor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles. Palmar aponeurosis.
- Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles. Muscles, vessels, and nerves

## Histology lab.

- SIMPLE EPITHELS: Simple squamous (mesothel, pleura); simple cuboidal (kid simple columnar (gallbladder); pseudostratified (trachea)
- STRATIFIED EPITHELIA: squamous, non-ceratinizing (esophagus); squamous ceratinizing (skin); columnar male urethra); transitional epithel (urinary bladder)
- GLANDULAR EPITHEL: Goblet cells (colon); merocrine gland (salivary gland); apocrine gland (prostate); holocrine gland (sebaceous gland). PIGMENT EPITHEL (retina)
- CONNECTIVE TISSUE, FIBERS: Collagen fibers (tendon); elastic fibers (vessel wall); reticular fibers (liver); differential staining of the fibers (skin); ground substance (umbilical cord)

## Laboratories

- 3 hours per week
- 6 hours per week, 4 hours Anatomy, 2 hours Histology

### First Semester

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Place</td>
<td>Behaviour in</td>
<td>Behaviour in the</td>
</tr>
<tr>
<td>2. Structure</td>
<td>the dissecting</td>
<td>histology lab. Use</td>
</tr>
<tr>
<td>4. Stratified</td>
<td>joints of the</td>
<td>Preparation of</td>
</tr>
<tr>
<td>5. Types</td>
<td>shoulder girdle</td>
<td>histological</td>
</tr>
<tr>
<td>6. Features</td>
<td>and the upper</td>
<td>specimens.</td>
</tr>
<tr>
<td>7. Shoulder</td>
<td>joint and the</td>
<td>Stains. Study of</td>
</tr>
<tr>
<td>8. Bones</td>
<td>muscles acting</td>
<td>a solid and a</td>
</tr>
<tr>
<td>9. Glandular</td>
<td>upon it</td>
<td>hollow organs:</td>
</tr>
<tr>
<td>10. Muscles</td>
<td>of the hand</td>
<td>surfaces,</td>
</tr>
<tr>
<td>11. Connective</td>
<td>of the hand</td>
<td>homogenous</td>
</tr>
<tr>
<td>12. Connective</td>
<td>tissue: fibers;</td>
<td>structure,</td>
</tr>
<tr>
<td>13. Blood,</td>
<td>types of the</td>
<td>layered</td>
</tr>
<tr>
<td>14. Supporting</td>
<td>connective tissue</td>
<td>structure.</td>
</tr>
<tr>
<td>15. Bone</td>
<td>formation</td>
<td>SIMPLE EPITHELS:</td>
</tr>
<tr>
<td>16. Vertebrae,</td>
<td>formation</td>
<td>Simple squamous</td>
</tr>
<tr>
<td>17. Superficial</td>
<td>sacrum, vertebral</td>
<td>(mesothel, pleura);</td>
</tr>
<tr>
<td>18. Thorax,</td>
<td>and deep muscles</td>
<td>simple cuboidal (kid</td>
</tr>
<tr>
<td>19. Thoracic</td>
<td>of the back</td>
<td>simple columnar</td>
</tr>
<tr>
<td>20. Thoracic</td>
<td>and intercostal</td>
<td>(gallbladder);</td>
</tr>
<tr>
<td>21. Thoracic</td>
<td>muscles</td>
<td>pseudostratified (trachea)</td>
</tr>
</tbody>
</table>

# Connective tissue

- Various types of cells (scar tissue); mast cells peri- (oneum); fat cells (tongue, skin). CONNECTIVE TISSUE, TYPES. Mesenchyme umbilical cord; dense connective tissue (tendon); reticular tissue (lymph node); cell rich tissue (uterus).
<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>19. Bones and ligaments of the pelvis</td>
<td>Muscles of the trunk. Bones and ligaments of the pelvis.</td>
<td>BLOOD, BONE MARROW.</td>
</tr>
<tr>
<td>20. Abdominal muscles, rectus sheath</td>
<td></td>
<td>Blood smear, bone marrow smear.</td>
</tr>
<tr>
<td>21. Diaphragm</td>
<td></td>
<td>SUPPORTING TISSUE.</td>
</tr>
<tr>
<td>22. Gametogenesis, fertilization</td>
<td>Bones of the lower extremity.</td>
<td>Hyaline cartilage (rib); fibrous cartilage (meniscus); elastic cartilage (epi</td>
</tr>
<tr>
<td>24. Development and differentiation of</td>
<td>Fascia lata, fascia cruris, plantar aponeurosis</td>
<td>BONE, BONE FORMATION.</td>
</tr>
<tr>
<td>25. Hip joint and the muscles acting upon it</td>
<td>Knee joint, joints of the foot.</td>
<td>Bone, cross and longitudinal sections. Enchondral ossification the mesoderm</td>
</tr>
<tr>
<td>26. Knee joint and the muscles acting upon it</td>
<td>Flexor muscles of the thigh and calf, muscles of the sole.</td>
<td>(digit); intramembranous ossification (skull).</td>
</tr>
<tr>
<td>27. Foot</td>
<td></td>
<td>REVIEW</td>
</tr>
<tr>
<td>28. Neurulation. Folding of the embryo</td>
<td>Extensor muscles of the thigh</td>
<td>TEST. Epithelial, connective and calf. Peroneal muscles. and supporting</td>
</tr>
<tr>
<td>Féetal membranes</td>
<td></td>
<td>tissues.</td>
</tr>
<tr>
<td>29. Early embryonic and placental circulation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure of the placenta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The motor system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31. Muscle tissue I.</td>
<td>Completion of the dissection</td>
<td>PLACENTA.</td>
</tr>
<tr>
<td>32. Muscle tissue II.</td>
<td></td>
<td>UMBILICAL CORD</td>
</tr>
<tr>
<td>33. Herniae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34. Neuronal tissue: neurons and supporting cells derived from the neural tube</td>
<td>TEST. Trunk, lower extremity.</td>
<td>MUSCLE TISSUE. Smooth muscles (gut); striated muscle (skeletal muscle); car|</td>
</tr>
<tr>
<td>35. Neuronal tissue: neurons and supporting cells derived from the neural crest</td>
<td>Skull</td>
<td>diac muscle (heart)</td>
</tr>
<tr>
<td>36. Neuronal tissue: synapses, effectors, Receptors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37. Sphenoid and ethmoid bones</td>
<td>Skull</td>
<td></td>
</tr>
<tr>
<td>38. Temporal bone</td>
<td></td>
<td>NEURAL TISSUE. CELLS.</td>
</tr>
<tr>
<td>39. Calvaria, base and interior of the skull</td>
<td></td>
<td>Multipolar neurons (spinal cord, autonomous ganglion, cerebral cortex, cereb</td>
</tr>
<tr>
<td>40. Facial skeleton, orbit</td>
<td>Skull</td>
<td>erellar cortex); pseudounipolar neurons (spinal ganglion)</td>
</tr>
<tr>
<td>41. Nasal cavity, paranasal sinuses</td>
<td></td>
<td>NERVE FIBERS.</td>
</tr>
<tr>
<td>42. Oral cavity, pterygopalatine and infratemporal fossae</td>
<td></td>
<td>GLIAL CELLS.</td>
</tr>
<tr>
<td>43. Mandible, temporomandibular joint</td>
<td>Skull</td>
<td>Peripheral nerve, glial cells (spinal cord, cerebral cortex)</td>
</tr>
<tr>
<td>44. Atlantooccipital and atlantoaxial joints. Suboccipital muscles</td>
<td></td>
<td>EFFECTORS, RECEPTORS.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Review</td>
</tr>
<tr>
<td>Lectures</td>
<td>Dissecting room</td>
<td>Histology lab.</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>1. Introduction. Significance of the vascular and lymphatic organs in the medical curriculum and in the medical practice</td>
<td>Heart: surface structure, vessels, myocard</td>
<td>VESSELS. Elastic artery (carotid artery); middle size artery and vein, arterioles, venules, capillaries (tongue)</td>
</tr>
<tr>
<td>2. Histology of the vessel wall</td>
<td></td>
<td>LYMPHATIC ORGANS.</td>
</tr>
<tr>
<td>3. Lymphatic organs: lymph node, spleen</td>
<td></td>
<td>Lymph node, spleen</td>
</tr>
<tr>
<td>4. Lymphatic organs: thymus, tonsils</td>
<td>Chambers of the heart, valves</td>
<td>LYMPHATIC ORGANS.</td>
</tr>
<tr>
<td>5. Surface structures of the heart, anulus fibrosus, myocard</td>
<td></td>
<td>Lymph node, spleen</td>
</tr>
<tr>
<td>6. Chambers of the heart, valves</td>
<td></td>
<td>LYMPHATIC ORGANS.</td>
</tr>
<tr>
<td>7. Vessels of the heart, conducting system, topography. Percard</td>
<td>Pericard. In situ heart dissection.</td>
<td>LYMPHATIC ORGANS.</td>
</tr>
<tr>
<td>8. Development of the heart and the pericard I.</td>
<td>Demonstration of unfixed heart.</td>
<td>LYMPHATIC ORGANS.</td>
</tr>
<tr>
<td>9. Development of the heart and the pericard II. Malformations.</td>
<td></td>
<td>HEART. Wall structure, conducting system.</td>
</tr>
<tr>
<td>10. Viscera, introduction. Histological structure of the solid and hollow viscera</td>
<td>TEST. Heart, anatomy and embryology</td>
<td>DIGESTIVE SYSTEM.</td>
</tr>
<tr>
<td>12. Muscles of mastication. Tongue</td>
<td>Tongue, cervical organs on the visceral complex</td>
<td>Foliate papilla</td>
</tr>
<tr>
<td>13. Salivary glands, Anatomy of the teeth</td>
<td></td>
<td>DIGESTIVE SYSTEM.</td>
</tr>
<tr>
<td>14. Development and histology of the teeth</td>
<td></td>
<td>Salivary glands (parotid, submandibular, sublingual); tooth (demonstration)</td>
</tr>
<tr>
<td>15. Development of the face, malformations</td>
<td></td>
<td>DIGESTIVE SYSTEM.</td>
</tr>
<tr>
<td>16. Pharynx, structure of the wall, soft palate</td>
<td>Esophagus, aorta</td>
<td>Tooth development, esophagus</td>
</tr>
<tr>
<td>17. Infrahypoid muscles, cervical fascia, para- and retropharyngeal space</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Esophagus, stomach: anatomy and histology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Small intestine: anatomy and histology</td>
<td>Hepatoduodenal ligament, mesentery</td>
<td></td>
</tr>
<tr>
<td>21. Colon, rectum: anatomy and histology</td>
<td>Unpaired branches of the abdominal aorta, tributaries of the portal vein</td>
<td></td>
</tr>
<tr>
<td>22. Liver and biliary apparatus: anatomy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Liver and biliary apparatus: histology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Pancreas: anatomy and histology, Portal vein and tributaries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Development of the middle and hindgut</td>
<td>Demonstration of the abdominal visceral topography in the cadaver of the second year and in unfixed cadaver. Larynx, trachea</td>
<td></td>
</tr>
<tr>
<td>26. Peritoneum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Cartilages, joints and muscles of the larynx</td>
<td>Pleura. Mediastinum.</td>
<td></td>
</tr>
<tr>
<td>28. Skeleton of the larynx, laryngeal inlet, rima glottidis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. Trachea, lung: anatomy, Pleura</td>
<td>TEST. Lymphatic organs, vessels, heart, digestive system</td>
<td></td>
</tr>
<tr>
<td>30. Histology of the lung, Development of the respiratory system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32. Histology and vascular structure of the kidney</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. Urinary bladder: anatomy and histology, Female urethra</td>
<td>Capsules of the kidney, components of the renal hilum, Aorta, inferior vena cava, ureter; pelvic organs.</td>
<td>UROPOETIC SYSTEM. Kidney, urinary bladder. Demonstration: ureter</td>
</tr>
<tr>
<td>34. Development of the uropoetic system, malformations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35. Testis, spermiogenesis, epididymis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lectures
36. Ductus deferens, spermatic cord, seminal vesicle, prostate, male urethra: anatomy and histology
37. Penis: anatomy and histology. Male perineum
39. Anatomy of the uterus, broad ligament
40. Histology of the uterus, menstrual cycle
41. Vagina, outer female genital organs. Female perineum
42. Malformation of the gender, bisexuality
43. Separation of the body cavities.
44. Development of the major arteries and veins. Fetal circulation

Dissecting room
Pelvic organs. Peritoneum in the pelvis.

Histology lab.
MALE GENITAL SYSTEM. Testis, epididymis, spermatic cord, seminal vesicle, prostate

Pelvic organs, topography.

MALE GENITAL SYSTEM.

Perineum

Penis.

FEMALE GENITAL SYSTEM. Ovary, uterine tube

Review

FEMALE GENITAL SYSTEM.

TEST. Urogenital system

Uterus, vagina, mammary gland

Semester examination (semi-final)

MEDICAL BIOLOGY I. - In 2011/12 exclusively for those who study according to the old curriculum and did not complete the subject in 2009/10 and 2010/11

Tutor: Dr. Valéria László

First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The cell membrane: structure and function</td>
<td>The light microscope in use</td>
</tr>
<tr>
<td>2.</td>
<td>Structure and function of the nucleus I</td>
<td>General view of the cell. Light and electron microscopic microtechnique.</td>
</tr>
<tr>
<td>3.</td>
<td>Structure and function of the nucleus II</td>
<td>Cell nucleus. Cyto(histo)chemistry</td>
</tr>
<tr>
<td>4.</td>
<td>Endoplasmic reticulum and the ribosomes</td>
<td>Endoplasmic reticulum</td>
</tr>
<tr>
<td>5.</td>
<td>Golgi complex, secretion and protein transport</td>
<td>Golgi complex</td>
</tr>
<tr>
<td>6.</td>
<td>Lysosomes, endocytosis, vesicular transport</td>
<td>Midterm (written)</td>
</tr>
<tr>
<td>7.</td>
<td>Structure and function of mitochondria and peroxisomes</td>
<td>Secretion. Immunohistochemistry</td>
</tr>
<tr>
<td>8.</td>
<td>The cytoskeleton,</td>
<td>Endocytosis. Cellular digestion. Enzyme-histochemistry</td>
</tr>
<tr>
<td>9.</td>
<td>Cellular movement</td>
<td>Cell and tissue culture</td>
</tr>
<tr>
<td>11.</td>
<td>Extracellular regulation of cells, signal transduction I</td>
<td>Cytoskeleton and cellular movement</td>
</tr>
<tr>
<td>12.</td>
<td>The cell cycle and its regulation I</td>
<td>Cell surface differentiation, ultrastructure of cellular junctions</td>
</tr>
<tr>
<td>13.</td>
<td>The cell cycle and its regulation II</td>
<td>Midterm (written)</td>
</tr>
<tr>
<td>14.</td>
<td>Cellular aging and programmed cell death (apoptosis)</td>
<td>Cell death (necrosis and apoptosis)</td>
</tr>
</tbody>
</table>
### MEDICAL BIOLOGY II.

**Second Semester**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Meiosis</td>
<td>Typical and atypical mitosis</td>
</tr>
<tr>
<td>2.</td>
<td>No lecture (Research Students’ Conference)</td>
<td>Meiosis and gametogenesis</td>
</tr>
<tr>
<td>3.</td>
<td>Introduction to human genetics; human genom</td>
<td>Cytogenetics I</td>
</tr>
<tr>
<td>4.</td>
<td>Mutations and polymorphisms.</td>
<td>Cytogenetics II</td>
</tr>
<tr>
<td>5.</td>
<td>Epigenetics</td>
<td>Introduction to human genetics; special methods of human genetics</td>
</tr>
<tr>
<td>6.</td>
<td>Cytogenetics I</td>
<td>Molecular genetics I</td>
</tr>
<tr>
<td>7.</td>
<td>Cytogenetics II</td>
<td>Midterm I (written)</td>
</tr>
<tr>
<td>8.</td>
<td>Autosomal (monogenic) inheritance</td>
<td>Molecular genetics II</td>
</tr>
<tr>
<td>9.</td>
<td>Role of sex in inheritance</td>
<td>Gene expression analysis on protein level</td>
</tr>
<tr>
<td>10.</td>
<td>Genetics of sex</td>
<td>Medical applications of genetic methods: monogenic inheritance</td>
</tr>
<tr>
<td>11.</td>
<td>Genetics and genomics of complex traits (disorders)</td>
<td>Medical applications of genetic methods: complex traits (disorders)</td>
</tr>
<tr>
<td>12.</td>
<td>Genetic aspects of development and cancer</td>
<td>Medical applications of genetic methods: practice</td>
</tr>
<tr>
<td>13.</td>
<td>Gene and genome manipulations</td>
<td>Midterm II (written)</td>
</tr>
<tr>
<td>14.</td>
<td>Theoretical background of reparative medicine</td>
<td>Consultation</td>
</tr>
</tbody>
</table>

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### BASES OF BIOSTATISTICS AND INFORMATICS

**Tutor:** Dr. István Voszka

<table>
<thead>
<tr>
<th>Lecture (1.5 hours/week)</th>
<th>Practice (2 hours/week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduction</td>
<td>Graphical representation of functions</td>
</tr>
<tr>
<td>2. Role of „change“ in theory and in practice</td>
<td>The most important functions and their representation by computer</td>
</tr>
<tr>
<td>3. Descriptive statistics</td>
<td>Use of excel tables</td>
</tr>
<tr>
<td>4. Elements of probability calculus</td>
<td>Mean, standard deviation, variance, standard error</td>
</tr>
<tr>
<td>5. Probability calculus and statistics</td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td>6. Principles of hypothesis testing</td>
<td>Hypothesis testing 1.: t-tests</td>
</tr>
<tr>
<td>7. Parametric and non-parametric tests for comparison of two groups</td>
<td>Hypothesis testing 2.: non-parametric tests</td>
</tr>
<tr>
<td>8. Comparison of more groups, analysis of variance</td>
<td>Hypothesis testing 3.: Mann-Whitney U-test</td>
</tr>
<tr>
<td>9. Examination of dependence relations of variables</td>
<td>Analysis of variance</td>
</tr>
<tr>
<td>10. Evaluation of diagnostic tests</td>
<td>Categorical variables, contingency table</td>
</tr>
<tr>
<td>11. Human body as signal source, signal processing</td>
<td>Regression analysis</td>
</tr>
<tr>
<td>12. Concept of information, databases</td>
<td>Calculation of correlation</td>
</tr>
<tr>
<td>13. Clinical databases</td>
<td>Bioinformatical databases</td>
</tr>
<tr>
<td>14. Evidence based medicine, role of mathematical logics in diagnostics</td>
<td>Publication databases, clinical databases</td>
</tr>
</tbody>
</table>
MEDICAL BIOPHYSICS  
Tutor: Dr. István Voszka

Lecture (2.5 hours/week)  
1. Introduction. Structure of living matter  
2. Muscle function  
3. Molecular bases of biological motion  
4. Biophysics of blood circulation and heart function  
5. Transport processes  
6. Radiations  
7. Luminescence  
8. X-radiation  
9. Radioactivity, dosimetry  
10. Sound, ultrasound  
11. Examination of biomolecular systems  
12. Bioelectric phenomena  
13. Sensory function. Biophysics of vision and hearing  
14. Biophysical research in medicine

Practice (3 hours/week)  
Introduction  
Electrocardiography  
Optics of the eye  
Coulter-counter  
Diffusion  
Light absorption  
Gamma energy determination  
X-ray measurement  
Imaging with ionizing radiations  
Ultrasound  
Gamma-absorption, dosimetry  
Audiometry  
Sensory function  
Repetition

BASES OF MEDICAL PHYSICS  
Elective course only for 1st year students  
Tutor: Dr. István Voszka

Lecture (1 hour/week)  
1. Physical quantities, scales  
2. Dynamics  
3. Thermodynamics 1.  
4. Thermodynamics 2.  
5. Geometric optics  
6. Physical optics  
7. Electric charge, current  
8. Resistances, capacitors  
9. Electromagnetic induction  
10. Atomic physics  
11. Atomic nucleus, radioactivity  
12. Decay law  
13. Multiatomic systems  
14. Basic electric circuits  

Practice (1 hour/week)  
Mechanics calculations  
Force measurement  
Thermodynamics calculations  
Measurement of light refraction  
Optics calculations  
Image formation of lenses  
Electric calculations  
Measurement of resistance  
Atomic physics calculations  
Measurement of light emission  
Nuclear physics calculations  
Nuclear measurement  
Multiatomic systems calculations  
Measurement with amplifier
**MEDICAL PHYSICS AND STATISTICS**

In 2011/12 exclusively for those who did not complete the subject in 2009/10 and 2010/11

Tutors: Dr. István Voszka – Faculty of Medicine, Faculty of Dentistry

**First Semester**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture (2.5 hours per week)</th>
<th>Laboratory (2.5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Radiations (basic concepts)</td>
<td>Laboratory safety rules</td>
</tr>
<tr>
<td>2</td>
<td>Properties of electromagnetic radiations; wave and corpuscular nature</td>
<td>Statistics I. (Data processing)</td>
</tr>
<tr>
<td>3</td>
<td>Attenuation of radiation</td>
<td>Emission spectroscopy. Light sources</td>
</tr>
<tr>
<td>4</td>
<td>Luminescence and its applications</td>
<td>Spectrophotometry</td>
</tr>
<tr>
<td>5</td>
<td>Lasers and their medical applications</td>
<td>Optical lenses; light microscope</td>
</tr>
<tr>
<td>6</td>
<td>Thermal radiation, thermography. Biological effects of light</td>
<td>Detection of nuclear radiations</td>
</tr>
<tr>
<td>7</td>
<td>Production and spectrum of X-radiation Cyclotron; Linear accelerator;</td>
<td>Oscilloscope</td>
</tr>
<tr>
<td>8</td>
<td>Attenuation of X-radiation, interactions X-ray diagnostics</td>
<td>Special light microscopes</td>
</tr>
<tr>
<td>9</td>
<td>Atomic structure; Radioactive decay law Gamma-radiation and its detection</td>
<td>Optics of the eye</td>
</tr>
<tr>
<td>10</td>
<td>Radiotherapy, radiosurgery; Isotope diagnostics</td>
<td>The attenuation of gamma-radiation</td>
</tr>
<tr>
<td>11</td>
<td>SPECT, PET Beta-radiation, beta-decay</td>
<td>Coulter counter</td>
</tr>
<tr>
<td>12</td>
<td>Alpha-radiation, alpha-decay Interaction with matter</td>
<td>Determination of skin-impedance</td>
</tr>
<tr>
<td>13</td>
<td>Dosimetry</td>
<td>Concentration determination with refractometer</td>
</tr>
<tr>
<td>14</td>
<td>Radiation protection; estimation of risk</td>
<td>Densitography (CT)</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture (2.5 hours per week)</th>
<th>Laboratory (2.5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bonds and their significance in macromolecular structure; Boltzmann distribution, examples</td>
<td>UV-dosimetry</td>
</tr>
<tr>
<td>2</td>
<td>Liquid crystals, membranes</td>
<td>Dosimetry</td>
</tr>
<tr>
<td>3</td>
<td>Electronic properties of condensed materials (solids, macromolecules)</td>
<td>Amplifier</td>
</tr>
<tr>
<td>4</td>
<td>Statistics I. Basics of biostatistics Most important distribution functions</td>
<td>Gamma energy determination</td>
</tr>
<tr>
<td>5</td>
<td>Statistics II. Hypothesis testing</td>
<td>Pulse generators (e.g. pacemaker, defibrillator)</td>
</tr>
<tr>
<td>6</td>
<td>Ultrasound properties, generation of ultrasound</td>
<td>Sine wave oscillators (high frequency heat therapy, ultrasound)</td>
</tr>
<tr>
<td>7</td>
<td>Ultrasonography, Doppler methods</td>
<td>Audiometry</td>
</tr>
<tr>
<td>8</td>
<td>Magnetic resonance imaging</td>
<td>Isotope diagnostics</td>
</tr>
</tbody>
</table>
Week 9  Lecture (2.5 hours per week)  Laboratory (2.5 hours per week)
Summary of medical imaging methods  (CT, SPECT, PET, endoscopy, thermography)  Statistics II. (Statistical inferences)

Week 10  Lecture (2.5 hours per week)  Laboratory (2.5 hours per week)
Basic concepts of Thermodynamics, First law  Flow of fluids. Electric model of vascular circulation

Week 11  Lecture (2.5 hours per week)  Laboratory (2.5 hours per week)
General description of transport phenomena,  Electrocardiography
Onsager’s equation, examples

Week 12  Lecture (2.5 hours per week)  Laboratory (2.5 hours per week)
Diffusion; transport across membrane,  Diffusion
resting potential

Week 13  Lecture (2.5 hours per week)  Laboratory (2.5 hours per week)
Action potential, properties, interpretation  Sensory function
General characteristics of sensory function,
hearing as example

MEDICAL CHEMISTRY

Teaching Secretary: Dr. András Hrabák

First Semester

Lecture topics

Week 1. Introduction to Medical Chemistry. The chemical equilibrium. Definition of pH and pOH, pH scale. pH of strong electrolytes.


Week 11. The most important groups of organic compounds. Alkanes, structures, reactions. Alkenes, their structures, properties, reactions. Lecturer: Dr. Pál Bauer


Week 13. Aldehydes, ketones. Reactions, nucleophilic addition. Organic acids, classification, their properties, reactions. Lecturer: Dr. Attila Ambrus


Laboratory program and seminars Fall Semester

- Week 1. Introduction, safety rules
- Week 2. Acid-base titrations I. Factorization, titration of NaOH
- Week 3. Acid-base titrations II., Titration of strong and weak acids.
- Week 4. Acid-base titrations III., Titration curves.
- Week 5. Consultation/seminar, preparation for the first midterm exam.
- Week 6. Midterm exam I.
- Week 7. Titration based on redoxi reactions (Permanganometry, iodometry)
- Week 8. Titration based on complex formation.*
- Week 9. Spectrophotometry. Determination of $pK_a$ of phenol red
- Week 10. Electrochemistry.
- Week 11. Conductometry. Determination of the ionization constant of acetic acid.
- Week 12. Consultation. Preparation for the second midterm exam.
- Week 13. Midterm exam II.
- Week 14. Titration based on precipitation. Laboratory exam (written)

Teaching Secretary Dr. András Hrabák
Tel.: (+36-1) 4591500/ext. 60181

Student Affairs Secretary Mr. Zsolt Ozsváth
Tel: 4591500/ext. 60061

Lab coordinator Dr. Gergely Keszler

Lab Staff Mrs Mária Kövecses
Mrs Mártta Stroe
Mrs Kinga Pelczer

Laboratory programs are on the 1st floor, Department of Medical Chemistry, Molecular Biology and Pathobiochemistry, “D” passage.
<table>
<thead>
<tr>
<th>Week</th>
<th>Topics of the lectures</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Metabolism and transport, the principle of metabolism. Metabolic profile of various organelles (endoplasmic reticulum, peroxisomes, lysosomes, mitochondria). Nucleic acids – structure and function. Bases, nucleosides, nucleotides, DNA structure, DNA denaturation, hybridization.</td>
</tr>
<tr>
<td>12</td>
<td>The role of apoptosis in the cellular homeostasis. The apoptotic cell. Biochemical processes during apoptosis: role of mitochondria, activation of caspases, degradation of DNA.</td>
</tr>
</tbody>
</table>
Laboratory program and seminars

Spring Semester

Week 1. Carbohydrates (seminar/consultation)
Week 2. Proteins (experimental)
Week 3. Amino acids as buffers. Structure and functions of proteins (seminar)
Week 4. Enzyme kinetics, calculation of enzyme activity (seminar)
Week 5. Urease measurement (experimental)
Week 6. Gel filtration (experimental)
Week 7. Thin layer chromatography
Week 8. Midterm exam I.
Week 9. Gel electrophoresis, western blot
Week 10. Lipids (seminar/consultation)
Week 11. Induction of β-galactosidase
Week 12. Nucleotides, vitamins, coenzymes (seminar/consultation)
Week 13. Midterm exam II.
Week 14. Restriction digestion of pGL3 basic vector followed by gel electrophoresis (experiment)
Laboratory exam (3rd midterm, written)

Exemption: Students who have certificates of their previous studies at other Universities in Chemistry and/or Biochemistry may apply for exemptions under the following conditions:

1. They have to present their certificates regarding the courses to the responsible tutor of the course during the first two weeks of the semester. (Dr. A. Hrabák, Department of Medical Chemistry.)

2. Exemptions are given only after a “checking” exam during the first month of the semester. At this exam one of the lecturers will check whether the student’s knowledge is sufficient to complete the semester without attending lectures and laboratory programs. This exam is based on the question list of the semifinal or final examination, and can be obtained from the tutor of the course. After a successful exam students are exempted from the semifinal or final exam at the end of the semester, including attending both lectures and laboratory programs. If students fail they must attend both lectures and laboratory programs and they have to sit for the semifinal or final exam at the end of the semester. The exemption is valid only for one semester unless the student successfully completes the final exam for both semesters’ material.

3. Partial exemption (i.e. only from laboratory programs or lectures) is not permitted.
MEDICAL PROFESSION

Lecturer: Prof. László Kalabay MD PhD
Institute: Department of Family Medicine
Duration: One semester, lectures: 6x2 hours, practices: 6x3 hours/semester
Exam: Practical mark (written exam)
Credit value: 2 credit points
Minimum/maximum group size: 55/210

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.

Application: Péter Torzsa MD Tel: 355-8530 e-mail: ptorzsa@gmail.com
Application date: 30th January
Precondition: Only for students in the 1st year.

MEDICAL COMMUNICATION

Institute of Behavioral Sciences
Type of the course: compulsory
credit: 2 credits

Presenter of the course: Dr. habil. Németh Erzsébet
Course leader: Dr. Pilling János
Semester: 2011/2012 II. semester

Course objectives:
Proper communication is essential in effective healing. The aim of the course is to teach communication strategies that can make the doctor’s everyday tasks more effective: how to listen, ask, inform and collaborate with the patient. The subject also contains some recent elements of the doctor-patient relationship, like shared decision making, patient education, and suggestive communication. We emphasize difficult situations in medical practice: communicating bad news, communication with aggressive patients, communicating about sexual problems, and analyzing cultural differences in medical practice. 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.

Course Syllabus:
Week
2. Lecture. Suggestive communication in medical practice.
3. Lecture. The specialties of age in medical communication: communication with ill children and elderly people.
6. Lecture. Treating complaints; preventive strategies in aggression and communication with aggressive patients.
8. Seminar. Communication in everyday life and in the medical practice. The role of non-verbal and metacommunicative signs in communication.

**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.

**Certifying absence from lessons and exam:**
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.

**Requirements for the signature at the end of the semester:**
Regular participation on the lectures and seminars.

**Method of granting grade:**
- Oral semi-final examination taken in the examination period.
- Students also can get a mark by participating in the competition exam (before the examination period). Those students who get mark 5 (excellent) or 4 (good) in the competition exam can get the same mark for semi-final examination. Participation in the competition exam is voluntary. The topics of the competition and the oral exam are the same.

**Type of the exam:** semi-final examination

**Requirements for the exam:**

**Exam topics:**

**A** list
1. Basic definitions in communication and their role in medical practice: basic elements, axioms and levels in communication; verbal communication.
2. The role of non-verbal communication.
3. The role of active listening and the role of empathy.
5. Communication issues of patient information.
6. Patient education and shared decision making.
7. Convincing strategies in medical practice: learning theories and cognitive models;
9. The role of suggestions in doctor-patient communication.

**B** list
1. Communication with acute patient.
2. Communication with ill children.
3. Communication with elderly patients.
4. Communication with somatizing patients.
5. Communication with alcohol and drug addictive patients.
6. Communication about sexual problems.
7. Communication aspects with patients committing suicide attempt.
8. Communication possibilities in prevention and handling aggression.
10. Intercultural communication in medical practice.

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:
Course text book:

Recommended text books:

MEDICAL INFORMATICS
Institute of Development and Higher Education in the field of Medical Informatics
Director: Dr. Elek Dinya
Tutor: Dr. Mariann Szabó Dinya

GENERAL INFORMATION:
The program in Medical Informatics trains students in the application of computer and information sciences to the quantitative aspects and decision needs of the health and life sciences. Medical Informatics encompasses not only mathematics, statistics and computing, but also includes other engineering, management, and information sciences applied to problems arising in biology, medicine and the delivery of health care. In addition to basic biostatistician and computing techniques, it is necessary that students has to be familiar with other methodologies such as mathematical modeling, systems analysis, image and signal processing, management information systems and decision sciences. Possible areas of emphasis include health information systems, biomathematical modeling, evaluation of health programs, system development, clinical decision studies and.

AIMS:
– to discuss the structure and operation of state of art information technology tools in the health care
– to teach medical students the basic principles of using information technology and general-purpose software in medical activity
– to help students to learn skills of using telecommunication systems and information resources on the Internet in education, learning, research and clinical practice
REQUIREMENTS:

- Practical course grade is obtained if the student has demonstrated the solution of the problem selected at the first lecture to the practice lecturer. Demonstration is associated with question-answering related to problem-solving.
- Students are allowed to redo a failed demonstration twice in one examination period.
- During practice students may ask for help from the lecturer.
- Signature is refused if the student’s absences exceeded 25% of all practices.

OPTIONAL COURSES:

1. **SCIENTIFIC COMMUNICATION course**
   The course gives an introduction to the paper based and web-based publications and presentations. The students find a medical problem (a topic) to work out during the course

   1. **(3 hours)**  
      Paper based publication  
      Creation of an article collection (for personal usage) using some previously defined features (e.g.: headlines, table of content) of a word processor.

   2. **(3 hours)**  
      Web based publication using HTML  
      Creation of a html page (about the medical topic), definition of the structure of the page, adding some HTML objects (hyperlinks, images).

   3. **(3 hours)**  
      Web based publication using HTML and CSS  
      Finalizing the content, personalizing the page appearance with CSS style definitions.

   4. **(3 hours)**  
      Presentation  
      Preparation of the final presentation.

   5. **(3 hours)**  
      Delivering the presentation.

2. **STATISTICS course**

   1. **(3 hours)**  
      Statistical concepts, introduction to the built-in functions of Excel and Statistical Module (program installation, usage of Stat Menu)  
      Descriptive statistics by built-in functions (means, indicators of dispersion, moments, normality, confidence interval), graphical representations

   2. **(3 hours)**  
      Parametrical methods by Excel (Student’s tests, F-test)  
      ANOVA methods (clinical trials, Fisher’s dissociation, one way and two-way ANOVA without replication and replication)

   3. **(3 hours)**  
      Correlation and regression analysis (correlation coefficient and its limitations, one and more variable linear regressions by Excel)

   4. **(3 hours)**  
      Usage of SPSS statistical program package I.

   5. **(3 hours)**  
      Usage of SPSS statistical program package II.  
      Final test: clinical data processing by Excel program

3. **DATABASES course**

   1. **(3 hours)**  
      Theory: Introduction to database theory (the application, logical, and physical models, basic concepts and objects). Planning a relational database (calendar and phone register example).
      Access: Student Database (tables: Students, Exams, Grades) - software introduction, managing tables
2. (3 hours) Access: Student Database - importing table data from an Excel file, definition of relations, creation of queries (simple and crosstab) and forms (lecture book and exam attendance)
   -Nutrient Database - exploration of tables and structure
3. (3 hours) Theory: SQL basics
   Access: Nutrient Database (tables: FoodGroups, FoodDescr., NutrientDef., NutrientData, MeasureDescr., GramWeight) - creation of basic SQL queries
   Theory: Database powered websites. Basic concepts of HTML, PHP, SQL servers
   EM project portal: Creation of an example PHP file (using basic HTML markups, input form to pass variables to php)
4. (3 hours) EM project portal: Creation of a user friendly, php based user interface to search in the Nutrient Database on the MySQL server of the project.
5. (3 hours) EM project portal: Finalizing the user interface to be able to find the detailed nutrient content of a certain food in the selected amount.

4. MULTIMEDIA course
1. (3 hours) Concepts of acoustics (frequency, sound pressure, sound as a mechanical wave), properties of human hearing (frequency and dynamic range). The basics of sound processing (principles of the microphones and speaker), the digitalizing (sampling, Shannon-theory, quantization).
   Exercises: sound recording with the computer, modification of the recorded sound.
2. (3 hours) Analysis of a phonocardiogram (heart sound, calculation of the pulse, murmurs).
3. (3 hours) (Optional) Basics of sound compression (simultaneous and temporal masking, Fletcher-Munson curves). The MP3 compression.
   Exercises: Comparison of different compressed sound files.
4. (3 hours) Basics of image processing (principles of the CRT and LCD displays and CCD cameras, black and white and color images).
   Exercises: Image processing with computer (modify of the resolution by different kind of filtering, color depth, Gamma-correction, color balance, etc.)
   Movie edition.
   Exam: theoretical and practical

FIRST AID
Tutor: Dr. Erzsébet Márton

Topics

BLS (Basic Life Support)
BLS
AED (Automated External Defibrillator). PAD (Public Access Defibrillation)
BLS + AED (management of situations)
BLS + AED (Management of situations)
Fractures, dislocation, sprain. Slings.
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 performance of the above mentioned requirements at the last practice will be evaluated with “accepted” or “not accepted”.

HUNGARIAN LANGUAGE, TERMINOLOGY
See information before the Study Programs

COMPULSORY SUMMER PRACTICE
Nursing Course - 1 month, 186 hours

Week 1
An introduction to the structure of a hospital as an institution for attending patients.
1. In-patient department
2. Out-patient department
3. Auxiliary departments (X-ray, labs, physiotherapy, etc.)
4. Departments of Administration (warden’s office, cashier’s office, etc.)
5. Service departments (kitchen, storeroom, laundry, etc.)
Getting acquainted with the ward and its connected parts
The structure and hygiene of the ward
Daily active participation in keeping order in the ward
Getting acquainted with the equipment of the ward
Cleaning beds and bedside tables after discharging of patients (cleaning, disinfection)
Making beds with help and alone (for walking cases)
Helping with discharging patients
Week 2
(practicing the things learnt in the previous week)

Making beds with turnable bedcase (first with nurse’s help)
Use of comfort equipment (under supervision)
Disinfectants in the ward
Cleaning and sterilization of bedpans, urinals and spittoons
Helping with taking temperatures, sterilization of thermometers
Helping with serving food
Helping with feeding bed patients

Week 3
(practicing the things learnt in the previous two weeks)

Helping with making the beds of patients unable to move
Helping with changing beds of patients unable to move
Helping with moving active and passive patients in bed
Helping with the patients’ placing in chairs, stretchers and wheelchairs
Helping with the washing of not seriously ill patients, mouth hygiene and nail care
Helping with the dressing and undressing of the patients
Taking temperatures
Practicing how to feel the pulse
Helping with keeping linen cupboards, wardrobes and equipment clean and tidy

Week 4
(practicing the things learnt in the previous 3 weeks)

Attending patients in the morning without help (washing, cleaning the mouth and nails, combing, making beds)
Helping with comfort equipment without help
Helping with cold and warm treatment, applying compresses, stupes, ice bags, thermofors
Practicing to keep temperature and pulse charts
Working with syringe, practicing pumping
Helping to sterilize the syringe (the importance of sterilization)
Helping with preparing and sending samples to the labs, filling up guide slips
Staying in the lab for one or two days, or 12 hours per day favourably in the department’s lab helping and practicing urine analysis

Before starting the practice, it is advisable that the head nurse or an experienced nurse should give introductory explanations.

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!
Information on the rules applicable to the summer and 6th year internships abroad

The United States International Students’ Office contacted the Hungarian Accreditation Committee in relation to the continuous accreditation and review of foreign clinical practice positions. The Committee consulted the leaders of the University and, taking into consideration the opinion of the United States authorities, it will take into account the following criteria in selecting the foreign clinical practice positions and accepting the practice period spent abroad:

1. In the Member States of the European Union (and in Switzerland and Norway), clinical practice is accepted and recognised if it is earned at state-accredited university clinics or teaching hospitals. The legal ground for this is the mutual recognition of diplomas issued by accredited institutions.

2. Practice outside the European Union is only admissible at institutions where Semmelweis University has a bilateral study contract or if these places are being accredited by Semmelweis University.

At the present time, the following non-EU teaching institutions have a study contract in place with Semmelweis University:

1. University of California, Davis School Medicine, One Shields Avenue, Davis, California 95616, USA
2. State University of New York, School of Medicine and Biomedical Sciences, 501 Capen Hall, Buffalo, NY 14260-1600, USA
3. Saitama Medical School, Moroyama, Iruma-gun, Saitama 350-0495, Japan

In the future, internships spent elsewhere will be considered by the University as additional opportunities of gaining experience, but the student must also spend mandatory internships in the given periods in an appropriate Hungarian or EU-based clinical institution.

If a student wishes to spend their internship abroad, it is the student’s responsibility to obtain a valid accreditation certificate accepted at the given EU teaching institution and must submit it with the Dean’s approval.
BASIC MODULE

Faculty of Medicine
2nd year
<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKANT003_3A¹</td>
<td>Anatomy, Cell, Histology and Embryology III.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology II., Biochemistry, Molecular and Cell Biology I.</td>
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<tr>
<td>AOKHUM004_3A²</td>
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<tr>
<td>AOKKIK227_1A</td>
<td>Medical Physiology I.</td>
<td>6</td>
<td>5</td>
<td>11</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology II., Biochemistry, Molecular and Cell Biology I., Medical Biophysics</td>
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<tr>
<td>AOKOBI010_2A</td>
<td>Biochemistry, Molecular and Cell Biology II.</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>semi-final</td>
<td>Biochemistry, Molecular and Cell Biology I.</td>
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<tr>
<td>AOKLEK228_3A</td>
<td>Hungarian Medical Terminology III.</td>
<td>–</td>
<td>4</td>
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<td>pract. mark</td>
<td>Hungarian Medical Terminology II.</td>
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<tr>
<td>AOKTS009_3A</td>
<td>Physical Education III.</td>
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<td>1</td>
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</table>

Total Number of Credit Points from Compulsory Subjects 26

<table>
<thead>
<tr>
<th>Obligatory elective subjects</th>
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</thead>
<tbody>
<tr>
<td>AOVCSA249_1A Introduction to Clinical Medicine</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Profession</td>
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</tbody>
</table>

4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory electives and electives after the 3rd year curriculum.

Total Number of Credit Points from Obligatory elective / Elective Subjects 4

¹ Department of Anatomy, Histology and Embryology
² Department of Human Morphology and Developmental Biology
### Second Year

#### 4th semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKVANT003_4A1</td>
<td>Anatomy, Cell, Histology and Embryology IV.</td>
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<td>2</td>
<td>3</td>
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<tr>
<td>AOKKIK227_2A</td>
<td>Medical Physiology II.</td>
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<td>5</td>
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<td>final #</td>
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<tr>
<td>AOKOBIO10_3A</td>
<td>Biochemistry, Molecular and Cell Biology III.</td>
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<td>3</td>
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<td>Biochemistry, Molecular and Cell Biology II.</td>
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<td>AOKBL1017_1A</td>
<td>Internal medicine - propedeutics I.</td>
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<td>3</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology III., Medical Physiology I., Medical Communication</td>
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<tr>
<td>AOKLEK228_4A</td>
<td>Hungarian Medical Terminology IV.</td>
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<td>4</td>
<td>2</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology III.</td>
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<tr>
<td>AOKTSK009_4A</td>
<td>Physical Education IV.</td>
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<td>1</td>
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<td>-</td>
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<tr>
<td>AOKNSG014_1A</td>
<td>Compulsory Nursing Practice (in summer)</td>
<td></td>
<td>188 hours workload</td>
<td>signature</td>
<td>-</td>
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</table>

**Total Number of Credit Points from Compulsory Subjects** 25

<table>
<thead>
<tr>
<th>Obligatory elective subjects</th>
<th>4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory electives and electives after the 3rd year curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOVANT095_1A</td>
<td>Anatomy of diagnostic imaging</td>
</tr>
<tr>
<td>AOVHUM097_1A</td>
<td>Clinical anatomy - propedeutics</td>
</tr>
</tbody>
</table>

**Total Number of Credit Points from Obligatory elective / Elective Subjects** 4
LIST OF TEXTBOOKS


Recommended textbooks:

2  Ganong: Review of Medical Physiology. Lange
ANATOMY, HISTOLOGY AND EMBRYOLOGY
Department of Anatomy, Histology & Embryology
Tutor: Dr. Andrea Székely

First Semester

Lectures: 3 hours per week
Laboratory: 5 hours per week, 3 hours Anatomy, 2 hours Histology

Lectures
1. The significance of the nervous system in the medical curriculum and practice.
2. Development of the telecephalon, Meninges anatomy of the hemispheres, lateral ventricles
5. Blood supply of the brain. Cerebrospinal fluid
6. Differentiation of the neural tube, development of the spinal cord
7. Anatomy of the spinal cord, spinal segment
8. Neuronal architecture of the spinal cord: proprioceptive and withdrawal reflex arches
9. Neuronal architecture of the spinal cord: mesencephalon
10. Nuclei and pathways in the brain stem I.
11. Nuclei and pathways in the brain stem II.
12. Nuclei and pathways in the brain stem III.
13. Microscopic structure and connections of the thalamic nuclei
14. Sensory pathways
15. Neural correlates of the pain sensation
16. Cerebellar cortex
17. Cerebellar pathways
18. Structural and connections of the basal nuclei (extrapyramidal system)
   - r. supraclavicularis, r. Axillaris
19. Motor pathways
20. Patient demonstration
21. Cerebral cortex
22. Trigeminal nerve
23. Facial nerve
24. Glossopharyngeal, vagus, accessory and hypoglossal nerves
25. Olfactory and gustatory systems
26. Outer and middle coats of the eyeball
27. Lens, chambers of the eye, vitreous body, accommodation
28. Inner coat of the eyeball, retina
29. Outer eye muscles, movement sof the eye

Dissecting room
- Divisions of the brain meninges, arteries and veins of the brain, surface structure of the hemispheres basis cerebris.
- Demonstration: dura maters, Sinuses
- Lateral ventricles, third ventricle
- Fourth ventricle
- Spinal cord, brain stem, fourth ventricle, cerebellum
- Spinal cord, spinal ganglion, medulla oblongata

Histology lab.
- Cross sections of the brain stem.
- Demonstration: spinal cord
- Coronal and horizontal sections
- Cerebellum, cerebral cortex

Faculty of Medicine

SEMMELEIS UNIVERSITY / FACULTY OF MEDICINE
### ANATOMY, HISTOLOGY AND EMBRYOLOGY

#### Second Semester

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topography of the upper extremity, clinical correlations</strong></td>
<td>Regio (r.) nuchae, r. dorsalis scapulae, r. glutea, r. cubiti post., r. carpi dors., r. poplitea, r. Plantaris.</td>
<td>Development of the eye</td>
</tr>
<tr>
<td>Topography of the lower extremity (clinical correlates), mechanism of walking</td>
<td>R. nuchae, r. dorsalis scapulae, r. Glutea, r. cubiti post., r. Poplitea, r. plantaris. Dissection of the back</td>
<td>Endocrine organs, Pituitary, pineal gland, thyroid gland, parathyroid gland</td>
</tr>
<tr>
<td><strong>Surface- and sectional anatomy I. Head</strong></td>
<td>R. brachii post., r. antebrachii post., r. dorsalis manus, r. femoris post., r. cruris post., retromalleolar regions</td>
<td>Endocrine organs, Adrenal gland, pancreas, testis, ovary, placenta</td>
</tr>
<tr>
<td><strong>Surface- and sectional anatomy II. Head</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Surface- and sectional anatomy III. Thorax I.</strong></td>
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<tr>
<td><strong>Surface- and sectional anatomy IV. Thorax II.</strong></td>
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<tr>
<td><strong>Surface- and sectional anatomy V. Abdominal cavity I.</strong></td>
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</tr>
<tr>
<td><strong>Surface- and sectional anatomy VI.</strong></td>
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</tbody>
</table>
ANATOMY, HISTOLOGY AND EMBRYOLOGY

Third Semester

Department of Human Morphology and Developmental Biology
Faculty of Medicine, Semmelweis University
English Language Course


Credits: 8

Lecture: 3 hours/week
Laboratory: 5 hours/week (5 hrs/week anatomy, or 2.5 hrs anatomy and 2.5 hrs histology)
### Detailed weekly curriculum

<table>
<thead>
<tr>
<th>LECTURE</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic</strong></td>
<td><strong>Anatomy</strong></td>
</tr>
<tr>
<td>1. Nervous system - Introduction.</td>
<td>Spinal cord, its blood supply.</td>
</tr>
<tr>
<td>5. Interneuronal synapses, chemical neurotransmission.</td>
<td></td>
</tr>
<tr>
<td>6. Peripheral sensory receptors and peripheral effector nerve endings.</td>
<td></td>
</tr>
<tr>
<td>7. Structural organization of the spinal cord. Gray matter.</td>
<td>Lateral ventricle, 3rd ventricle, oblique section of the brain, coronal sections of the brain.</td>
</tr>
<tr>
<td>8. White matter of the spinal cord. Pathways of the spinal cord.</td>
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</tr>
<tr>
<td>11. Nuclei of cranial nerves.</td>
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<tr>
<td>12. Diencephalon.</td>
<td></td>
</tr>
<tr>
<td>13. Thalamus.</td>
<td></td>
</tr>
<tr>
<td>14. Hypothalamus, hypothalamo-hypophyseal system.</td>
<td></td>
</tr>
<tr>
<td>17. The dorsomedial (medial lemniscus) sensory system. Somatosensory cortex.</td>
<td></td>
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<tr>
<td>18. The ventrolateral (spinthalamic) sensory system.</td>
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<tr>
<td>20. Limbic system.</td>
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<tr>
<td>23. Pyramidal tract.</td>
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<tr>
<td>27. Reticular formation and its neural connections.</td>
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</tr>
<tr>
<td>29. Craniosacral parasympathetic system.</td>
<td></td>
</tr>
<tr>
<td>30. Development of the nervous system, I. Early stage of development, differentiation of the neural tube.</td>
<td></td>
</tr>
</tbody>
</table>
### LECTURE

<table>
<thead>
<tr>
<th>Topic</th>
<th>Anatomy</th>
<th>Histology</th>
</tr>
</thead>
<tbody>
<tr>
<td>31. Development of the nervous system, II.</td>
<td><strong>MID-TERM TEST</strong></td>
<td>Eye, orbit dissection</td>
</tr>
<tr>
<td>32. Histogenesis, cranio-caudal and dorsoventral differentiation.</td>
<td></td>
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</tr>
<tr>
<td>33. Development of the nervous system, III.</td>
<td></td>
<td>Eye, orbit dissection</td>
</tr>
<tr>
<td>Development of the brain stem and cerebellum.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34. Development of the nervous system, IV.</td>
<td></td>
<td>Outer ear. Tymanic cavity</td>
</tr>
<tr>
<td>Development of the telencephalon, basal ganglia, choroid plexus</td>
<td></td>
<td>Eye, optic nerve, eye lid, lacrical gland</td>
</tr>
<tr>
<td>35. Structure of the eye. Fibrous and vascular envelops of the eye.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36. Development of the eye.</td>
<td></td>
<td></td>
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<tr>
<td>38. Accommodation.</td>
<td></td>
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<tr>
<td>40. Clinical anatomy.</td>
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</tr>
<tr>
<td>41. Clinical anatomy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42. Auditory apparatus, outer ear, middle ear</td>
<td></td>
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</tr>
<tr>
<td>44. Organ of Corti. Auditory pathway.</td>
<td></td>
<td></td>
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<tr>
<td>45. Development of the auditory apparatus.</td>
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</tbody>
</table>

### LAB

<table>
<thead>
<tr>
<th>Topic</th>
<th>Anatomy</th>
<th>Histology</th>
</tr>
</thead>
<tbody>
<tr>
<td>34. Development of the nervous system, V.</td>
<td></td>
<td>Eye, orbit dissection</td>
</tr>
<tr>
<td>Neural crest and its derivatives.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35. Structure of the eye.</td>
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<td></td>
</tr>
<tr>
<td>36. Development of the eye.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37. Structure of the retina.</td>
<td></td>
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</tr>
<tr>
<td>40. Clinical anatomy.</td>
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</tr>
<tr>
<td>41. Clinical anatomy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42. Auditory apparatus, outer ear, middle ear</td>
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<td>44. Organ of Corti. Auditory pathway.</td>
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</tr>
<tr>
<td>45. Development of the auditory apparatus.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Fourth Semester

**Department of Human Morphology and Developmental Biology**

**Faculty of Medicine, Semmelweis University**

**English Language Course**

**Subject:** Regional anatomy of the head, neck, trunk, and body cavities. Gross anatomy of the pharynx, larynx, and peritoneum. Section anatomy.

**Credits:** 5

**Lecture:** 1 hour/week

**Laboratory:** 4 hours anatomy or 2 hours anatomy plus 2 hours histology
## Detailed weekly curriculum

<table>
<thead>
<tr>
<th>LAB</th>
<th>Topic</th>
<th>Anatomy</th>
<th>Histology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Regional and sectional anatomy of the upper limb.</td>
<td>Dorsal regions of the head, neck, chest wall and limbs. Cross section of the arm and forearm. Bones and joints of the upper limb. Topography of radial nerve injury. Dorsal veins of the hand.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Calvaria, face, mimetic muscles - blood supply and innervation.</td>
<td>Ventral regions of the head, neck, limb. Cranial nerves related to these regions. Subclavian artery, external carotid artery and their branches. Subclavian vein, internal jugular vein and their tributaries.</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Topography and CT of the abdomen.</td>
<td>Topography of the rectum. Pelvis, perineum.</td>
<td>Digestive tract. II.</td>
</tr>
</tbody>
</table>
# MEDICAL PHYSIOLOGY

**Institute of Human Physiology and Clinical Experimental Research**  
**Tutor: Dr. Tamás Ivanics**

## First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture (6 hours per week)</th>
</tr>
</thead>
</table>
**Practice (5 hours weekly)**

Introduction. Measurement and processing of data:
- Simulation type experiments
  - „BiopacTM Student Lab”
- Investigating the compound action potential in the sciatic nerve of the frog, Sim Nerve
- Experiments on the frog nerve-muscle preparation, Sim Muscle
- Experiments on isolated rat heart, Sim Heart
- Human neuromuscular function I.
- Human neuromuscular function II.
- Electromyogram
- Smooth muscle activity of isolated, superfused muscle strips, Sim Vessel
- Electrocardiogram
- Indirect measurement of arterial pressure and recording heart sounds
- Computer modeling of the cardiovascular system
- Cardiovascular case report
- Heart rate analysis, respiratory sinus arrhythmia
- Respiratory function
- Pulmonology case report

**MEDICAL PHYSIOLOGY**

**Second Semester**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture (6 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Formation and excretion of urine. Physiological functions, their significance in the maintenance of the internal milieu and in healthy functioning of the organism. Renal circulation, Glomerular filtration.</td>
</tr>
</tbody>
</table>
Week Lecture (6 hours per week)

7 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.

8 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. Spinal organization

9 Ascending and descending pathways. Spinal and supraspinal control of muscular tone.
Basal ganglia. Cerebellum. Lateral and medial descending pathways involved in motor
control (spinal integration, medullary, midbrain and cortical components).

10 The visual system. The image-forming mechanism. The photoreceptor mechanism:
Eye movements.

11 The auditory system. Chemical senses. Olfactory receptors and pathways. Physiology of
olfaction. Taste receptor organs and pathways. Physiology of taste.

12 The autonomic nervous system and its central control. Anatomic organisation and
chemical transmission. Adrenal medulla. Control of autonomic functions.

13 Neural basis of instinctual behavior. The integrative role of the hypothalamus. Limbic

14 “Higher functions of the nervous system”. Conditioned reflexes. Learning and memory.
Integrative functions of the neocortex.

Practice (5 hours weekly)

Blood groups
Respiratory function and circulatory responses during aerobic exercise
Clinical respiratory function
Adaptation of the cardio-respiratory system during clinical exercise testing
Kidney function
Determination of parameters of acid/base equilibrium
Nephrology case report
Endocrinology lab
Endocrinology case report
Registration of a human EEG
Investigation of eye movements (EOG) and vestibular system
Echocardiography
MEDICAL BIOCHEMISTRY, MOLECULAR AND CELL BIOLOGY II.

Teaching secretary: István Léránt Ph.D.

Fall semester

Schedule of lectures

2. Glycolysis; entry of other hexoses into glycolysis
3. Oxidative phosphorylation.
4. Gluconeogenesis, gluconeogenesis in starvation
5. Regulation of blood sugar level. Glycogen mobilization in liver and muscle. Glucagon. Secretion of insulin, insulin receptors, influence of insulin on various tissues
10. Catabolism of amino acids II. Metabolism of porphyrines
12. Metabolism of red blood cells. Metabolism of striated and heart muscle. The role of SREBP, PPAR-alpha and beta in muscle metabolism.
13. Intermediary metabolism of kidneys, Regulation of intermediary metabolism during fasting and in the well-fed state. ChREBP signal transduction.

Fall semester

Schedule of laboratory lessons and seminars

2. Enzyme kinetics – computer simulation
3. Competitive inhibition of succinate dehydrogenase (laboratory lesson)
4. Gene therapy – stem cell therapy (consultation)
5. Oxidative phosphorylation in mitochondria (laboratory lesson)
6. Lactic acidosis (consultation)
7. Allosteric regulation of pyruvate kinase. (laboratory lesson)
8. Fructose intolerance, & McArdle’s disease (consultation)
9. Digestion of lipids, role of bile acids (laboratory lesson)
10. Signal transduction of insulin (consultation)
11. Determination of serum cholesterol and triglyceride levels
12. Lipoprotein lipase, & carnitine deficiency (consultation)
13. Purification of trypsin by affinity chromatography. & Substrate specificity of trypsin and chymotrypsin. (laboratory lesson)
14. Hereditary hyperammonemias. & Vitamin B12 deficiency, methylmalonic acidemia (consultation)
MEDICAL BIOCHEMISTRY, MOLECULAR AND CELL BIOLOGY III.

Teaching secretary: István Léránt Ph.D.

Spring semester

Schedule of lectures

3. Adrenergic receptors, dopaminergic, serotoninergic and glutamatergic neurotransmission, NO, its regulatory role.
5. General properties of ion channels, K⁺ channels, voltage-gated, Ca²⁺-activated, and ATP-sensitive K⁺ channels. Voltage-gated Cl⁻ channels. The CFTR chloride channel. Nicotinic Ach receptor.
6. Molecular and cellular elements of hemostasis, Initiation, regulation and termination of blood coagulation.
7. Initiation, regulation and termination of fibrinolysis; polymorphonuclear cells and fibrinolysis. Adhesion molecules and platelets.
8. Endothelial cells; hemostasis and cancer.
10. Biotransformation II.
12. Steroid hormones of adrenal cortex I.
14. Biosynthesis and biological role of eicosanoids.

Spring semester

Schedule of laboratory lessons and seminars

1. LDH isoenzymes (laboratory lesson)
2. Acute and chronic liver disease (consultation).
3. Determination of serum transaminase and creatine kinase activities (laboratory lesson).
5. Determination of blood sugar level, glycosylated haemoglobin (laboratory lesson).
6. Cystic fibrosis (Consultation).
10. Haemostatic abnormalities (Consultation).
13. Bioinformatics (Consultation).
14. Research of professional literature in Biochemistry. Presentation of research in our department.
INTERNAL MEDICINE - PROPEDEUTICS I.

The new curriculum is under preparation, announced later.

MEDICAL SOCIOLOGY

A0MAGSZO_1A

Semester: 1st

Credit: 2
Responsible person and Institute for the course: Dr. Zsuzsa Szántó; Institute of Behavioural Sciences
Lecturers: Dr. Zsuzsa Szántó
Dr. Katalin Kovács
Dr. Bea Dávid
Dr. Fruzsina Albert

Goals of the subject:
To introduce to the students 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.

Syllabus of the subject:

<table>
<thead>
<tr>
<th>Week</th>
<th>Class type</th>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lecture</td>
<td>Introduction. Changing patterns of disease</td>
</tr>
<tr>
<td>2</td>
<td>Lecture</td>
<td>Health and illness behaviour.</td>
</tr>
<tr>
<td>3</td>
<td>Lecture</td>
<td>Social inequalities in health and mortality.</td>
</tr>
<tr>
<td>4</td>
<td>Seminar</td>
<td>Health and illness behaviour.</td>
</tr>
<tr>
<td>5</td>
<td>Seminar</td>
<td>Social inequalities in health and mortality.</td>
</tr>
<tr>
<td>6</td>
<td>Lecture</td>
<td>Health professions</td>
</tr>
<tr>
<td>7</td>
<td>Seminar</td>
<td>Health professions</td>
</tr>
<tr>
<td>8</td>
<td>Lecture</td>
<td>National variations of health care</td>
</tr>
<tr>
<td>9</td>
<td>Lecture</td>
<td>Health care and health policy</td>
</tr>
<tr>
<td>10</td>
<td>Lecture</td>
<td>Midterm examination</td>
</tr>
<tr>
<td>11</td>
<td>Seminar</td>
<td>Chronic illness and disability</td>
</tr>
<tr>
<td>12</td>
<td>Seminar</td>
<td>Ageing and care of the elderly</td>
</tr>
<tr>
<td>13</td>
<td>Seminar</td>
<td>Gender aspects of health</td>
</tr>
<tr>
<td>14</td>
<td>Seminar</td>
<td>Doctor-patient relationship</td>
</tr>
</tbody>
</table>

The course consists of: (lecture, seminar, laboratory exercise):
7 lectures, 7 seminars.
Course requirements, methods of monitoring:

To obtain signature for absolving the course students have to participate at a minimum of 10 classes. Participation is documented through catalogues. A midterm exam is taken after the 6th lecture. It is also required to submit a home paper or a class presentation in course-related topics by the end of the semester. The course ends with an exam; the grade may include the results of the midterm and the home assignment.

Supplement possibilities: based on the SE’s exam regulation.

Absence may be justified by a medical document at the next class. One seminar per semester can be supplemented by an extra assignment given by the teacher or attending the same class with another group.

Textbook:

2. Handouts for the lectures will be accessible on the homepage of the Institute of behavioural Sciences: www.magtud.sote.hu.

INTRODUCTION TO CLINICAL MEDICINE

Lecturer: Prof. László Kalabay MD PhD
Institute: Department of Family Medicine
Duration: One semester, practices: 12x2.5 hours/semester
Exam: Written. Practical mark (written exam)
Credit value: 2 credit points
Minimum/maximum group size: 55/210
Thematic:

- Formation of the consciousness of profession.
- Most frequent diseases in the clinical department and the general practitioner’s office. Case reports.
- Referral of patients. The medical consultation.
- Communication with the patient and his/her relatives. The role of the family in treatment and care for acute and chronic diseases.
- Effective cooperation with patients. Means to improve compliance.
- The importance of prevention of disease.
- Team work in medicine.
- Overview of the scientific activity of the clinical department. Raising interest on joining to it.

Application: Péter Torzsqa MD Tel: 355-8530 e-mail: ptorzsa@gmail.com
Application date: 1st September
Precondition: Only for students in the 2nd year, following completion of Medical Profession
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 birds and 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-mesenchymal 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
ANATOMY OF DIAGNOSTIC IMAGING

obligatory elective course

Short title: Imaging anatomy
Elective course

Second Semester

Language: English
Course Director: Dr András Csillag, Professor in Anatomy
Program of course: Two lecture hours per week, in the spring semester, with mandatory test examination on the last class
Credit value: 2 credits
Eligibility: EM students of second year (Anatomy III finished and passed) or higher forms
Venue: Auditorium of Dept. of Anatomy, Histology and Embryology,
Time: Thursdays at 5 o’clock pm

The aim of the course is to lay the anatomical foundation for the evaluation of modern diagnostic images of ever improving quality and definition. Furthermore, the course enables the utilization of relevant knowledge obtained by diagnostic imaging methods for the studying of anatomy. The course is recommended primarily for second year students as a supplement to anatomical studies but, due to its clinical relevance, the students of higher forms can also make good use of the course material. Tutored by anatomists, radiologists and other clinical specialists, the course deals with a systematic and topographic overview of the following problems: Introduction into diagnostic imaging techniques, the topography and imaging of the system of locomotion, lungs, pleura and mediastinum, the heart (MRI, echocardiography, coronarography), peripheral arterial system of limbs (including common variations and disorders), abdominal and pelvic organs (including fetal ultrasonography), sectional anatomy of the brain using 3T MRI images, other diagnostic imaging methods of the brain (CT, cerebral angiography, PET), experimental investigation of human subjects by fMRI, topography and imaging of the vertebral column, spinal cord, facial skeleton and cervical region, also including frequent disorders.
## STUDY PROGRAMME

### Third year

#### 5th semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKORKOR_1A</td>
<td>Pathophysiology and Clinical Lab. Diagnostics I.</td>
<td>2.5</td>
<td>2.5</td>
<td>5</td>
<td>semi-final</td>
<td>Anatomy, Histology and Embryology IV., Medical Physiology II., Medical Biochemistry and Molecular Biology II.</td>
</tr>
<tr>
<td>AOMIKMik_1A</td>
<td>Medical Microbiology I.</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>semi-final</td>
<td>Anatomy, Histology and Embryology IV., Medical Physiology II., Medical Biochemistry and Molecular Biology II.</td>
</tr>
<tr>
<td>AOPTKPAT11A1</td>
<td>Pathology and Histopathology I.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>semi-final</td>
<td>Anatomy, Histology and Embryology IV., Medical Physiology II., Medical Biochemistry and Molecular Biology II.</td>
</tr>
<tr>
<td>AOKGEN025_1A</td>
<td>Immunology</td>
<td>2</td>
<td>2</td>
<td>4</td>
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<td>Medical Biochemistry and Molecular Biology II.</td>
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<tr>
<td>AUBL1BEL11A3</td>
<td>Internal Medicine I.</td>
<td>3</td>
<td>4</td>
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<td>basic module</td>
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<tr>
<td>ADMAGPSZ_1A</td>
<td>Medical Psychology I.</td>
<td>10/sem.</td>
<td>18/sem.</td>
<td>1</td>
<td>pract. mark</td>
<td>basic module</td>
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<tr>
<td>AOKLEK228_5A</td>
<td>Hungarian Medical Terminology V.</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>final #</td>
<td>Hungarian Medical Terminology IV.</td>
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</table>

**Total Number of Credit Points from Compulsory Subjects:** 31

**Obligatory elective / Elective subjects:** At least 4 credit points from the obligatory electives/electives must be collected in each semester. See the detailed list of obligatory electives and electives after the 3rd year curriculum.

**Total Number of Credit Points from Obligatory elective / Elective subjects:** 4

---

1. 1st Department of Pathology
2. 2nd Department of Pathology
3. 3rd Department of Pathology
4. 1st Department of Internal Medicine
5. 2nd Department of Internal Medicine
6. 3rd Department of Internal Medicine
### Third year

#### 6th semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKORKOR_2A</td>
<td>Pathophysiology and Clinical Lab. Diagnostics II.</td>
<td>2,5</td>
<td>2,5</td>
<td>5</td>
<td>final #</td>
<td>Pathophysiology and Clinical Lab. Diagnostics I., Immunology</td>
</tr>
<tr>
<td>AOMIKMIK_2A</td>
<td>Medical Microbiology II.</td>
<td>2</td>
<td>3</td>
<td>5</td>
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<td>Medical Microbiology I., Immunology</td>
</tr>
<tr>
<td>AOPTKAPAT12A²</td>
<td>Pathology and Histopathology II.</td>
<td>3</td>
<td>4</td>
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<td>ADBL1BEL12A³</td>
<td>Internal Medicine II.</td>
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<td>10/sem.</td>
<td>18/sem.</td>
<td>2</td>
<td>final #</td>
<td>Medical Psychology I.</td>
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<tr>
<td>ADAMGOET_1A</td>
<td>Medical Ethics</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>basic module</td>
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<tr>
<td>AOFRMRMFRM_1A</td>
<td>Pharmacology and Pharmacotherapy I.</td>
<td>1,5</td>
<td>0,5</td>
<td>2</td>
<td>pract. mark</td>
<td>basic module</td>
</tr>
<tr>
<td>AKNSG032_1A</td>
<td>Compulsory Internal Medicine Practice (in summer)</td>
<td>–</td>
<td>188 hours workload</td>
<td>–</td>
<td>signature</td>
<td>–</td>
</tr>
</tbody>
</table>

**Total Number of Credit Points from Compulsory Subjects:** 30

**Obligatory elective / Elective subjects:** At least 4 credit points from the obligatory electives/electives must be collected in each semester. See the detailed list of obligatory electives and electives after the 3rd year curriculum

**Total Number of Credit Points from Obligatory elective / Elective subjects:** 4

1st Department of Pathology
2nd Department of Pathology
3rd Department of Pathology
2nd Department of Internal Medicine
3rd Department of Internal Medicine
# The grade influences the qualification of the Diploma.
## LIST OF TEXTBOOKS


### Recommended textbooks:

18 Zalatnai A.: 500 Practice Questions about Pathology (Semmelweis University of Medicine)
19 Illyés Gy.: Path Nebulo 2000. Version 1.0 (English-Hungarian)
20 Székely E.: Practice on Histopathology I-II. (Semmelweis University of Medicine) - video
# PATHOPHYSIOLOGY

**Tutor:**  
Dr. Miklós Molnár  
Dr. Tünde Kriston

## First Semester

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Pathophysiology of Circulation</strong></td>
<td></td>
</tr>
<tr>
<td>Heart Failure I</td>
<td>The normal electrocardiogram</td>
</tr>
<tr>
<td>Heart Failure II</td>
<td>Arrhythmias I: Disorders of Impulse</td>
</tr>
<tr>
<td></td>
<td>Formation</td>
</tr>
<tr>
<td><strong>II. Pathophysiology of Fluid and Electrolyte Balance</strong></td>
<td>arrhythmias II: Disorders of impulse conduction</td>
</tr>
<tr>
<td>Disturbances in Fluid, Na⁺ and K⁺ Balance</td>
<td></td>
</tr>
<tr>
<td><strong>III. Pathophysiology of Acid-Base Balance</strong></td>
<td></td>
</tr>
<tr>
<td>Respiratory and Metabolic Disturbances</td>
<td>Arrhythmias III: Complex Arrhythmias</td>
</tr>
<tr>
<td><strong>IV. Pathophysiology of the Kidney</strong></td>
<td></td>
</tr>
<tr>
<td>Acute Renal Failure</td>
<td>ECG Abnormalities in Cardiac</td>
</tr>
<tr>
<td>Chronic Renal Failure</td>
<td>Hypertrophy and Metabolic Disorders</td>
</tr>
<tr>
<td></td>
<td>ECG Sign of the Abnormalities of</td>
</tr>
<tr>
<td></td>
<td>Coronary Circulation</td>
</tr>
<tr>
<td><strong>V. Pathophysiology of Respiration</strong></td>
<td></td>
</tr>
<tr>
<td>Respiratory Insufficiency</td>
<td>ECG Signs and Laboratory Diagnosis of</td>
</tr>
<tr>
<td></td>
<td>Myocardial Infarction</td>
</tr>
<tr>
<td><strong>VI. Pathophysiology of the Peripheral Circulation</strong></td>
<td>Practice, Examples, Exam</td>
</tr>
<tr>
<td>Shock</td>
<td>Laboratory Evaluation of Fluid and</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Electrolyte Disorders</td>
</tr>
<tr>
<td><strong>VII. Pathophysiology of Metabolic Disorders</strong></td>
<td>Laboratory Evaluation of Acid-Base</td>
</tr>
<tr>
<td>Metabolic Disturbances in Diabetes</td>
<td>Disorders</td>
</tr>
<tr>
<td>Hepatic Insufficiency</td>
<td>Laboratory Evaluation of Kidney Diseases</td>
</tr>
<tr>
<td>Nutritional Disorders, Obesity</td>
<td>Laboratory Evaluation of Hemostatic</td>
</tr>
<tr>
<td></td>
<td>Disorders</td>
</tr>
<tr>
<td>Disturbances in Protein, Amino Acid and</td>
<td>Laboratory Evaluation of Carbohydrate</td>
</tr>
<tr>
<td>Metabolism Purine Metabolism Disorders</td>
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<tr>
<td><strong>VIII. Pathophysiology of the Gastrointestinal Tract</strong></td>
<td>Laboratory Diagnosis of Hepatobiliary</td>
</tr>
<tr>
<td>Gastric and Duodenal Ucer</td>
<td>Diseases</td>
</tr>
<tr>
<td>Malabsorption-Maldigestion</td>
<td>Laboratory Evaluation of GI-Tract</td>
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<tr>
<td></td>
<td>Function</td>
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</tbody>
</table>
PATHOPHYSIOLOGY

Second Semester

Lecture Lab

IX. Pathophysiology of Hematologic Disorders Evaluation of the Leukocyte-Monocyte System
Anemias
Myeloproliferative Diseases
Disturbances in Hemostatis

Evaluation of Erythropoietic System
Evaluation of Anemias

X. Pathophysiology of Lipid Metabolism, Atherosclerosis
Lipid Abnormalities, Atherosclerosis

Evaluation of Granulocytopenic Disorders

XI. Pathophysiology of the Immune System
Inflammation
Immunodeficiency and Tumor Immunity

Hematologic and Immunologic Disorders
Evaluation of Lymphoid Disorders
Evaluation of Lymphoproliferative Disorders
Tour in a Routine Clinical Laboratory

Autoimmunity

XII. Pathophysiology of Endocrine Disorders
Practice, Examples, Exam
Disturbances in Pituitary Function Laboratory Evaluation of Plasma Proteins and Enzymes
Disturbances in Thyroid Function Laboratory Evaluation of Lipid and Lipoprotein Disorders
Disturbances in Adrenal Gland and Sexual Function Hypothalamic-Pituitary Tests
Metabolic Bone Diseases

XIII. Pathophysiology of the Nervous System
Thyroid Function Tests
Motor and Sensory Disturbances Laboratory Evaluation of Ca++ and Phosphate
Disturbances in “Higher” CNS Function Metabolism
Pathophysiology of Pain Practice, Examples, Exam
# Medical Microbiology

## Institute of Medical Microbiology

**Program Director:** Prof. Dr. Károly Nagy  
**Tutor:** Dr. Zsuzsanna Berek (# 56225; email: berzs@net.sote.hu)

## First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (2 hours per week)</th>
</tr>
</thead>
</table>
| 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 resistance of bacteria against antibacterial drugs |
| 5.   | Introduction to the classification of medically important bacteria: fundamentals of taxonomic, epidemiological, nosological, as well as pathogenetical classification.  
Gram-positive non-spore forming rods: Corynebacterium, Listeria, Erysipelothrix, Lactobacillus  
Normal flora of the vagina. |
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. |
| 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 paratyphi), 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 |
| 14.  | Rickettsiales, Chlamydiaceae, Mycoplasmatales |
# First Semester

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

# MEDICAL MICROBIOLOGY

## Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (2 hours per week)</th>
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<tbody>
<tr>
<td>1.</td>
<td>Medical Mycology</td>
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<tr>
<td>2.</td>
<td>Medical Parasitology - 1</td>
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<td>3.</td>
<td>Medical Parasitology - 2</td>
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<td>4.</td>
<td>Medical Parasitology - 3</td>
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<td>5.</td>
<td>General Virology</td>
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<td>6.</td>
<td>• DNA viruses - 1</td>
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<tr>
<td>7.</td>
<td>• DNA viruses - 2</td>
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<tr>
<td>8.</td>
<td>• RNA viruses - 1</td>
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<tr>
<td>9.</td>
<td>• RNA viruses - 2</td>
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<tr>
<td>10.</td>
<td>• RNA viruses - 3</td>
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<td>11.</td>
<td>• Hepatitis viruses</td>
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<tr>
<td>12.</td>
<td>Retro viruses. AIDS. Viral oncogenesis</td>
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<tr>
<td>13.</td>
<td>• Slow viruses and Prions. Control of viral diseases. Antiviral chemotherapy</td>
</tr>
<tr>
<td>14.</td>
<td>• Iatrogenic and Nosokomial infections</td>
</tr>
<tr>
<td>Week</td>
<td>Practicals (3 hours per week)</td>
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<tr>
<td>1.</td>
<td>Medical Mycology</td>
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<td>2.</td>
<td>Medical Parasitology - 1</td>
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<td>3.</td>
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<td>4.</td>
<td>Medical Parasitology - 3</td>
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<tr>
<td>5.</td>
<td>Midterm exam I.</td>
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<tr>
<td></td>
<td>General Virology</td>
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<tr>
<td>6.</td>
<td>DNA viruses</td>
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<tr>
<td>7.</td>
<td>RNA viruses - 1</td>
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<tr>
<td>8.</td>
<td>RNA viruses - 2</td>
</tr>
<tr>
<td>9.</td>
<td>Midterm exam II.</td>
</tr>
<tr>
<td>10.</td>
<td>• Clinical Bacteriological Diagnosis – 2: Respiratory tract infections</td>
</tr>
<tr>
<td>11.</td>
<td>• Clinical Bacteriological Diagnosis – 3: Infections of the uro-genital tract, Abdominal and Enteral infections, Sexually transmitted diseases</td>
</tr>
<tr>
<td>12.</td>
<td>• Clinical Bacteriological Diagnosis – 4: Bacteraemia, sepsis, endocarditis, meningitis</td>
</tr>
<tr>
<td>13.</td>
<td>Summary and review</td>
</tr>
<tr>
<td>14.</td>
<td>Practical exam</td>
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</table>
PATHOLOGY
1st Dept. of Pathology and Experimental 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), Mo 10:50-12:00, We 8:00-9:10.

Autopsy and histology practice (14 weeks): We 9:30-12:50, 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)

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)
   - Emolliation 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)
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 polyposis sinusitis H&E (18)
9. Neoplasia
   - Chronic abscess (9)
10. Neoplasia
    - Granulation tissue H&E (19)
11. Neoplasia
    - Metaplasia (slide demonstration)
12. Genetic diseases
    - Dysplasia of the cervical epithelium (CIN) H&E (24)
13. Genetic diseases
    - In-situ carcinoma of the cervix H&E (25)
14. Haemodynamic disorders
    - Invasive squamous cell carcinoma of the cervix H&E (26)
15. Haemodynamic disorders
    - Squamous cell papilloma H&E (23)
16. Haemodynamic disorders
    - Squamous cell carcinoma of the larynx H&E (10)
17. Haemodynamic disorders
    - Tubulovillous adenoma of the colon H&E (30)
18. Haemodynamic disorders
    - Adenocarcinoma of the colon H&E (31)
19. Haemodynamic disorders
    - Metastasis in lymph node H&E (36)
20. Haemodynamic disorders
    - Metastatic carcinoma in the lung (slide demonstration)
21. Haemodynamic disorders
    - Leiomyoma H&E (37)
22. Haemodynamic disorders
    - Leiomyosarcoma (slide demonstration)
23. Haemodynamic disorders
    - Lipoma H&E (11)
24. Haemodynamic disorders
    - Liposarcoma (slide demonstration)
25. Haemodynamic disorders
    - Malignant fibrous histiocytoma H&E (38)
26. Haemodynamic disorders
    - Immunohistochemistry (slide demonstration)
### Histopathology practices

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Histopathology details</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. Environmental and nutritional pathology</td>
<td>Atherosclerosis of the aorta H&amp;E (45)</td>
</tr>
<tr>
<td>15. Blood vessels</td>
<td>Benign nephrosclerosis H&amp;E (46)</td>
</tr>
<tr>
<td>16. Blood vessels</td>
<td>Coronary-sclerosis H&amp;E (47)</td>
</tr>
<tr>
<td>17. Heart</td>
<td>Polycystic nodosa H&amp;E (58)</td>
</tr>
<tr>
<td>18. Heart</td>
<td>Giant cell arteritis H&amp;E (49)</td>
</tr>
<tr>
<td>19. Respiratory system</td>
<td>Cystic medianecrosis of the aorta H&amp;E (50)</td>
</tr>
<tr>
<td>20. Respiratory system</td>
<td>Fatty infiltration of the myocardium H&amp;E (41)</td>
</tr>
<tr>
<td>21. Respiratory system</td>
<td>Myocardial infarction, early H&amp;E (42)</td>
</tr>
<tr>
<td>22. Infectious diseases</td>
<td>Myocardial infarction, old H&amp;E (43)</td>
</tr>
<tr>
<td>23. Infectious diseases</td>
<td>Myocarditis H&amp;E (44)</td>
</tr>
<tr>
<td>24. Infectious diseases</td>
<td>Endocarditis H&amp;E (45)</td>
</tr>
<tr>
<td>25. Gastrointestinal tract</td>
<td>IRDS H&amp;E (50)</td>
</tr>
<tr>
<td>26. Gastrointestinal tract</td>
<td>Lobar pneumonia H&amp;E (51)</td>
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<tr>
<td>27. Gastrointestinal tract</td>
<td>Bronchopneumonia H&amp;E (52)</td>
</tr>
<tr>
<td>28. Pancreas</td>
<td>Pneumoniaisosis H&amp;E (53)</td>
</tr>
<tr>
<td>29. Liver and biliary system</td>
<td>Pleuralfibrosis H&amp;E (54)</td>
</tr>
<tr>
<td>30. Liver and biliary system</td>
<td>Nasopharyngeal carcinoma (slide demonstration)</td>
</tr>
<tr>
<td>31. Liver and biliary system</td>
<td>Mixed tumor of the parotid gland H&amp;E (55)</td>
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<tr>
<td>32. Kidney</td>
<td>Warthin-tumor (slide demonstration)</td>
</tr>
<tr>
<td>26. Gastrointestinal tract</td>
<td>Mucopidermoid carcinoma (slide demonstration)</td>
</tr>
<tr>
<td>27. Gastrointestinal tract</td>
<td>Adenoid cystic carcinoma (slide demonstration)</td>
</tr>
<tr>
<td>28. Pancreas</td>
<td>Chronic peptic ulcer H&amp;E (60)</td>
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<tr>
<td>29. Liver and biliary system</td>
<td>Chronic gastritis H&amp;E (61), Giemsa (62)</td>
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<tr>
<td>30. Liver and biliary system</td>
<td>Signet ring cell carcinoma of the stomach H&amp;E (63), PAS (64)</td>
</tr>
<tr>
<td>31. Liver and biliary system</td>
<td>Ventricular-lymphoma (slide demonstration)</td>
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<tr>
<td>22. Infectious diseases</td>
<td>Villous atrophy in small intestine (65)</td>
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<tr>
<td>23. Infectious diseases</td>
<td>Ulcerative colitis H&amp;E (66)</td>
</tr>
<tr>
<td>24. Infectious diseases</td>
<td>Crohn’s disease H&amp;E (67)</td>
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<tr>
<td>25. Gastrointestinal tract</td>
<td>Carcinoid H&amp;E (68)</td>
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<tr>
<td>26. Gastrointestinal tract</td>
<td>Peritoneal carcinosis H&amp;E (69)</td>
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<tr>
<td>27. Gastrointestinal tract</td>
<td>Organ demonstration</td>
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<tr>
<td>28. Pancreas</td>
<td>Organ demonstration</td>
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### PATHOLOGY

#### Second Semester

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<tr>
<th>Lecture</th>
<th>Histopathology details</th>
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<tbody>
<tr>
<td>29. Liver and biliary system</td>
<td>Alcoholic hepatitis H&amp;E (70)</td>
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<tr>
<td>30. Liver and biliary system</td>
<td>Chronic hepatitis H&amp;E (71)</td>
</tr>
<tr>
<td>31. Liver and biliary system</td>
<td>Liver cirrhosis H&amp;E (72)</td>
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<tr>
<td>32. Kidney</td>
<td>Hepatocellular carcinoma H&amp;E (73)</td>
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<tr>
<td>26. Gastrointestinal tract</td>
<td>Cavernous haemangioma of liver H&amp;E (35)</td>
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<tr>
<td>27. Gastrointestinal tract</td>
<td>Chronic cholecystitis H&amp;E (74)</td>
</tr>
<tr>
<td>Lectures (3 hours per week)</td>
<td>Histopathology practices</td>
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<tr>
<td><strong>33. Kidney</strong></td>
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<tr>
<td></td>
<td>Chronic pancreatitis H&amp;E(75)</td>
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<td></td>
<td>Acute hemorrhagic necrotising pancreatitis H&amp;E(76)</td>
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<td>Pancreatic pseudocyst (slide demonstration)</td>
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<td></td>
<td>Adenocarcinoma of pancreas H&amp;E (77)</td>
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<td></td>
<td>Islet cell tumor of pancreas (slide demonstration)</td>
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<td><strong>34. Urinary tract</strong></td>
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<td>Diabetic nodular glomerulosclerosis (Kimmelstiel-Wilson) H&amp;E (78)</td>
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<td><strong>35. Male genital syste</strong></td>
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<tr>
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<td>Glomerulonephritis H&amp;E (79)</td>
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<td>End stage kidney H&amp;E (80)</td>
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<td>Acute rejection in transplanted kidney H&amp;E (22)</td>
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<tr>
<td><strong>36. Gynecologic pathology</strong></td>
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<tr>
<td></td>
<td>Acute pyelonephritis H&amp;E (81)</td>
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<tr>
<td><strong>37. Gynecologic pathology</strong></td>
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<tr>
<td></td>
<td>Chronic pyelonephritis H&amp;E (82)</td>
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<td>Renal cell carcinoma H&amp;E (83)</td>
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<td>Normal adrenal cortex (slide demonstration)</td>
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<td>Wilm’s tumor H&amp;E(84)</td>
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<td></td>
<td>Transitional cell carcinoma H&amp;E (28)</td>
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<td><strong>38. Neonatology</strong></td>
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<td>Nodular hyperplasia of the prostate H&amp;E(85)</td>
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<tr>
<td><strong>39. Breast</strong></td>
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<td>Adenocarcinoma of prostate H&amp;E(87)</td>
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<td>Seminoma H&amp;E (88)</td>
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<td>Embryonal carcinoma (slide demonstration)</td>
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<td>Teratoma H&amp;E(89)</td>
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<td><strong>40. Blood and lymphoid organs</strong></td>
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<tr>
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<td>Placenta retention H&amp;E (90)</td>
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<tr>
<td><strong>41. Blood and lymphoid organs</strong></td>
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<tr>
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<td>Extraterine gravidity H&amp;E (91)</td>
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<td>Arias-Stella phenomenon (slide demonstration)</td>
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<td>Hydatiform mole H&amp;E (92)</td>
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<td>Choriocarcinoma H&amp;E (93)</td>
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<td></td>
<td>Endometrial hyperplasia H&amp;E (94)</td>
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<td>Endometriosis (slide demonstration)</td>
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<td>Endometrium carcinoma H&amp;E (95)</td>
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<td><strong>42. Blood and lymphoid organs</strong></td>
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<tr>
<td></td>
<td>Chronic cervicitis H&amp;E (123)</td>
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<tr>
<td><strong>43. Blood and lymphoid organs</strong></td>
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<tr>
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<td>HPV infection in cervix H&amp;E (124)</td>
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<td>In situ hybridisation (slide demonstration)</td>
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<td>Condyloma acuminatum (slide demonstration)</td>
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<td></td>
<td>Follicular cyst of the ovary H&amp;E (125)</td>
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<td></td>
<td>Mucinous cystadenoma of the ovary H&amp;E(29)</td>
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<td></td>
<td>Mucinous cystadenocarcinoma (slide demonstration)</td>
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<td>Borderline serous papillary cystadenoma of the ovary H&amp;E (126)</td>
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<tr>
<td></td>
<td>Serous papillary cystadenocarcinoma of the ovary (slide demo)</td>
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<tr>
<td></td>
<td>Granulosa cell tumor (slide demonstration)</td>
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<tr>
<td><strong>44. Endocrinology</strong></td>
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<tr>
<td><strong>45. Endocrinology</strong></td>
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<td>Fibrocystic disease of the breast H&amp;E (101)</td>
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<td>Peri- and intracanalicular fibroadenoma of the breast H&amp;E (33)</td>
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<td>Phyllid tumor (slide demonstration)</td>
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<td>Intraductal carcinoma H&amp;E (102)</td>
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<td></td>
<td>Invasive ductal carcinoma H&amp;E(103)</td>
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<td>Invasive lobular carcinoma H&amp;E (104)</td>
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<tr>
<td><strong>46. Skin</strong></td>
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<td>FNAB of the breast (cytol. smear demonstration)</td>
</tr>
<tr>
<td><strong>47. Skin</strong></td>
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<tr>
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<td>Normal bone marrow H&amp;E (127)</td>
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<tr>
<td></td>
<td>Leukemic bone marrow H&amp;E(128)</td>
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<td></td>
<td>Leukemic infiltration of parenchymal organs (slide demonstration)</td>
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<td></td>
<td>Multiple myeloma H&amp;E (106)</td>
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<td></td>
<td>Amyloidosis Congo (21)</td>
</tr>
</tbody>
</table>
Lectures (3 hours per week)

48. Head and neck
- Non Hodgkin lymphoma (low grade) H&E (107)
- Non Hodgkin lymphoma (high grade) H&E (108)
- Follicular lymphoma (slide demonstration)
- Tonsillar lymphoma (slide demonstration)
- MALT lymphoma (slide demonstration)
- Hodgkin lymphoma H&E (109)
- Hodgkin lymphoma histologic types (slide demonstration)

49. Bones and joints
- Follicular adenoma of the thyroid gland H&E(112)
- Follicular carcinoma (slide demonstration)
- Papillary carcinoma of the thyroid gland H&E (113)
- Medullary carcinoma (slide demonstration)
- Adrenal cortical adenoma H&E(105)
- Parathyroid adenoma (slide demonstration)

50. Bones and joints
- Osteosarcoma H&E (114)
- Rhabdomyosarcoma H&E (115)
- Rheumatoid arthritis H&E (116)
- Autoimmune diseases (slide demonstration)

51. Bones and joints
- Basal cell carcinoma H&E (27)
- Verruca vulgaris H&E (100)
- Naevus pigmentedus H&E (39)
- Malignant melanoma H&E (40)
- Metastatic melanoma (slide demonstration)
- Bowen’s disease (slide demonstration)
- Capillary haemangiomata of the skin H&E (34)

52. Eye
- Encephalitis H&E (118)
- Meningeoma H&E (119)
- Glioblastoma multiforme H&E(120)
- Schwannoma H&E (121)
- Neuroblastoma H&E (122)
- Ganglieneuroblastoma (slide demonstration)
- Paraganglioma (slide demonstration)

53. Skeletal muscle
- Review

54. Nervous system

55. Nervous system

56. Nervous system

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
2nd Department of Pathology
Head of Department: Prof. Dr. József Timár
Tutor: Dr. András Kiss

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Schedule for the academic year

Lectures

1st Semester - 2011

09.12. M. 1. lecture
Dr. Timár
Introduction - History of pathology, its significance in medicine, Health and sickness. - Clinicopathology - Demonstration of establishing diagnosis from biopsy specimen to the pathological report and therapeutic suggestion.

09.14. W. 2. lecture
Dr. Timár
Cell injury
Reversible cell injury (hydropic swelling, atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia, intracellular storage).
Irreversible cell injury (necrosis, apoptosis, ischemic cell injury, external agents, calcification, hyaline, aging).

09.19. M. 3. lecture
Dr. Schaff
Hemodynamic disorders
Basic notions in hemodynamics. Hemorrhage, active and passive hyperemia.

09.21. W. 4. lecture
Dr. Timár
Inflammation I.
Extracellular matrix. Regeneration, repair.

09.26. M. 5. lecture
Dr. Lotz
Inflammation II.
Chronic inflammation, fibrosis, scarring. Granulomatous inflammations: (tuberculosis, syphilis. etc.)

10.03. M. 7. lecture
Dr. Timár
Immunopathology – Autoimmune diseases.
Etiology. Mono- and polysystemic diseases (e.g. ch. Atrophic gastritis, myasthenia gravis Basedow dis., Hashimoto thyreoiditis, Addison dis., Insulin dependent diabetes mellitus, Sclerosis multiplex) and Oligo- polysystemic diseases (e.g. SLE, Sjögren sy, RA, scleroderma, dermatomyositis)
10.05. W. 8. lecture  
**Dr. Kerényi**  
*Environmental and nutritional pathology.*  

10.10. M. 9. lecture  
**Dr. Schaff**  
*Neoplasia I.*  

10.12. W.10. lecture  
**Dr. Timár**  
*Neoplasia II.*  
Molecular mechanisms of tumor development: protooncogenes, oncogenes, tumor suppressor genes, growth factors, tumor associated inherited genetic disorders.

10.17. M. 11. lecture  
**Dr. Timár**  
*Neoplasia III.*  
Tumor growth, tumor progression, metastasis.

**Dr. Schaff**  
*Neoplasia IV.*  

**Dr. Kulka**  
*Neoplasia V.*  
Prognostic factors in tumor pathology. Staging and grading of tumors. TNM. Handling of surgical biopsy material.

**Dr. Timár**  
*Childhood Tumors*  
(ALL, Wilms tumor, medulloblastoma, hepatoblastoma, retinoblastoma, neuroblastoma, Ewing sarcoma, osteosarcoma)

11.02. W. 15. lecture  
**Dr. Kiss**  
*Genetic and developmental disorders. Gene pathology.*  

11.07. M. 16. lecture  
**Dr. Székely**  
*Pathological Diagnostics*  
Tumor Screening, Cytodiagnostics. The morphologic and technical basis of aspiration cytology. Aim and clinico-pathological use of the technique. Basic cytopathological morphology of benign and malignant lesions. Cases will be presented in which aspiration cytology revealed the nature of disease or changed the clinical diagnosis. (non-neoplastic and neoplastic lesions).

11.09. W. 17. lecture  
**Dr. Glasz**  
*Cardiovascular Pathology I.*  

**Dr. Glasz**  
*Cardiovascular Pathology II.*  

11.16. W. 19. lecture  
**Dr. Glasz**  
*Cardiovascular Pathology III.*  

11.21. M. 20. lecture  
**Dr. Timár**  
*Skin*  

11.23. W. 21. lecture  
**Dr. Timár**  
*Head and neck*  
11.28. M. 22. lecture  
**Respiratory system I.**  
Dr. Székely  
Conducting airways (congenital abnormalities, infections, bronchial obstructions and aspiration). Lung parenchyma (congenital abnormalities, infections, pneumonia). Diffuse alveolar damage (ARDS, iatrogenic damage, hemorrhage). Chronic obstructive pulmonary diseases (COPD - obstruction, bronchitis, asthma, bronchiolitis, emphysema). Restrictive lung diseases: e.g. pneumoconiosis, sarcoidosis).

11.30. W. 23. lecture  
**Respiratory system II.**  
Dr. Tímár  

12.05. M. 24. lecture  
**Gastrointestinal tract I.**  
Dr. Schaff  
Esophagus (anatomy and developmental disorders, inflammation, trauma, tumors).

12.07. W. 25. lecture  
**Gastrointestinal tract II.**  
Dr. Schaff  

**Gastrointestinal tract III.**  
Dr. Schaff  

12.14. W. 27. lecture  
**Bones and joints**  
Dr. Arató  

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**2nd Semester - 2012**

02.06. M. 28. lecture  
**Liver and biliary system I.**  
Dr. Schaff  

02.08. W. 29. lecture  
**Liver and biliary system II.**  
Dr. Schaff  

02.13. M. 30. lecture  
**Liver and biliary system III.**  
Dr. Schaff  
Gallbladder and bile ducts (congenital anomalies, cholecystitis, cholelithiasis, cholangitis, neoplasms).

02.15. W.  
**TDK Conference**

02.20. M. 31. lecture  
**Pancreas**  
Dr. Székely  
Pathology of the exocrine pancreas: Developmental abnormalities, inflammations, tumors of the exocrine pancreas.

02.22. W. 32. lecture  
**Endocrinology I.**  
Dr. Székely  
Pathology of the endocrine pancreas: Diabetes mellitus.
02.27. M. 33. lecture  
**Endocrinology II.**  
Dr. Székely  

02.29. W. 34. lecture  
**Kidney Pathology I.**  
Dr. Kardos  

03.05. M. 35. lecture  
**Kidney Pathology II.**  
Dr. Székely  

03. 07. W. 36. lecture  
**Kidney Pathology III.**  
Dr. Timár  
Tumors of the kidney. Kidney transplantation.

03.12. M. 37. lecture  
**Uropathology**  
Dr. Székely  

03.14. W. 38. lecture  
**Male genital system**  
Dr. Székely  
Diseases of the epidydimis, testis, prostate, penis and scrotum.

03.19. M . 39. lecture  
**Gynecologic pathology I**  
Dr. Schaff  

03.21. W. 40. lecture  
**Gynecologic pathology II.**  
Dr. Schaff  

03.26. M. 41. lecture  
**Neonatology**  
Dr. Kiss  

03.28. W. 42. lecture  
**Breast I**  
Dr. Kulka  
Symptoms and diagnosis of breast diseases. Malformations. Benign symptomatic lesions (inflammations, fibrocystic disease, epithelial dysplasia and its significance, benign tumors)

04.11. W. 43. lecture  
**Breast II**  
Dr. Kulka  

04.16. M. 44. lecture  
**Blood and lymphoid organs I.**  
Dr. Székely  

04. 18 . W. 45. lecture  
**Blood and lymphoid organs II.**  
Dr. Székely  
04.23. M. 46. lecture
Dr. Timár
Blood and lymphoid organs III.
Genetic overview

04.25. W. 47. lecture
Dr. Székely
Blood and lymphoid organs IV.
Clinicopathological case demonstrations

04.30. M.
Clinicopathology

05.02. W. 48. lecture
Dr. Schaff
Nervous system I.

05.07. M. 49. lecture
Dr. Schaff
Nervous system II.
Demyelinating diseases. Neurodegenerative diseases. Pathology of the eye and ear. Metabolic diseases

05.09. W. 50. lecture
Dr. Schaff
Nervous system III.

05.14. M. 51. lecture
Dr. Lotz
Infectious diseases
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)

05.16. W. 52. lecture
Clinicopathology – case demonstrations by students

LIST OF TEXTBOOKS

3. Szende B., Suba Zs Introduction to Histopathology (Medicina, 1999)

Recommended literature


WEB: www.path2.sote.hu
Histopathology practices and slides for the final examination

1. practice  Introduction into the practice of pathology – methods and approaches

2. practice  Nutmeg liver H&E (1)
Fatty degeneration of the liver H&E (7)
Pulmonary edema H&E (2)
Haemosiderin in alveolar macrophages H&E (3a)
Haemosiderin in alveolar macrophages: Prussian blue staining (3b)

3. practice  Thromboembolism – organising thrombus (H&E (4)
Hemorrhagic infarction of the lung H&E (5)
Anemic infarction of the kidney H&E (6)

4. practice  Acute appendicitis H&E (8)
Fibrinous pericarditis H&E (9)
Granulation tissue H&E (12)
Foreign-body granuloma H&E (13)
Candidiasis PAS (14)
Chronic abscess/ fistule (slide demonstration)

5. practice  HPV infection in cervix – LSIL H&E (74)
Squamous cell metaplasia of the cervix H&E (11)
In-situ carcinoma of the cervix - HSIL H&E (15)
Invasive squamous cell carcinoma of the cervix H&E (17)

6. practice  Squamous cell papilloma H&E (18)
Squamous cell carcinoma of the larynx H&E (19)
Tubulovillous adenoma and adenocarcinoma of the colon H&E (20)
Squamous cell carcinoma metastasis in lymph node H&E (22)
Colorectal adenocarcinoma metastasis in liver (23)
Metastasis in the brain (91)
Lung metastasis H&E (60)

7. practice  Differential diagnosis of tumors based on immunohistochemical characterization
Leiomyoma H&E (24)
Leimyosarcoma (slide demonstration)
Lipoma H&E (25)
Liposarcoma (slide demonstration)
Rhabdomyosarcoma H&E (26)
Gastric GIST H&E (30)
Capillary haemangioma of the skin H&E (27)

8. practice  DIAGNOSTIC METHODS IN PATHOLOGY – OVERVIEW of HISTOPATHOLOGY
<table>
<thead>
<tr>
<th>Practice</th>
<th>Cases</th>
</tr>
</thead>
</table>
| 9. practice | Benign nephrosclerosis H&E (28)  
Coronary-sclerosis H&E (31)  
Myocardial infarction, early H&E (32)  
Myocardial infarction, old H&E (33)  
Endocarditis H&E (34) |
| 10. practice | IRDS H&E (35)  
Bronchopneumonia H&E (36)  
Lobar pneumonia H&E (slide demonstration)  
Miliary tuberculosis in lung H&E (37)  
Tuberculotic lymphadenitis H&E (38) |
| 11. practice | Small cell carcinoma of the lung H&E (39)  
Squamous cell carcinoma of the lung (40)  
Adenocarcinoma of the lung (42)  
Mesothelioma H&E (41)  
Pneumoconiosis H&E - slide demonstration  
Lung metastasis H&E (60) |
| 12. practice | Mixed tumor of the parotid gland H&E (43)  
Squamous cell carcinoma of the oesophagus (63)  
Chronic peptic ulcer H&E (44)  
Chronic gastritis, Helicobacter pylori H&E (45), Giemsa (45/G)  
Signet ring cell carcinoma of the stomach H&E (46), PAS (46/P)  
Gastric GIST H&E (30) |
| 13. practice | Villous atrophy in small intestine (47)  
Ulcerative colitis H&E (48)  
Crohn’s disease H&E (49)  
Pseudomembranous colitis (10) |
| 14. practice | ORGAN DEMONSTRATION |
| 2. Semester | |
| 15. practice | Pathology of the Eye and its Appendices (theory and practice)  
Dr. Jeanette Tóth – Dr. Hajnalka Gyorffy |
| 16. practice | Alcoholic hepatitis H&E (50)  
Viral hepatitis – HCV/HBV H&E - slide demonstration  
Liver cirrhosis H&E (52)  
Hepatocellular carcinoma H&E (53)  
Cavernous haemangioma of liver H&E (51)  
Colorectal adenocarcinoma metastasis in liver (23) |
17. practice
Acute pancreatitis H&E (56)
Chronic pancreatitis H&E (55)
Adenocarcinoma of pancreas H&E (57)
Islet cell tumor of pancreas H&E (16)

18. practice
Colloid goiter H&E (86)
Hashimoto thyreoiditis (85)
Follicular adenoma of the thyroid gland H&E (88)
Follicular carcinoma (slide demonstration)
Papillary carcinoma of the thyroid gland H&E (89)
Carcinoid tumor in small intestine H&E (58)
Adrenal cortical adenoma H&E (59)

19. practice
Acute purulent pyelonephritis H&E (62)
End stage kidney H&E (64)
Renal cell carcinoma H&E (65)
Transitional cell carcinoma H&E (66)

20. practice
Nodular hyperplasia of the prostate H&E (67)
Adenocarcinoma of prostate H&E (68)
Seminoma H&E (69)
Embrional carcinoma of testis H&E (61)

21. practice
Extrauterine (tubal) gravidity H&E (71)
Endometrial hyperplasia H&E (72)
Endometriosis (29)
Endometrium carcinoma H&E (73)

22. practice
Mucinous cystadenoma of the ovary H&E (75)
Mucinous cystadenocarcinoma of the ovary H&E (54)
Serous papillary cystadenoma of the ovary H&E (76)
Serous papillary cystadenocarcinoma of the ovary (82)
Teratoma / Dermoid cyst H&E (70)

23. practice
Fibrocystic disease of the breast H&E (77)
Peri- and intracanalicular fibroadenoma of the breast H&E (78)
Phylloid tumor H&E – slide demonstration
Intraductal carcinoma H&E (79)
Invasive ductal carcinoma H&E (80)
Invasive lobular carcinoma H&E (81)

24. practice
Normal bone marrow H&E – slide demonstration
Reactive lymph node H&E (87)
Leukemic bone marrow H&E - slide demonstration
Hodgkin lymphoma H&E (83)
Non Hodgkin lymphoma (high grade) H&E (84)
Squamous cell carcinoma metastasis in lymph node H&E (22)
25. practice
Purulent meningitis H&E (90)
Meningeoma H&E (92)
Glioblastoma multiforme H&E (93)
Brain metastasis H&E (91)

26. practice
Basocellular carcinoma – Krompecher tumor H&E (94)
Seborrheic keratosis H&E (95)
Naevus pigmentosus H&E (96)
Malignant melanoma H&E (97)
Solar keratosis (slide demonstration)

27. practice
Childhood tumors
Osteosarcoma H&E (98)
Neuroblastoma H&E (99)
Wilms tumor H&E (100)

28. practice
Repetition - consultation

List of oral questions

A

2. Morphologic reaction to persistent stress (Atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia).
5. Chemical (vasoactive) mediators in inflammation.
6. The role of neutrophil leukocytes in inflammation.
7. Chronic and granulomatous inflammation.
8. Morphologic patterns of inflammation (origin and types of exsudate).
10. Lymphocytes and macrophages in inflammation
11. Extracellular matrix.
12. Repair and wound healing.
13. Regeneration and healing in different tissues.
15. Types of hypersensitivity.
16. Immune reaction to transplanted organs.
17. Immunodeficiencies (congenital, acquired).
18. Autoimmunity.
20. Clinically important malformations.
21. Syndromes linked to chromosomal abnormalities.
22. Autosomal dominant disorders.
23. Autosomal recessive disorders.
25. Diseases of infancy and childhood.
27. Edema and related disorders of water and electrolytes.
28. Embolism and thrombosis.
29. Shock.
30. Smoking.
31. Alcoholism.
32. Drug abuse and iatrogenic drug injury.
33. Environmental chemical agents.
34. Environmental physical agents. Radiation.
36. Diseases affecting the epidermis.
37. Inflammatory diseases of the skin and diseases of dermal connective tissue.
38. Pathology of the oral cavity.
39. Disorders of growth and maturation of the skeleton.
40. Infectious diseases of the bones.
41. Metabolic bone disease.
42. Non tumorous lesions of the joints.
43. Noninflammatory lesions of skeletal muscles.

2nd Semester
43. Acute pancreatitis.
44. Chronic pancreatitis.
46. Inflammatory glomerular lesions of the kidneys.
47. Vascular diseases of the kidneys.
48. Diseases of the urinary bladder and urethra.
49. Non-neoplastic disorders of the testis and epididymis.
50. Infectious disorders of the female genital tract.
51. Pathology of the cervix uteri (except tumors).
52. Pathology of placenta and gestational trophoblastic disease.
53. Non neoplastic diseases of the breast.
55. Pathology of the spleen.
56. Pathology of the pituitary gland and the hypothalamus.
57. Non-neoplastic lesions of the thyroid gland.
58. Pathology of the parathyroid gland.
59. Pathology of the thymus and pineal gland.
60. Circulatory disorders of the central nervous system.
61. Inflammatory diseases of the central nervous system.

B
1. Classification of neoplasms.
2. Cytological and histological characteristics of malignancy.
4. Invasion and metastasis.
5. Grading and staging of cancer.
6. Physical and chemical carcinogenesis.
7. Viral carcinogenesis.
11. Heredity and cancer.
12. Epidemiology of cancer.
15. Tumors of blood vessels and heart.
16. Pathology of larynx and trachea.
17. Primary lung cancer.
22. Neoplasms of colon.
23. Viral diseases.
24. Diseases caused by mycoplasma, chlamidia, rickettsiae and spirochetes.
26. Diseases caused by bacteria (cholera, shigellosis, E.coli infection, yersiniosis, campylobacter, brucellosis, listeriosis).
27. Diseases caused by bacteria (clostridial diseases, diphtheria, rhinoscleroma, Klebsiella, granuloma inguinale, phagedenic ulcer, noma).
28. Diseases caused by bacteria (staphylococcal, streptococcal infections, filamentous bacteria)
29. Diseases caused by mycobacteria.
30. Diseases caused by protozoans.
31. Diseases caused by fungi.
32. Diseases caused by nematodes.
33. Diseases caused by trematodes, cestodes, arthropods.
34. Opportunistic infections.
35. Benign and malignant tumors of melanocytic origin in the skin.
36. Benign and malignant tumors of the skin (other than melanocytic).
37. Pathology of the salivary glands.
40. Tumors and tumorlike lesions of the joints.

2nd Semester

41. Neoplasms of the exocrine pancreas.
42. Neoplasms of the endocrine pancreas.
43. Neoplasms of the liver.
44. Neoplasms of the biliary tract and gallbladder.
45. Tumors of the kidney.
46. Diseases of the renal pelvis and ureter.
47. Testicular neoplasms.
48. Pathology of the prostate, penis and scrotum.
49. Pathology of the vulva and vagina.
50. Pathology of the body of the uterus and endometrium.
51. Benign and malignant breast tumors, premalignant lesions.
52. Chronic myeloproliferative syndromes.
53. Acute myeloproliferative syndromes.
54. Lymphocytic leukemias and malignant disorders of the mononuclear phagocyte system.
57. Neoplastic lesions of the thyroid gland.
58. Pathology of the adrenal medulla and paraganglia.
59. Tumors of the central nervous system.
60. Tumors of the uterus.
61. Tumors of childhood.

C

1. Atherosclerosis.
2. Hypertensive vascular and heart disease.
4. Aneurysms and diseases of the veins.
7. Rheumatic and other “hypersensitivity” diseases of the heart.
8. Inflammatory, nutritional, endocrine and metabolic diseases of the heart.
15. Pneumoconiosis.
16. Restrictive, infiltrative or interstitial lung disease.
17. Diseases of the pleura.
18. Diseases of the pulmonary vasculature.
20. Pathology of esophagus (except congenital disorders and tumors).
22. Peptic ulcer disease.
25. Pathology of the appendix.
27. Amyloidosis.
28. Diseases affecting the basement membrane zone of the skin.
29. Pathology of the nose and paranasal sinuses.
30. Pathology of the nasopharynx.
32. Inflammatory and metabolic diseases of skeletal muscles.
2nd Semester

33. Bilirubin metabolism and jaundice.
34. Hepatic failure.
35. Acute viral hepatitis.
36. Chronic hepatitis.
37. Alcoholic liver disease.
38. Etiology of cirrhosis. Primary biliary cirrhosis. Hemochromatosis.
39. Inheritable disorders associated with cirrhosis.
41. Toxic liver injury.
42. Nonviral infections of the liver. Neonatal hepatitis.
43. Cholelithiasis.
44. Cholecystitis, cholesterosis and cholangitis.
45. Noninflammatory lesions of the kidneys associated with nephrotic syndrome.
46. Renal diseases associated with systemic disorders.
47. Tubulointerstitial diseases of the kidneys.
48. Pathology of the fallopian tube and the ovaries.
49. Benign disorders of the lymphoid cells.
50. Pathology of the adrenal cortex.
51. Diabetes.
52. Pathology of trauma in the central nervous system.
53. Congenital malformations of the central nervous system.
54. Metabolic and degenerative diseases of the central nervous system.
55. Pathology of the peripheral nervous system.
56. Pathology of the eye (except manifestations of systemic diseases)
57. Manifestations of systemic diseases in the eye. Pathology of the ear.

General information

Lectures

The topics of the lectures include both general and systemic pathology. To provide a more practical, clinicopathological aspect of the subject systemic pathology is emphasized in the lectures but all of them include general aspects.

Each lecture lasts 1 hour 10 minutes and is illustrated with macroscopic and microscopic photographs, as well as with electronmicroscopic photographs or radiologic images, illustrating the material presented. Occasionally interesting autopsy cases will be demonstrated at the end of the lectures.

It is compulsory to visit the lectures, since the semifinal and final exams are partly based on them. The 2nd Department of Pathology may record the absences and those students who are missing more then 15% of the lectures may not be registered for examination.

Practices

There are 14 two + two hour practices in both semesters, which are divided into autopsy and histopathology. 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. Autopsy hall practices can be repeated and verified by the signature of the
tutor of another group. In case the absences exceed the allowed limit the student will not be accepted for examination.

The histopathology practices provide basic histopathology skills and ability to describe lesions. To help the students to find the lesions on their own slides the tutor will demonstrate the slides with the help of a video-projector. The students will have an opportunity to make drawings and notes of the slides. The topics of the histopathology practices match the lectures.

On the autopsy practices the students can learn the basic skills of autopsy, and will practice to recognize the pathologic lesions and describe them. The emphasis is on the clinicopathologic aspect of the cases discussed. If there is no autopsy available on a practice organ demonstration will take place.

**Mid-term exams:** There are two midterm exams in each semester (October 24-28, November 28-December 02; March 26-30 and April 23–27). The participation on the mid-term exam is compulsory. The average of the two midterms in each semester will be added to the final score of the written test in case one is over the passing limit. In case one does not participate on the mid-term exam in the given time the exam should be retaken by the teacher of the group otherwise the student will not be accepted for examination.

**Competition**

There will be a competition in pathology held in two turns in the last week of April and in the first week of May. 20 macroscopic photographs will be projected in the first turn and the diagnoses must be given. The students with the best results (up to 10 people) will participate in the second round, where a complete autopsy report should be written, and 2 histological slides to be recognized. Both turns are passworded. The results will be announced in one week after the competition. Those who pass into the second round will be exempted from test writing, those who recognize the histology slide in the second round are exempted from histology in the final. The first three ranked students – the winners - will be awarded.

**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. 2 weeks before and during the exam period there are histopathology consultations. The exact schedule will be displayed in the institute. There is no autopsy consultation during the exam period.

**Examinations**

**SEMMELWEIS UNIVERSITY / FACULTY OF MEDICINE**

MATERIAL FOR SEMIFINAL: The material of the lectures of the I. Semester 2011 / 2012 ending with the lecture of the Pathology of the Bones and Joints.

1. Prerequisites:
Not more than 2 autopsy practices and not more than 2 histology practices (histology practice and autopsy hall practice counts separately) can be missed on each semester.

Autopsy hall practices can be repeated and verified by the signature of the tutor of another group.
Participation on 2 midterm exams on each semester is obligatory. The visit of the lectures is obligatory. If one does not fulfill (proved by the signed absence lists) the above mentioned prerequisites the 2nd Department of Pathology has the right for not acknowledging the semester.

2. Autopsy demonstration will be held on the last autopsy hall practice. One should be able to recognize the organ (complex), orientate 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 result (1-5) will be added in points in case one is over the passing limit. (1-5: as many points as the mark of the organ demonstration was)

Mid-term exams: The average of the two midterm’s note of the first semester will be added to the final score of the written test in case one 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 100 questions. The students have 100 minutes for writing the test. The test is given in one session, there will be no rest break during the examination. Your place is determined by the actual supervisor. You will obtain a question and an answer sheet. You may write anything you want onto your question sheet, but exclusively the answer sheets will be evaluated. The correct answers should be marked by crossing the given letter(s) (e.g. A B C D E). The circled answers will not be scored. You may use a ball-pen, a brush-pen, a fountain-pen, but no pencils. Correction can be made, but it should be unequivocal. For correction you may shade out the wrong answer, or you may use correction fluid. Any correction must be signed by yourself. The question and the answer sheets are not allowed to take out from the testing room. Similarly, copying the questions and the answer sheet is not permitted. Your scores are evaluated and double-checked by the supervisors. The results are posted at the same day, generally early afternoon.

Evaluation: The passing level is 61 points. Each correct answer is worth of 1 point. If you reach 60 points or less you have failed.

- 0-60 pts: 1
- 61-70 pts: 2
- 70-80 pts: 3
- 81-90 pts: 4
- 91× pts: 5

The tests are available for overview on the day of the exam between 3 and 4 pm in case of well established request.

Suspension: If you have any problem during the test, ask the supervisor. In case of communicating, unacceptable behaving after the first warning your exam is suspended and your answer sheet is not scored. In any case of cheating your exam is immediately suspended without evaluating your test. In cases of suspension both supervisors write the cause of this action onto the answer sheet and sign it.
4. The exam for EM begins at 8.30 a.m. sharp at the IInd Department of Pathology, meeting at the lecture hall. The indexes are collected by the supervisor before starting the exam. Students having no index are not allowed to take 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 be posted on the billboards. Additional dates will not be available. 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 the 3rd year students as well. The sign up procedure is controlled and regulated by the software and the institute cannot interfere with the system. The officially signed up students will be scheduled for examination. In case the internet based sign up system would not be introduced you must sign up in advance into the SIGN UP BOOK which is located on the 1st floor at the main entrance in front of the doorman’s office. Only the registered students are entitled to take examination on the given day. Your name should be appeared in printed form to avoid the unintentional misspelling. The registration should also include your group (e.g. EM/1, EM/4 etc.).

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 next trial 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!! Students who have failed the exam on one occasion can retake it not earlier than four working days passing by after the first trial (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 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.

8. Types of the written questions:
Different kinds of questions are prepared and randomly selected from a pool.

The test questions include simple choice (one right answer out of 5), combination (2-5 correct answers according to a code), multiple choice (2-5 correct answers - no code), “true-false” questions, medical terms and short assays.
a/ True-false: You must decide if the given statement is true or not.
For example:
The eagle is a bird.
A: True  B: False  (Mark: A )

b/ Simple choice: Only 1 answer is correct out of 5 possibilities.
For example:
Select the country in which pyramids are found:
A: Netherlands
B: Egypt
C: Hungary
D: Cyprus
E: Greece  (Mark: B)

c/ Problem-solving simple choice.
For example:
Jane has four children. Betty is the oldest, her mother was 18 when she was born. Tom is 2 years younger than Bobby and 5 years older than the youngest child, Mark. Bobby was born 3 years later than Betty. Mark was born 2 years ago. How old is Jane now?
A: 28
B: 18
C: 23
D: 30
E: 35  (Mark: D)

d/ Combination (simple choice with multiple choice pattern).
You have four or five possible answers and 5 combinations. Mark the only letter covering the correct answers.
For example:
The natural habitat of the following animals is the water.
1. lion  A: 1,2,3
2. sea-lion  B: 2,3,4
3. whale  C: 2,4,5
4. shark  D: 1,2
5. baboon  E: 2,3  (Mark: B)

e/ Combination questions with a standard code:
A: 1, 2, 3
B: 1, 3
C: 2, 4
D: 4
E: 1, 2, 3, 4
f/ **Multiple choice:** Two to five possible answers. Mark all of the correct possibilities. (The number of the correct answers is not indicated!)
For example:
Select the presidents of the U.S.
A: Neil Armstrong
B: J.F. Kennedy
C: Michael Jackson
D: George Washington
E: Ronald Reagan  (Mark: B,D,E)

**g/ Relations:** You should match the corresponding numbers and letters
For example:
1. wind A: snow
2. light B: fluid
3. white C: air
4. water D: food
5. taste E: sun
(Mark: 1C, 2E, 3A, 4B, 5D)

**h/ Medical term.**
For example:
What is the name of the medical person who is engaged in pathology?
(Write: pathologist)

**i/ Assay:** You should give a short, concise description of a given topic.
For example:
List the main features of a modern car (minimally 3)  (Write: safe, fast, comfortable)

**j/ Figure:** You should name the individual parts of the given figure.
For example:
Name the numbered parts:  (Mark: 1: hair, 2: ear, 3: nose, 4: lip)

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**FINAL**

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: a written test (60-question test) 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 oral lectures.

*The material for the examinations is based on the book, the lectures and practices as well!!*
The examination for EM 1-6 will take place at the 2nd Department of Pathology starting with the written test in the Lecture Hall of the II. Department.

The exam begins sharp at 8.30 a.m. for the final!!!

MEETING POINT: In the Lecture Hall of the II. Dept. of Pathology !!!

The indexes are collected by the supervisor before starting the exam. Students having no index are not allowed to take examination!

The written test is compulsory part of the exam! The passing limit is 60 % which means 37 points. The form of the test examination is a written test containing 60 questions to be solved within 60 minutes. The test is given in one session, there will be no rest break during the examination. Your place is determined by the actual supervisor.

You will obtain a question and an answer sheet. You may write anything you want onto your question sheet, but exclusively the answer sheets will be evaluated. The correct answers should be marked by crossing the given letter(s) (e.g. A B C D E). The circled answers will not be scored. You may use a ball-pen, a brush-pen, a fountain-pen, but no pencils. Correction can be made, but it should be unequivocal. For correction you may shade out the wrong answer, or you may use correction fluid. Any correction must be signed by yourself.

No taking the question and the answer sheets from the testing room is allowed. Similarly, copying the questions and the answer sheet is not permitted.

Your scores are evaluated and double-checked by the supervisors. The results will be posted on the exam data sheet.

Mid-term exams score: The average of the two midterm’s note of the second semester will be added to the final score of the written test in case one is over the passing limit.

Evaluation of the written test: The passing level is 37 points. Each correct answer is worth 1 point.

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>0-36 pts:</td>
<td>1</td>
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<tr>
<td>37-42 pts:</td>
<td>2</td>
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<tr>
<td>43-48 pts:</td>
<td>3</td>
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<td>49-54 pts:</td>
<td>4</td>
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<tr>
<td>55-60 pts:</td>
<td>5</td>
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</tbody>
</table>

After the test writing examinees are required to take the histology part of the final. Two slides from the exam 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, correct diagnosis should be given. The Histology part can not be examined by the tutor of the student.

Following the test and the histology organ demonstration is held. During this part of the exam you will get cut, prepeared organs or organ complexes, and you should correctly demonstrate them. One should be able to orientate the organ properly, to describe and evaluate the pathological alterations and establish the diagnoses. Finally, theoretical topics 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.

Retake exams: Students who have failed the exam on one occasion can retake it not earlier than 4 days after the first trial (exam days are not included). Example: In case the failure was on Tuesday the earliest next exam can be taken the following week on Tuesday, however, those who fail on Thursday they can retake the exam earliest on following Tuesday. The first retake exam consists the same parts as the first one. The written test and histology part should not be retaken if the mark was at least 3. The autopsy demonstration and the oral questions must be repeated in any case. The third retake exam will be conducted in front of an exam board and does not include the written test, however, it consists of histology (in case the result of the previous exam was not at least 3), autopsy demonstration and theoretical questions.

**Failure on any part of the exam excludes a result of 5!** You must also register and indicate that this is the first, second, etc. retake exam. During registration the chosen examination form should also be indicated. Without retake ticket one is not allowed to take an examination.

Announcement of the results: is held at the same day, usually early afternoon (depending on the number of examinees per day). Indexes can be obtained in the office of Prof. Dr. Timár (passing by the doorman’s cabine to the right, at the end of the corridor take a left turn).

However, it should be kept in mind that the final mark is not merely the mathematical average of the given grades! Additional factors, for example your midterm grades, your general performance during the academic year (evaluated by your tutor), the point scores of your written test, 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 failing.

**Suspension:** If you have any problem during the test, ask the supervisor. In case of communicating, unacceptable behaving after the first warning your exam is suspended and your answer sheet is not scored. In any case of cheating your exam is immediately suspended without evaluating your test. In cases of suspension both supervisors write the cause of this action onto the answer sheet and sign it.

**Schedule**

**Lectures**

<table>
<thead>
<tr>
<th></th>
<th>I. semester</th>
<th>II. semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>11:50–13:00</td>
<td>10:45–11:55**</td>
</tr>
<tr>
<td></td>
<td>8:00–9.10</td>
<td>8:00–9.10**</td>
</tr>
</tbody>
</table>

**Practices**

<table>
<thead>
<tr>
<th></th>
<th>I. semester</th>
<th>II. semester</th>
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</thead>
<tbody>
<tr>
<td>Gr. 6</td>
<td>13:00–14:30</td>
<td>11:10–12:50**</td>
</tr>
<tr>
<td>Gr. 1-4, 5, 7</td>
<td>9:30–12:50</td>
<td>9:30–12:50**</td>
</tr>
<tr>
<td>Gr. 6</td>
<td>11:10–12:40</td>
<td>11:10–12:40**</td>
</tr>
</tbody>
</table>

**preliminary data**
Tutors

Group 1  Dr. Attila KOVÁCS / Dr. Gábor LOTZ
Group 2  Dr. András KISS / Dr. Dóra HARGITAI / Dr. István KENESSEY
Group 3  Dr. Hajnalka GYORFFY / Dr. Marcell Szász
Group 4  Dr. Janina KULKA / Dr. Judit Halász / Dr. Zsuzsanna Rácz
Group 5 (EM6) Dr. Eszter SZÉKELY / Dr. Magdolna KARDOS / Dr. Tamás SZÉKELY

Responsible tutor: Dr. András KISS

Schedule for the academic year of 2011/2012

1st semester: September 12. - December 16, 2011
Official holidays: October 21. (Friday)
November 01. (Tuesday) – All Saints Day
November 05. (Saturday)

Examination period: December 19, 2011- January 27., 2012
Retake examination period: January 30.- February 03. 2012

2nd semester: February 06. - May 18., 2012
Official holidays: February 15-16. (Semmelweis Student Research Competition),
March 14. (Wednesday) 2011
March 15. (Thursday) National Holiday 2011
April 02.- April 06. - (Spring Vacation) 2011
April 09. (Monday) - Easter Monday 2011
April 20. (Friday) Dean’s Day 2011
May 01. (Tuesday) - Labor Day 2011
May 28. (Monday) - Whit Monday 2011

Competition: Date will be determined in the II. semester (1st and 2nd turn)
Last week of April and first week of May is the preferred time of the competition.

Examination period: May 21. - June 29, 2012
August 21. – August 31, 2012
Retake examination period: September 03. – September 07. 2012

Prof. Dr. József Timár
Head of Department
INTERNAL MEDICINE
1st Dept. of Internal Medicine
3rd Dept. of Internal Medicine
Tutor: Prof. Dr. Ferenc Szalay, Dr. Katalin Keital, Dr. Margit Abonyi

First Semester

Lectures with case presentation (3 hours per week)
Introduction to internal medicine. The sick man. The medical interview. The doctor’s
countenance and attitude towards the patient. Basic rules of the medical interview.
Details of history taking. Questions related to the respiratory, circulatory and
gastrointestinal systems.
The physical examination. Inspection. Palpation.
Percussion. Auscultation.
Fever. Taking the temperature. The types of fever curves.
The main symptoms of pulmonary disease. Cough, sputum production, hemoptysis,
dyspnea, wheezing, cyanosis and chest paint.
Physical diagnosis of the common pleural and pulmonary syndromes.
Examination of the heart. Inspection and palpation of the precordial region. Evaluation of
the apical impulse. Percussion of the heart. ECG. The heart sounds (normal and
pathological findings).
Murmurs (Normal and pathological findings).
he pulse. Examination of the vascular system. The pericardium.
The diagnosis of vascular heart disease (1).
The diagnosis of vascular heart disease (2). Heart failure.
The blood pressure. Hypertensive vascular disease.
General signs and symptoms of
the diseases of abdominal organs (gaseous abdominal distention, ascites, painful acute
abdominal diseases).
Examination of the gastrointestinal tract. General diagnostics of liver diseases.
General diagnostics of biliary tract diseases.
General diagnostics of pancreatic diseases. Metabolic diseases (diabetes mellitus).
The erythrocyte sedimentation rate (ESR). The complete blood count (CBC). General
diagnostics of hematological diseases.
Immunology.
Investigation of the musculoskeletal and the nervous systems.

Practice: Ward rounds (4 hours per week)

Introduction to medical diagnosis. Behaviour in the medical ward. The patient-doctor and the
patient-medical student relationship in practice. Communication with the patient. Medical
confidentiality during medical studies.

The medical documentation. Equipment for physical examination. The practice of medical history
taking.

practicing of the basic techniques in history taking and physical examination throughout the
semester.
The common medical syndromes demonstrated with patients. Examination of the heart, the vascular system, the respiratory system, the abdominal organs. Jaundice. Ascites. Diseases of the liver and the biliary tract. Gastrointestinal and renal syndromes. Examination of the urine. Examination of patients with endocrine diseases and diabetes mellitus. The diet. The practice of the most important laboratory tests. Examination of the spleen, the musculoskeletal and the nervous systems. Examination of patients with hematological and immunological diseases.

**INTERNAL MEDICINE**

**Second Semester**

*Lectures with case presentation* (3 hours per week)


*Practice Ward rounds* (4 hours per week)

Examination of patients with the following endocrine diseases: Diabetes insipidus, inappropriate secretion of ADH, acromegaly, hyperprolactinemia, Cushing’s hyperthyroidism, hypothyroidism, thyroiditis, goiter, solitary thyroid nodule, Addison’s disease, Cushing’s syndrome, Conn’s syndrome, adrenogenital syndromes, phaeochromocytoma, parathyroid hyperfunction, parathyroid hypofunction, hyper- and hypocalcaemic states, gonadal diseases, hirsutism, carcinoma of the breast, carcinoid syndrome, diabetes mellitus, diabetic ketoacidosis, complications of diabetes mellitus, hypoglycemic disorders, anorexia nervosa, gout, alcoholism, vitamin deficiencies, metabolic and respiratory acidosis, metabolic and respiratory alkalosis, and inborn errors of metabolism.
IMMUNOLOGY
Department of Genetics, Cell and Immunobiology

Course director: Prof. Dr. András Falus
Tutor: A. Kristóf Fülöp, PhD
Subject code: AOKGEN025_1A
Prerequisite subject: Medical Biochemistry, Molecular and Cell Biology III.

Credits: 4

<table>
<thead>
<tr>
<th>Lectures (2 hr / week)</th>
<th>Practices / Seminars (2 hr / week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The roles, processes, organs and cells of the immune system</td>
<td>Basic terms, organs and cell of the immune system</td>
</tr>
<tr>
<td>2. Principles of natural immunity</td>
<td>Methods based on antigen-antibody interactions</td>
</tr>
<tr>
<td>3. The complement system</td>
<td>Flow cytometry</td>
</tr>
<tr>
<td>4. Acute phase reaction, neuro- and psychoimmunology</td>
<td>Immunoserology</td>
</tr>
<tr>
<td>5. Antigen, antigen presentation and MHCs</td>
<td>Cell culturing</td>
</tr>
<tr>
<td>6. Antigen receptors and their formation</td>
<td>Immunization and vaccination</td>
</tr>
<tr>
<td>7. T lymphocytes and cell-mediated immune response</td>
<td>Migration of immune cells, homing and extravasation</td>
</tr>
<tr>
<td>8. B lymphocytes and humoral immune response</td>
<td>Screening methods for autoantibodies, HLA typing</td>
</tr>
<tr>
<td>9. Hypersensitivity</td>
<td>Midterm test</td>
</tr>
<tr>
<td>10. Immunology of transplantation and pregnancy</td>
<td>Hypersensitivity I.</td>
</tr>
<tr>
<td>11. Natural and pathological autoimmunity</td>
<td>Hypersensitivity II.</td>
</tr>
<tr>
<td>12. Immune response in infections, immunodeficiencies</td>
<td>Biological therapies</td>
</tr>
<tr>
<td>13. Tumor immunology</td>
<td>Immunological databases, prediction servers, simulations</td>
</tr>
<tr>
<td>14. Immunopharmacology, immunogenetics and review</td>
<td>Case studies</td>
</tr>
</tbody>
</table>

The order of lessons may change.

Attendance of a minimum of 75% of the lessons is necessary for the end-term signature.

Exam: written test in the exam period.

Literature:
Hand-out: on www.dgci.sote.hu
MEDICAL PSYCHOLOGY I.
General Medicine, 3rd year Medical Students
Institute of Behavioral Sciences
Lecturer: Prof. Dr. Ferenc Túry

Code: AOMAGPSZ-1A
Credit: 2
2011/2012

1st Semester

Course objectives:
To introduce the concepts of human behavior and its impact on the development and maintenance of chronic diseases, as well as to the healing process, and to the doctor - patient relationship. Topics include developmental psychology, the role of family, psychological aspects of chronic illnesses, dying and grief. Emphasis is laid on enhancing understanding of psychological issues that influence treatment, respectively communication techniques that enable doctors to work more efficiently.

The lectures are held in the first five weeks and the seminars will be held in the venues indicated on the course information sheet.

<table>
<thead>
<tr>
<th>Week 1.</th>
<th>LECTURE</th>
<th>Brain and Behavior</th>
<th>Dr. Róbert Bódizs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 2.</td>
<td>LECTURE</td>
<td>Behavior and Medicine - The Role of Behavioral Sciences in Medical Practice</td>
<td>Prof. Dr. Mária Kopp</td>
</tr>
<tr>
<td>Week 3.</td>
<td>LECTURE</td>
<td>Learning theory and human behavior</td>
<td>Dr. György Purebl</td>
</tr>
<tr>
<td>Week 4.</td>
<td>LECTURE</td>
<td>Psychodynamic formulations of human behavior - development</td>
<td>Dr. Adrienne Stauder</td>
</tr>
<tr>
<td>Week 5.</td>
<td>LECTURE</td>
<td>Altered states of consciousness and suggestive communication in medical practice (I)</td>
<td>Gábor Suhai</td>
</tr>
<tr>
<td>Week 6.</td>
<td>SEMINAR</td>
<td>Physician - Patient relationship - adherence to treatment</td>
<td></td>
</tr>
<tr>
<td>Week 7.</td>
<td>SEMINAR</td>
<td>Communication- basic concepts -The medical interview</td>
<td></td>
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<tr>
<td>Week 8.</td>
<td>SEMINAR</td>
<td>Communicating bad news</td>
<td></td>
</tr>
<tr>
<td>Week 9.</td>
<td>SEMINAR</td>
<td>Chronic illness, disability, and pain- psychological consequences</td>
<td></td>
</tr>
<tr>
<td>Week 10.</td>
<td>SEMINAR</td>
<td>Death, dying, and grief</td>
<td></td>
</tr>
<tr>
<td>Week 11.</td>
<td>SEMINAR</td>
<td>Families, relationships, and health</td>
<td></td>
</tr>
<tr>
<td>Week 12.</td>
<td>SEMINAR</td>
<td>Developmental psychology - Birth, childhood, adolescence, middle years, old age</td>
<td></td>
</tr>
<tr>
<td>Week 13.</td>
<td>SEMINAR</td>
<td>Providing health care in a multicultural community</td>
<td></td>
</tr>
<tr>
<td>Week 14.</td>
<td>SEMINAR</td>
<td>Review</td>
<td></td>
</tr>
</tbody>
</table>

Department:
Institute of Behavioral Sciences
Department of Psychology
NET Building, 20th floor
Tel: 210-2953
Secretary: NET Building, 20th floor, Room-2005. tel: 2102930/ 56114.
Course Leader: Dr. Piroska Balog
NET 20th floor, room 2011
Tel: 210-2930/ 56403, e-mail: balopir@net.sote.hu
Further information: www.behsci.sote.hu

Seminar Teachers:
Dr. György Purebl purgyor@net.sote.hu
Dr. László Harmat laszloharmat@yahoo.com
Dr. András Szentkirályi aszentkiralyi@gmail.com
Bernadett Babusa bernadett.babusa@gmail.com
Gyöngyvér Salavecz salgyon@net.sote.hu
Anikó Hazag anikoha@gmail.com
Judit Pap juditpap@gmail.com
Éva Pollák evipoll@yahoo.com

Participation and making up for absences:
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. (The maximum number of absences permitted: one absence from the lectures and two absences from the seminars.) Content of the lectures may appear in the exams.

Certifying absence from lesson:
Medical certificate

Semester requirements:
To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature. (The maximum number of absences permitted: one absence from the lectures and two absences from the seminars.) 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.

Grade:
Course at the end of the first semester will conclude with a term mark (practice mark), based on classroom activity and paper.

Type of exam:
Practice

Exam requirement:
Classroom activity and paper presented in the group.

Sign up for exam: Through the NEPTUN system.
Method of sign up: Through the NEPTUN system.

Certifying absence from exam:
A telephone or email message to the seminar leader.
Sign up for exam: Through the NEPTUN system.

Course Textbook:
Recommended text books:

MEDICAL PSYCHOLOGY II.
General Medicine, 3rd year Medical Students
Institute of Behavioral Sciences
Lecturer: Prof. Dr. Ferenc Túry
2011/2012

2nd Semester

Code: AOMAGPSZ_2A
Credit: 2

Course objectives:
To provide a body of knowledge to students, which helps them to recognize and understand psychopathological issues when encountered in everyday clinical practice and research. To introduce the concepts of causes, diagnosis, assessment, symptoms, treatment, and preventive methods of mental disorders.

The lectures are held in the first five weeks and the seminars from the 6th to 14th weeks be held in the venues indicated on the course information sheet.

<table>
<thead>
<tr>
<th>Week 1</th>
<th>LECTURE</th>
<th>Psychotherapeutic methods</th>
<th>Dr. György Purebl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 2</td>
<td>LECTURE</td>
<td>Altered states of consciousness and suggestive communication in medical practice (II.)</td>
<td>Gábor Suhai</td>
</tr>
<tr>
<td>Week 3</td>
<td>LECTURE</td>
<td>Stress and illness</td>
<td>Prof. Dr. Mária Kopp</td>
</tr>
<tr>
<td>Week 4</td>
<td>LECTURE</td>
<td>Behavioral interventions</td>
<td>Dr. Adrienn Stauder</td>
</tr>
<tr>
<td>Week 5</td>
<td>LECTURE</td>
<td>Intellect, Cognitive state, Thought processes, and Perception</td>
<td>Dr. Róbert Bódizs</td>
</tr>
<tr>
<td>Week 6</td>
<td>SEMINAR</td>
<td>Depression and mood disorders</td>
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<tr>
<td>Week 7</td>
<td>SEMINAR</td>
<td>Anxiety and medical illnesses</td>
<td></td>
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<tr>
<td>Week 8</td>
<td>SEMINAR</td>
<td>Somatization and Dissociative disorders</td>
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<tr>
<td>Week 9</td>
<td>SEMINAR</td>
<td>Eating disorders</td>
<td></td>
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<tr>
<td>Week 10</td>
<td>SEMINAR</td>
<td>Personality disorders</td>
<td></td>
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<tr>
<td>Week 11</td>
<td>SEMINAR</td>
<td>Sleep and sleep disturbances</td>
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<tr>
<td>Week 12</td>
<td>SEMINAR</td>
<td>Human sexuality in health and disease, sexual disorders, HIV/AIDS, and treatment considerations.</td>
<td></td>
</tr>
<tr>
<td>Week 13</td>
<td>SEMINAR</td>
<td>Addiction, alcohol, nicotine and illicit substance abuse</td>
<td></td>
</tr>
<tr>
<td>Week 14</td>
<td>SEMINAR</td>
<td>Behaviour change and psychotherapy.</td>
<td></td>
</tr>
</tbody>
</table>

Department:
Institute of Behavioral Sciences
Department of Psychology
NET Building, 20th floor
1089, Budapest, Nagyvárad tér 4.
Tel: 210-2953

Secretary: NET Building, 20th floor, Room-2005. tel: 2102930/ 56114.

Course Leader: Dr. Piroska Balog
NET 20th floor, room 2011
Tel: 210-2930/ 56403, e-mail: balopir@net.sote.hu
Further information: www.behsci.sote.hu

Seminar Teachers:
Dr. György Purebl: purgyor@net.sote.hu
Dr. László Harmat: laszloharmat@yahoo.com
Dr. András Szentkirályi: aszentkiralyi@gmail.com
Bernadett Babusa: bernadett.babusa@gmail.com
Gyöngyvér Salavecz: salgyon@net.sote.hu
Anikó Hazag: anikoha@gmail.com
Judit Pap: juditpap@gmail.com
Éva Pollák: evipoll@yahoo.com

Participation and making up for absences:
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. (The
maximum number of absences permitted: one absence from the lectures and two absences from
the seminars.) Content of the lectures may appear in the exams.

Certifying absence from lesson:
A telephone message to the secretary of the Institute. Secretary: NET Building, 20th floor,
Room-2005. Tel: 06-1-2102930/ 56114.

Semester requirements:
To participate on at least 75% of the total number of lessons is a prerequisite for getting the
signature. (The maximum number of absences permitted: one absence from the lectures and two
absences from the seminars.) 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.

Method of granting grade:
The course will conclude with a written FINAL EXAMINATION taken in the examination period.

Type of exam: FINAL EXAM

Exam requirement:
Content of the lectures and seminars (1st + 2nd semester)

Sign up for exam: Through the NEPTUN system.
Method of sign up: Through the NEPTUN system.

Certifying absence from exam:
Medical certificate presented to the course leader
Course Textbook:

Recommended text books:

MEDICAL ETHICS (BIOETHICS)
Institute of Behavioral Sciences
Tutor: Dr. József Kovács

Code: AOMAGOET_1A

Course Syllabus.
(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 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 (Practices)
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 (Lecture)
The basic principles of medical ethics.
The principle of respect for autonomy.
The principle of non-maleficence.
The principle of beneficience.
The principle of justice.
Arguments against „principalism“.

4. week (Practices)
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 (Lecture)
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 (Practices)
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 (Lecture)
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 (Practices)
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 (Lecture)
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.)

10. week (Practices)
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: antspeciesism.
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 (Lecture)
Definitions.
The sanctity of life versus the quality of life doctrine.
Is there any difference between active and passive euthanasia?
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 (Practices)
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 (Lecture)
Ethical questions of organ- and tissue transplantation.
Some problems of justice concerning kidney transplantation and chronic haemodialysis.
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 (Practices)
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:
Jozsef Kovacs, 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
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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
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
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. (One absence from the lectures and two absences from the practices is the maximum number permitted.) The student can make up for the absences in practices held at other times elsewhere. 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. Júlia Timár

Second semester

Lectures (1,5 hours) Practices (0,5 hour)

Curriculum:

Pharmacology and Pharmacotherapy (three semesters)

Topic of Pharmacology and Pharmacotherapy I (Year 3, 2011/2012, second semester):

Cancer chemotherapy– Basic pharmacology of cancer chemotherapeutic drugs. Drugs affecting the immune system.
Endocrine drugs. – Hypothalamic and pituitary hormones. Thyroid and antithyroid drugs. Calcium and agents that affect bone mineral homeostasis. Treatment of osteoporosis. Pancreatic hormones and antidiabetic drugs. Adrenocorticosteroids and andrenocortical antagonists.
Vitamins.

Code: AOFRMFMRM_1,2,3_A
Total credits for the 3 semesters: 10
Maximum number of absences is 25 percent of the practices in the semester

Absence: Medical certificate is accepted
There are no obligatory midterms

Semester requirements: The number of absences should not be more than 25 percent of the practices in the semester.
Successful exam from the topic of the preceding pharmacological course

Written test: scores.
Final exam consists of three parts. The grade will be decided after the oral part of the exam, taken into consideration the results of the preceding two parts (see below).

Exam types:
1st semester. Written test
2nd semester. Semi-final, oral
3rd semester. Final exam which consists of three parts. 1. Preceding exam from toxicology and prescription writing. 2. Written test from clinical pharmacology. 3. Oral exam.

Sign up for the exam: Registration has to be done through the NEPTUN system for the days set by the department until the number of limit.

How to modify the exam date: Through the NEPTUN system, as it allows

Justifying the exam absence: Medical certificate is accepted on the following three days

Textbook:
B. G. Katzung: Basic and Clinical Pharmacology, 10th edition

PROBLEM BASED MEDICAL PHYSIOLOGY
Course Director: Prof. Dr. László Hunyadi 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 Vármai 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.

OBLIGATORY ELECTIVE COURSES FOR MEDICINE I. II. III.
YEARS:
1. BASIC CELL BIOLOGY – Department of Genetics, Cell- and Immunobiology
Lecturers: Prof. Dr. András Falus
Dr. Valéria László

First semester
Credit: 2
Topics:
1. Eukaryotic cell organization.
5. Structure and function of endoplasmic reticulum.
7. Endocytosis. Intracellular digestion
8. Protein and lipid transport mechanisms in eukaryotic cell.
9. Mitochondria and peroxisomes
12. Cells in their social context.
13. Cell cycle and its regulation

**Important notes:** No possibility to make up of absences.

There are no mid-term exams.

Attendance of 75% of lectures is necessary 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:**

**Optional text:**
Alberts et al.: Molecular Biology of the Cell. (4th or 5th edition)

Lecture presentations and additional texts are available on the homepage: www.dgci.sote.hu

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2. BASIC GENETICS – Department of Genetics, Cell- and Immunobiology

Lecturers: **Prof. Dr. András Falus**

**Dr. Sára Tóth**

**Second semester**

**Credit:** 2

**Topics:**

1. Regulation of cell cycle, normal and atypical mitosis.
2. Meiosis and gametogenesis.
3. Organization of human genom.
5. Mutations and polymorphisms.
6. Cytogenetics, numerical and structural chromosomal aberrations.
7. Monogenic inheritance: autosomal dominant and recessive.
9. Role of sex in inheritance.
12. Relationship of genetics and environmental factors. Inheritance of complex traits.
13. Epigenetics.

**Important notes:** No possibility to make up of absences.

There are no mid-term exams.

Attendance of 75% of lectures is necessary for the end-term signature.

Requirement: practice grade based on the result of the written or oral exam.

(depending on the number of students).
COMPULSORY SUMMER PRACTICE
Internal Medicine - 1 month, 186 hours

The following information pertains to the compulsory summer practice in internal medicine. The practice is one-month duration, with a work requirement of 35 hours per week and a 24 hour on-call duty once every two weeks. At Semmelweis University the summer practice is offered in two blocks: July 1-31, or August 1-31. Registration for the practice will take place directly at the designated institutions. Proof of practices completed internationally must be submitted latest at the time of registration for the 4th year. The aims of the compulsory summer practice are as follows:

Introduction to the Department of Internal Medicine and to the hospital.
Examination of the patient with special emphasis on the physical examination with cardiovascular and pulmonary diseases.
Under the attending physician’s supervision, taking responsibility and caring for patients who are assigned to the student by the chief physician. This is done at the level of a 3rd year student, recognizing that the student has not had pharmacology yet.
Learning and practicing the most important medical interventions.
Medication administration and dosing (different techniques).
Taking the pulse, blood pressure and temperature as well as the measurement of body height and weight.
Learning and practicing venipuncture and the administration of injections (intramuscular, intravenous, subcutaneous injections, administration of insulin).
Familiarity with equipment (ECG, Doppler and/or oscilometry, monitors, oxygen supply according to availability at the different locations).
The assembly of intravenous catheters and practicing IV catheter insertion (under supervision).
Participation at transfusions, practicing blood group determination.
Introduction to patient documentation and subsequently the independent recording of patients’ data.
Establishing relationships with patients and their families with special emphasis on providing medical information to the patient and maintaining physician-patient confidentiality.
Practicing so-called small laboratory techniques, i.e. those basic laboratory techniques needed in bedside diagnosis (RBC/WBC count, urinalysis, use of dipsticks).
Participation in consultations, especially consultations of patients known to the student.
Participation in the hospital’s medical seminars and conferences.
On-call duties.

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!
Information on the rules applicable to the summer and 6th year internships abroad

The United States International Students’ Office contacted the Hungarian Accreditation Committee in relation to the continuous accreditation and review of foreign clinical practice positions. The Committee consulted the leaders of the University and, taking into consideration the opinion of the United States authorities, it will take into account the following criteria in selecting the foreign clinical practice positions and accepting the practice period spent abroad:

1. In the Member States of the European Union (and in Switzerland and Norway), clinical practice is accepted and recognised if it is earned at state-accredited university clinics or teaching hospitals. The legal ground for this is the mutual recognition of diplomas issued by accredited institutions.

2. Practice outside the European Union is only admissible at institutions where Semmelweis University has a bilateral study contract or if these places are being accredited by Semmelweis University.

At the present time, the following non-EU teaching institutions have a study contract in place with Semmelweis University:

1. University of California, Davis School Medicine, One Shields Avenue, Davis, California 95616, USA
2. State University of New York, School of Medicine and Biomedical Sciences, 501 Capen Hall, Buffalo, NY 14260-1600, USA
3. Saitama Medical School, Moroyama, Iruma-gun, Saitama 350-0495, Japan

In the future, internships spent elsewhere will be considered by the University as additional opportunities of gaining experience, but the student must also spend mandatory internships in the given periods in an appropriate Hungarian or EU-based clinical institution.

If a student wishes to spend their internship abroad, it is the student’s responsibility to obtain a valid accreditation certificate accepted at the given EU teaching institution and must submit it with the Dean’s approval.
# 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

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
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<tbody>
<tr>
<td>AOVNE263_1A</td>
<td>History of Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
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<td>AOVHUM084_1A</td>
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<td>AOVKIK102_1A</td>
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<tr>
<td>AOVGEN083_1A</td>
<td>Basic Cell Biology</td>
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<td>pract. mark</td>
<td>–</td>
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<td>AOVDEM156G1A</td>
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<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
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<tr>
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<td>Developmental Biology I.</td>
</tr>
<tr>
<td>AOVKIK102_1A</td>
<td>Clinical cardiovascular physiology</td>
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<td>AOVANT095_1A</td>
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<td>AOVGEN247_1A</td>
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# Elective Subjects

## 1st Semester

<table>
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<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
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<td>AOVGEN083_1A</td>
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<td>–</td>
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<td>AOSKIK151_1A</td>
<td>Cardiovascular and neurophysical measuring techniques</td>
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<td>AOVTDK158G1A</td>
<td>Work within the union of research students (TDK munka)</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>pract. mark</td>
<td>–</td>
</tr>
</tbody>
</table>

## 2nd Semester

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOSMMS174_1A</td>
<td>Traditional Chinese Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>basic module</td>
</tr>
<tr>
<td>AOVET101_1A</td>
<td>Problem based medical physiology</td>
<td>2,5</td>
<td>–</td>
<td>4</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
</tr>
<tr>
<td>AOVKIK010_1A</td>
<td>Clinical cardiovascular physiology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
</tr>
<tr>
<td>AOSGEN142_1A</td>
<td>Sexual genetics</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Anatomy, Cell, Histology and Embryology II./Anatomy, Histology and Embryology II.</td>
</tr>
<tr>
<td>AOVGEN247_1A</td>
<td>Basic Genetics</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOSMAG139_2A</td>
<td>Jewish Medical Ethics II.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOSGEN176_1A</td>
<td>Chemotaxis – Its significance in biology and clinical sciences</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Chemistry</td>
</tr>
<tr>
<td>AOVCSA248_1A</td>
<td>Medical Profession</td>
<td>0,67</td>
<td>1,33</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVTDK158H1A</td>
<td>Work within the union of research students (TDK munka)</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>pract. mark</td>
<td>a grade of 4 or 5 in the related subject</td>
</tr>
</tbody>
</table>

* 2nd TDK research and/or demonstrator activity
CLINICAL MODULE

Faculty of Medicine
4th year
<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOFRMFRM_2A</td>
<td>Pharmacology and Pharmacotherapy II.</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>semi-final</td>
<td>Pharmacology and Pharmacotherapy I.</td>
</tr>
<tr>
<td>ADKZKOZ_1A</td>
<td>Public Health I.</td>
<td>1</td>
<td>1.5</td>
<td>2</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AOKARKAR_1A</td>
<td>Cardiology</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
<td>Internal Medicine II.</td>
</tr>
<tr>
<td>AOKOZKOZ_1A</td>
<td>Internal Medicine I.</td>
<td>1</td>
<td>1.5</td>
<td>2</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AOBL1BEL13A1</td>
<td>Internal Medicine II.</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AOBL2BEL23A2</td>
<td></td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AOBL3BEL33A3</td>
<td></td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AOSB1SEB_1A</td>
<td>Surgery I.</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AOPULPUL_1A</td>
<td>Odontopedagogics (either)</td>
<td>1</td>
<td>1.5</td>
<td>2</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AORADRAD_1A</td>
<td>Radiology</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AOPULPUL_1A</td>
<td>Pulmonology (either in the 1st or the 2nd semester)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AOSZBFOG_1A</td>
<td>Oral Surgery and Dentistry</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AORTADRAD_1A</td>
<td></td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
</tbody>
</table>

**Total Number of Credit Points from Compulsory Subjects:** 26, 27, 29 or 30

**Obligatory elective / Elective subjects:** At least 4 credit points from the obligatory electives/electives must be collected in each semester. See the detailed list of them after the fifth year.

**Total Number of Credit Points from Obligatory elective / Elective Subjects:** 4
### Fourth Year

#### 8th semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOFRMFRM_3A</td>
<td>Pharmacology and Pharmacotherapy III.</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>final#</td>
<td>Pharmacology and Pharmacotherapy II.</td>
</tr>
<tr>
<td>AOKOZKOZ_2A</td>
<td>Public Health II.</td>
<td>1</td>
<td>1.5</td>
<td>3</td>
<td>semi-final#</td>
<td>Public Health I.</td>
</tr>
<tr>
<td>AOBEL1BEL2BEL3A</td>
<td>Internal Medicine IV.</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>semi-final</td>
<td>Internal Medicine III.</td>
</tr>
<tr>
<td>AOSB1SEB_2A</td>
<td>Surgery II.</td>
<td>2</td>
<td>2.5</td>
<td>4</td>
<td>pract.mark</td>
<td>Surgery I.</td>
</tr>
<tr>
<td>AOFULFUL_1A</td>
<td>Otorhinolaryngology (either)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final#</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOBORBOR_1A</td>
<td>Dermatology (or)</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>semi-final#</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOPULPUL_1A</td>
<td>Pulmonology (either in the 1st or in the 2nd semester)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
<td>Internal Medicine II.</td>
</tr>
<tr>
<td>AODOORTORT_1A</td>
<td>Orthopaedics</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final#</td>
<td>Surgery I.</td>
</tr>
</tbody>
</table>

**Total Number of Credit Points from Compulsory Subjects**  
21, 22, 24 or 25

**Obligatory elective / Elective subjects:** At least 4 credit points from the obligatory electives/electives must be collected in each semester. See the detailed list of them after the fifth year.

**Total Number of Credit Points from Obligatory elective / Elective Subjects**  
4

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1. 1st Department of Internal Medicine  
2. 2nd Department of Internal Medicine  
3. 3rd Department of Internal Medicine  
# The grade influences the qualification of the Diploma
LIST OF TEXTBOOKS


Recommended textbooks:

2. Lynn S. Bickley: Bates’ Guide to Physical examination and history taking
3. Tulassa Z. (Ed): A belgyógyászat alapjai (I.-II.)
4. Internet links for Internal Medicine
14. Fitzpatrick’s Dermatology in General Medicine
   Editor: Freedberg, Irwin M.; Eisen, Arthur Z.; Wolff, Klaus; Austen, K. Frank; Goldsmith, Lowell A.; Katz, Stephen I.
15. full-text online access:
16. Shimizu’s Textbook of Dermatology – accessible online also
17 Clinical Dermatology

18 Dermatology
   Editor: Otto Braun-Falco, Gerd Plewig, Helmut H. Wolff, Walter Burgdorf
   Publisher: Springer Verlag; 3 edition (November 2009)


PHARMACOLOGY AND PHARMACOTHERAPY

Tutor: Dr. Júlia Timár

First Semester

Lectures (1.5 hours)  Practices (2.5 hours)

Code: AOFRMFRM_1,2,3_A
Total credits for the 3 semesters: 10

Curriculum:

Pharmacology and Pharmacotherapy (three semesters)

Topic of Pharmacology and Pharmacotherapy II (Year 4, 2011/2012, first semester):

Introduction to the neurotransmission
The autonomic nervous system – Pharmacology of adrenergic and cholinergic transmission.
Pharmacology of the central nervous system – Introduction to the pharmacology of CNS drugs.
General anesthetics. Drugs of abuse. Sedative-hypnotic and anxiolytic drugs. Antipsychotics.
Centrally acting skeletal muscle relaxants (spasmolytics). Pharmacological management of neurodegenerative disorders. Drugs used to treat migraine.
Clinical pharmacology of psychiatric and neurological diseases.
Pharmacology of peripheral nerves and muscles. – Local anesthetics. Skeletal muscle relaxants.
Drugs acting on the smooth muscle. Smooth muscle relaxants.
Pharmacology and clinical pharmacology of infections caused by living pathogens – Antiseptics.
Antimicrobial, antiviral, antifungal, antiprotozoal and anthelmintic agents.
Prescription writing.

Maximum number of absences is 25 percent of the practices in the semester

Absence justification: Medical certificate is accepted

There are no obligatory midterms

Semester requirements: The number of absences should not be more than 25 percent of the practices in the semester.
Successful exam from the topic of the preceding pharmacological course

Written test: scores.
Final exam consists of three parts. The grade will be decided after the oral part of the exam, taken into consideration the results of the preceding two parts (see below).

Exam types:
1st semester. Written test
2nd semester. Semi-final, oral
3rd semester. Final exam which consists of three parts. 1. Preceding exam from toxicology and prescription writing, 2. Written test from clinical pharmacology. 3. Oral exam.
Sign up for the exam: Registration has to be done through the NEPTUN system for the days set by the department until the number of limit.

How to modify the exam date: Through the NEPTUN system, as it allows

Justifying the exam absence: Medical certificate is accepted on the following three days


PHARMACOLOGY AND PHARMACOTHERAPY

Second Semester

Lectures (2 hours) Practices (2 hours)

Code: AOFRMFRM_1,2,3_A

Curriculum:

Pharmacology and Pharmacotherapy (three semesters)

Topic of Pharmacology and Pharmacotherapy III (Year 4, 2011/2012, second semester):


Immunopharmacology

Treatment strategy of rheumatoid arthritis
Clinical pharmacology of diabetes mellitus. Metabolic syndrome.
Toxicology

Absence: Maximum number of absences is 25 percent of the practices in the semester

Absence justification: Medical certificate is accepted

There are no obligatory midterms
Semester requirements:
The number of absences should not be more than 25 percent of the practices in the semester. Successful exam from the topic of the preceding pharmacological course

Written test: scores.
Final exam consists of three parts. The grade will be decided after the oral part of the exam, taken into consideration the results of the preceding two parts (see below).

Exam types:
1st semester. Written test
2nd semester. Semi-final, oral
3rd semester. Final exam which consists of three parts. 1. Preceding exam from toxicology and prescription writing. 2. Written test from clinical pharmacology. 3. Oral exam.

Sign up for the exam: Registration has to be done through the NEPTUN system for the days set by the department until the number of limit.

How to modify the exam date: Through the NEPTUN system, as it allows

Justifying the exam absence: Medical certificate is accepted on the following three days

PUBLIC HEALTH
Institute: Department of Public Health
Location: NET building, 1089 Budapest, Nagyvárad tér 4., 13th, 14th, 19th and 21st floors.
Academic coordinator for EM4 Public Health:
Dr. András Terebessy
NET 13th floor, room 1314
Tel.: 061 210-2930, extension 56313
Email: terand@net.sote.hu

Course structure:
• Public Health I. (AOKKOZKOZ-1A) – first semester (2 credits)
• Public Health II. (AOKKOZKOZ-2A) – second semester (3 credits)

Course topics:
• Public Health I.:
  • History of public health
  • Basic demographic and epidemiological methods
  • Environmental health
  • Occupational health
  • Health policy
  • Health economics
• Public Health II.:
  • Epidemiology and prevention of communicable diseases
  • Epidemiology and prevention of non-communicable diseases
  • Nutrition and food-hygiene
  • Maternal and child health
  • School and youth health
  • Health promotion in the elderly
  • Public mental health

Required course material:
• Materials presented and discussed at lectures and practicals

Other recommended sources:
• Acute Communicable Disease Control Manual (B-73), 2006 revision. Los Angeles County Department of Public Health. Freely available at:
  • http://www.lapublichealth.org/acd/procs/b73/b73index.htm
• Information at numerous websites which are partly listed at the back of the required textbook (An Overview of Public Health) and also on the department’s website (http://www.kozegeszsegtan.sote.hu), or are announced separately during lectures and practicals.
Lectures:
One 45 minute lecture every week, 14 lectures per semester.

Practicals:
One 70 minute practical every week, 14 practicals per semester.

Attendance:
Attendance at both lectures and practicals is compulsory and will be recorded on each occasion. University regulations allow for a maximum of three absences during a semester from both lectures and practicals. There is a possibility to make up for a missed practical by attending the same practical of another group. Students with four or more absences at the end of the semester will not be able to take the semi-final exam, and will have to retake the course in their successive academic year. Students who can provide valid medical documentation that they were ill or received medical treatment during a missed lecture or practical with which they would exceed the allowed amount of absences will not be counted as absent on those occasions.

Practical groups:
In order to facilitate productive class work, the department is committed to keeping practical group size below the limit of 15 students / group. Students are required to comply with this rule as it is both in their own and in the department’s best interest. If a student would like to change groups during the semester, she/he should submit a formal, written request to the department’s academic coordinator that has been signed by the current and requested practical instructor.

In-course assessment:
At the end of three randomly chosen lectures there will be short, multiple choice quizzes with a few questions on the lecture’s material. The points earned on these quizzes will augment students’ score on the semi-final exam. At practicals students will be given three in-class or take-home exercises on major topics of the semester’s material. Each exercise will receive an “unsatisfactory”, “satisfactory” or “excellent” mark. Students are required to earn at least a satisfactory mark on all exercises in order to pass the semester.

Semi-final exam:
At the end of each semester, students will be given a written test, which will be graded on a scale of 1 to 5. Students who fail the test or wish to earn a better grade have to take an oral exam. Exam dates and oral exam topics will be posted on the department’s website (see above) one month prior to the beginning of exam period. Students can sign up for exams via the NEPTUN system.

Academic administration (index matters, submission of assignments... etc.)
Mrs. Hlatky Sándorné (Hédi)
Mrs. Judit Németh
NET, 13th floor, room 1306
Phone: +36 1 210 2930 / extension 56178
Office hours: Monday-Friday 9-12 p.m., 1-3 p.m

Students are strongly advised to check the NEPTUN system and the department’s website regularly for the latest updates on course-related information.
CARDIOLOGY
Tutor: Dr. György Bárczi

First Semester

Lectures (1 hour per week)

1. Introduction. Differential diagnosis in acute cardiac care
   History, epidemiology
   Acute coronary syndrome, pulmonary embolism, aortic dissection
2. High blood pressure and the heart
3. Ischaemic heart disease I.
   Atherosclerosis
   Invasive/non invasive tests
   Stable coronary artery disease
4. Ischaemic heart disease II.
   Acute coronary syndrome
5. “Cardiology Day”
   Live demonstrations, interactive lectures, resuscitation practice, etc.
6. Heart failure
   Cardiomyopathies
7. Arrhythmias I.
   Supraventricular arrhythmias
8. 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 secondary prevention
14. Interactive case presentations

Practices

(ward rounds, 2 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 – ischemic 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://cvc-oktatas.blogspot.com/

INTERNAL MEDICINE
1st Dept. of Internal Medicine Tutors: Prof. Dr. Ferenc Szalay, Dr. Margit Abonyi
3rd Dept. of Internal Medicine Tutor: Dr. Katalin Keltai

First Semester

The patient presenting with urinary symptoms.
Functional and morphological assessment of the kidney.
Glomerulopathies: the clinical syndromes; histology; possibilities of treatment.
Tubulopathies. Interstitial nephritis.
Acute and chronic renal failure. Diagnosis and treatment. Dialysis treatment, kidney transplantation.
Acute volume and electrolyte disorders.
Systemic lupus erythematoses (SLE).
Autoimmune haematological diseases.
Rheumatoid arthritis
Autoimmune vasculitis. Periarteritis nodosa, Henoch-Schönlein purpura, Wegener’s granulomatosis, giant cell arteritis, temporal arteritis, Takayasu arteritis, Buerger disease.
Dermatomyositis, polymyositis, polymyalgia rheumatica, fibromyalgia. Osteoarthritis.
Autoimmune hepatitis and pancreatitis.
Competition – Written test

INTERNAL MEDICINE

Second semester

Cardiology. Diagnostic and therapeutic options of acute coronary syndrome, heart failure, valve disorders, arrhythmias. Cardiological interventions.

Lectures: Monday 8.00-9.40

Lecture Hall of 1st Department of Medicine, 1083 Budapest, Korányi S. u. 2A
Title of the lecture

Introduction. Epidemiology, etiology and pathomechanism of cardiac diseases

Diagnosis of cardiac diseases.

Acute coronary syndrome. Angina. Myocardial infarction


Sudden cardiac death.

Disorders of the heart valves

Inflammation and infection of the heart. Endocarditis, myocarditis, pericarditis.

Arrhythmias

Disorders of the electrical system of the heart. Cardiac electrophysiology.

Cardiac pharmaceutical agents

Procedures done for coronary diseases. Devices used in cardiology; pacemaker, defibrillator, devices used to maintain blood pressure.

Heart surgery, heart transplantation. Primary tumors of the heart.


Competition – Written test

NOTE: 3 absences are allowed with the need of replacement.

SURGERY

I. Department of Surgery

II. Department of Surgery

Department of Transplantation and Surgery

Tutors: Dr. Péter Kokas

Dr. Bíborka Bereczky

Dr. Gábor Telkes

First Semester

Lectures (2 hours per week)

History of Surgery. - Developments. Recent trends and perspectives.

General Anesthesia.

The resuscitation. (CPR). The Shock.

Fluid, electrolyte 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 haemostasis.

Plastic surgery.
Surgical oncology.
Tissue and organ transplantation.
Consultation. Questions/Answers.

Practice (2 hours per week)

SURGERY
Second Semester

Lectures (2 hours per week)
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 choleliathiasys 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 (2,5 hours per week)
OTORHINOLARYNGOLOGY, HEAD AND NECK SURGERY

Tutor: Dr. László Noszék

First Semester – half class
Second Semester – half class

Lecture
(1 hour per week)

The role of otorhinolaryngology in medicine.
Clinical anatomy of the ear. Diseases of the external ear.
Acute and chronic otitis media I. (etiology, diagnosis, pathology).
Acute and chronic otitis media II. (Complications and therapy)
Types of hearing losses, etiology. Audiological diagnostic methods.
Surgical management of hearing losses.
Otosclerosis. Cochlear implant.
Physiology and lesions of the vestibular system.
Neurological and ophthalmological aspects of ear diseases. Prevention and rehabilitation.
Clinical anatomy and physiology of the nose and paranasal sinuses. Nasal obstruction.
Epistaxis.
Infections and tumors of the nose and the paranasal sinuses. Therapeutical possibilities.
Clinical anatomy, physiology and diseases of the pharynx.
Diseases of the tonsils and their complications.
Indications and complications of the tonsillectomy.
Anatomy and physiology of the larynx. Disorders.
Infections of the larynx and their management.
Dyspnoe and suffocation with upper airway origin.
Conicotomy and tracheotomy.
Tumors of the larynx and their therapy.
Rehabilitation of patients after total laryngectomy.
Diseases of the trachea and the oesophagus.
Foreign bodies. Medial and lateral neck masses.

Practice (2 hours per week)

Clinical examinations.
Diagnostical methods of the ear.
Evaluation of different types of perforations of the tympanic membrane. Cadaver bone practice.
Routine audiology. Uning fork practice.
Operating theatre. Video.
Examination of the vestibular system. ENG.
CCPG.
Evaluation of different otological cases.
Anterior and posterior rhinoscopy. Clinical management of the epistaxis.
X-ray photos of the paranasal sinuses.
Operating theatre. Video.
Advanced examination of the pharynx.
Directoscopy. fiberoscopy.
Peritonsillar abscess. Dangers of the tonsillectomy.
Tonsillectomy. Operating theatre.
Direct and Indirect of the voice.
Laryngoscopy. Videostroboscopy.
Emergency management of suffocation.
Oesophagoscopy, bronchoscopy.
Case reports. Palpation and investigation of patients with different neck masses.
ORAL SURGERY AND DENTISTRY
Tutor: Dr. Zsolt Németh

First Semester

Lectures (2 hours per week)
Introduction to Oral and Maxillofacial Surgery.
Benign tumors of the maxillofacial region
Haemangiomas of the maxillofacial region. Salivary glands
Malignant tumors of the maxillofacial region
Maxillofacial traumatology
Dental anesthesia. Extraction of the teeth General anesthesia in the maxillofacial surgery
Periodontal diseases. Oral medicine
Infections of dental origin
Minor oral surgery Dentoalveolar surgery
Dental reconstructions. Prosthodontics
Biomaterials in the maxillofacial surgery
Developmental anomalies of the maxillofacial region
Den to-maxillofacial radiology
Computer tomography (CT) in the maxillofacial surgery
Pediatric dentistry and orthodontics
Cariology and endodontics
Consultation

Note: The maximum number of absences in a semester is 3.
More than 3 absences invalidate the semester. Final examination.

DERMATOLOGY
Department of Dermatology-Venerology and Dermatooncology
Lecturer: Prof. Dr. Sarolta KÁRPÁTI
Tutor: Dr. Ágnes I. OTTÓ

Credits: 4

First Semester – half class
Second Semester – half class

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.
Psoriasis. Skin symptoms of autoimmune diseases. Skin symptoms of vascular diseases.
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.

End semester 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

Tutor: Dr. Mártá Orosz

Second semester

Lectures (1 hour per week)

Invasive and noninvasive diagnostic techniques of the lung diseases.
i.e. Fiberoptic bronchoscopy, lung biopsies, B.A.L., radiology, CT-scan, radioisotope scanning, ultrasound, lung function tests, immunological examinations.
The lung: anatomy and function (inclusive non-respiratory)
Chronic Obstructive Pulmonary Diseases
(Small Airway Diseases except: bronchial asthma)
Epidemiology, etiology, diagnosis, clinical picture, therapy.
Emphysema (clinical picture, diagnosis, laboratory findings, Alpha-1 antitrypsin deficiency)
Bronchial asthma (epidemiology, etiology, pathogenesis, diagnosis, clinical picture)
Allergic rhinitis
Bronchial asthma, allergic rhinitis (treatment)
Follow-up dispensation.
Role of the I.C.U. (Intensive Care Unit) in pulmonology.
(Respiratory failures, mechanical ventilation, ARDS.)
Pneumonias (classification, etiology, causative agents, clinical features, diagnosis, therapy)
 Opportunistic pathogens, AIDS and the lung, pulmonary mycotic infections
Tumors in the lung (statistics, etiology, classification, histology, clinical features, diagnosis, management, primary and metastatic forms)
Pulmonary embolism and pulmonary hypertension (clinical manifestations, origin, prevention, therapy, recurrent form)
Occupational lung diseases (Air pollution and the lung)
Immune diseases of the lung -Interstitial lung diseases
Sarcoidosis, Goodpasture-syndrome, hypersensitive pneumonitis, lung involvement in collagen vascular disease.
Diseases of the mediastinum and pleura.
Infrequent pulmonary diseases with uncertain etiology.

Consultation

Practises (2 hours per week)
In topics of lung function tests and blood gas analyses, allergology and clinical immunology, laboratory examinations, furthermore intensive therapy, rotary system has been planned. On further trainings patient interview, physical examination, X-ray picture visitation and discussion of the actual cases will be organized with active participation of all students. All of the main pulmonological diseases will be analyzed.

ORTHOPEDICS
Tutor: Dr. Gergely Holnapy

Second Semester

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.
Schuermann’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).
Deformities and diseases of the neck and the upper extremity.
Osteoarthritis of the hip. Etiology, pathology, clinical and radiological symptoms. Methods of conservative and operative Treatment.

Consultation.

ORTHOPEDICS

Practices
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, spondyloisthesis. Demonstration of Roentgenograms.
Examination of scoliotic patients. Preparation of plaster and other corsets.
Examination of patients. Tuberculous spondylitis. Demonstration of Roentgenograms.
Examination of patients with lumbago, ischias syndrome, spondylolysis, spondyloisthesis.
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.
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, periartthritis 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.

RADIOLOGY
Dept. of Radiology and Oncotherapy
www.radi.sote.hu
Tutor: Dr. Attila Kollár

First Semester

Lectures (2 hours) Practices (2 hours)

Code: A0RADRAD_1A
Credits: 4
Course Director: Dr. Viktor Bérczi

Course topics (order of lectures could change)
Practices
(Must-see-images: image collection on our website)

Semester requirements
3 or less absences (more than 3 invalidate the course).
Successful midterm test exam (on 8th or 9th week; supplementary test 2 weeks later)
Appreciated work on practices (assessment by teacher)

ELECTIVE SUBJECTS

Detailed programs see in the 5th year of Medicine!

COMPULSORY SUMMER PRACTICE

General Surgery - 1 month, 186 hours

Students are required to take part in the daily morning conference.

Students should participate in the daily rounds, first attending and later taking part in the examination of patients under the supervision of qualified surgeons. The students are also required to participate in the evaluation of the findings. Under supervision of either interns or qualified surgeons, students have to gain practice in patient documentation.

Students are required to take part in the pre- and postoperative care and treatment of the patients.

Students should participate as second assistants in simple and moderately complicated operations. They are expected to stay on night duty upon request, except on weekends. During night duty, students are under the supervision of either the consultant or an authorized surgeon and take part in the evaluation of all problems caused by either acute or chronic diseases.

Students are required to participate in the daily outpatient care. They are required to take part in all consultations organized for 4th year medical students.

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!
Information on the rules applicable to the summer and 6th year internships abroad

The United States International Students’ Office contacted the Hungarian Accreditation Committee in relation to the continuous accreditation and review of foreign clinical practice positions. The Committee consulted the leaders of the University and, taking into consideration the opinion of the United States authorities, it will take into account the following criteria in selecting the foreign clinical practice positions and accepting the practice period spent abroad:

1. In the Member States of the European Union (and in Switzerland and Norway), clinical practice is accepted and recognised if it is earned at state-accredited university clinics or teaching hospitals. The legal ground for this is the mutual recognition of diplomas issued by accredited institutions.

2. Practice outside the European Union is only admissible at institutions where Semmelweis University has a bilateral study contract or if these places are being accredited by Semmelweis University.

At the present time, the following non-EU teaching institutions have a study contract in place with Semmelweis University:

1. University of California, Davis School Medicine, One Shields Avenue, Davis, California 95616, USA
2. State University of New York, School of Medicine and Biomedical Sciences, 501 Capen Hall, Buffalo, NY 14260-1600, USA
3. Saitama Medical School, Moroyama, Iruma-gun, Saitama 350-0495, Japan

In the future, internships spent elsewhere will be considered by the University as additional opportunities of gaining experience, but the student must also spend mandatory internships in the given periods in an appropriate Hungarian or EU-based clinical institution.

If a student wishes to spend their internship abroad, it is the student’s responsibility to obtain a valid accreditation certificate accepted at the given EU teaching institution and must submit it with the Dean’s approval.
## STUDY PROGRAMME

### Fifth Year

#### 9th semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOBL1BEL15A</td>
<td>Internal Medicine V.</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>semi-final</td>
<td>Internal Medicine IV.</td>
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<tr>
<td>AOBL2BEL25A</td>
<td>Surgery III.</td>
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<td>1</td>
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<td>Surgery II.</td>
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<td>Obstetrics and Gynecology I.</td>
<td>2</td>
<td>–</td>
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<td>pract. mark</td>
<td>Surgery II.</td>
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<tr>
<td>AOY1GYE11A</td>
<td>Paediatrics I.</td>
<td>2</td>
<td>3</td>
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<tr>
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<tr>
<td>AONEUNEU_1A</td>
<td>Neurology I.</td>
<td>2</td>
<td>1.5</td>
<td>3</td>
<td>pract. mark</td>
<td>Internal Medicine IV.</td>
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<tr>
<td>AOIGSIGS_1A</td>
<td>Forensic Medicine I.</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>AOANEANE_1A</td>
<td>Anaesthesiology and Intensive Therapy</td>
<td>1.5</td>
<td>1</td>
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<td>Surgery II.</td>
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<tr>
<td>AOTRATRA_1A</td>
<td>Traumatology</td>
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<td>2</td>
<td>4</td>
<td>semi-final</td>
<td>Surgery I.</td>
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<tr>
<td>AOSZ1SZE_1A</td>
<td>Ophthalmology</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>semi-final#</td>
<td>Surgery I.</td>
</tr>
</tbody>
</table>

**Total Number of Credit Points from Compulsory Subjects:** 31

---

**Obligatory elective / Elective subjects:** At least 4 credit points from the obligatory electives/electives must be collected in each semester. See the detailed list of them after the fifth year.

**Total Number of Credit Points from Obligatory elective / Elective subjects:** 4

---

1. 1st Department of Internal Medicine
2. 2nd Department of Internal Medicine
3. 3rd Department of Internal Medicine
4. 1st Department of Pediatrics
5. 2nd Department of Pediatrics

# The grade influences the qualification of the Diploma
<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Pricals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
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<td>1 week/sem.</td>
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<td>2</td>
<td>3</td>
<td>5</td>
<td>semi-final</td>
<td>Paediatrics I.</td>
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<tr>
<td>AOGY2GYE2A</td>
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<td>2</td>
<td>4</td>
<td>pract. mark</td>
<td>Psychiatry I.</td>
</tr>
<tr>
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<td>2</td>
<td>1.5</td>
<td>4</td>
<td>semi-final</td>
<td>Neurology I.</td>
</tr>
<tr>
<td>AOGS1GIS2A</td>
<td>Forensic Medicine II.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final#</td>
<td>Forensic Medicine I.</td>
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<tr>
<td>ADANE5SO1A</td>
<td>Emergency Medicine and Prehospital Emergency Care</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>Internal Medicine V.</td>
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<tr>
<td>AORDURO1A</td>
<td>Urology</td>
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<td>2.5</td>
<td>3</td>
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<td>Pre-clinical module</td>
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<td>2</td>
<td>0</td>
<td>2</td>
<td>pract. mark</td>
<td>Internal Medicine V.</td>
</tr>
</tbody>
</table>

Total Number of Credit Points from Compulsory Subjects: 31

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Total Number of Credit Points from Obligatory elective / Elective subjects: 4

1 1st Department of Internal Medicine
2 2nd Department of Internal Medicine
3 3rd Department of Internal Medicine
4 1st Department of Obstetrics and Gynecology
5 2nd Department of Obstetrics and Gynecology
6 1st Department of Pediatrics
7 2nd Department of Pediatrics
# The grade influences the qualification of the Diploma
LIST OF TEXTBOOKS

12. Lindsay, Bone, Callender: Neurology and Neurosurgery Illustrated. Churchill Livingstone

Recommended textbooks:

4. Silver, Kempe Byn and Fulginiti’s Handbook of Pediatrics. Appleton and Lange. ISSN 0440-192
10. Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers
INTERNAL MEDICINE

1st Dept. of Internal Medicine Tutor: Prof. Dr. Ferenc Szalay, Dr. Margit Abonyi
3rd Dept. of Internal Medicine Tutor: Dr. Katalin Keltai

First Semester

Lectures with case presentations

The patient presenting with urinary symptoms.
Functional and morphological assessment of the kidney.
Glomerulopathies: the clinical syndromes.
Glomerulopathies: histology; possibilities of treatment.
Renal involvement in systemic diseases.
Vascular diseases of the kidney.
Tubulopathies. Interstitial nephritis.
Chronic pyelonephritis. Urinary tract infection.
Uremia. Treatment of chronic renal failure.
Cystic diseases of the kidney. Renal neoplasms.
The patient with fever of unknown origin (FUO). Nosocomial infections.
Viral infections: herpes viruses of humans, neurotropic viruses, systemic viral diseases.
Rickettsioses. Nonsexually transmitted treponematoses.
Mycoses: candidiasis, aspergillosis.
Helminthic diseases.
Protozoal diseases: amoebiasis, giardiasis.
Protozoal diseases: malaria, leishmaniasis, pneumocystosis, toxoplamosis, trypanosomiasis.
Principles of antibiotic treatment.

INTERNAL MEDICINE

Second Semester

Lectures with case presentations

Infections of the head, neck and lower respiratory tract.
Infections of the heart and vessels. Infective endocarditis.
Phlebitis.
Differential diagnosis of diarrhea. Food poisoning.
Acute infectious diarrhea. IBD.
AIDS syndrome and other HIV related disorders.
Infections involving bones and joints. Differential diagnosis of musculoskeletal and connective tissue diseases.
Sexually transmitted diseases.
Lectures with case presentations
Poisoning II. Treatment of common specific poisoning.
Differential diagnosis of thoracic pain.
Differential diagnosis of abdominal pain.
Differential diagnosis of jaundice.
Alcohol related diseases.
Disorders due to physical agents. Cold, heat, burns, electrical shock, drowning.
Geriatic medicine and the elderly patient.
The paraneoplastic syndromes. Oncologic emergencies.
Primary and systemic cancer therapy.

Surgery
Tutor: Dr. Péter Kokas

First Semester

Lectures (2 hours every second week)

NO LECTURE !!!
The surgery of hernia*
The surgery of endocrin organs*
No lecture
The surgery of breast*
No lecture
Vascular surgery. (To be announced later)**
No lecture
Cardic surgery (To be announced later)**
No lecture
Thorax and pulmonary surgery***
No lecture
The minimal invasive surgery (MIC) and the surgical perspectives*
No lecture
Consultation. - Questions/Answers*

Site of lectures:

Lecture room of 1st Department of Surgery (Előadó terem 1. Seb. Klinika)*
Lecture room of Dept. Of Cardio-Vascular Surgery (Szív és Érseb. K.)**
XII., Városmajor u. 68.)
Lecture room of Dept. Of Thoraco-Pulmonology (National Korányi Inst.***

Time:

Every second week on MONDAY (EXCEPTION: ONLY the very first lecture will be held on the second Monday

Site of practice: The venue is same as on the lecture will be held.
OBSTETRICS AND GYNECOLOGY

First Semester

Lectures (2 hours/week) held at the 1st Department

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.
Abnormalities of pregnancy.
Abnormalities of labor and delivery.
Monitoring of the fetus.
Premature disorders in pregnancy.
Premature delivery. Intrauterine growth retardation (IUGR).
Neonatology.
Twin pregnancy. Operative delivery.
Normal and abnormal puerperium.
Major issues in current obstetrics.

OBSTETRICS AND GYNECOLOGY

Second Semester

The one week internship is to be completed at the 1st and at the 2nd Department (the year is divided into two parts).

Lectures (2 hours/week) held at the 1st Department

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. Polycystic 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. Erzsébet Horváth
2nd Dept. Tutor: Dr. Péter Hauser

LECTURES IN PAEDIATRICS FOR 5th GRADE MEDICAL STUDENTS

First Semester

Location: I. Department of Pediatrics, Budapest, Bokay J. u. 54. I. floor

Subject
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
SIDS
Seizures during infancy and childhood.
Status epilepticus
Congenital heart diseases
Disturbances of the lipid metabolism

PEDIATRICS

First Semester

Practice
The Pediatric Interview and History
The Pediatric Physical Examination
The Status of the Physical Findings
The Growth and Development of Infants
The Growth and Development of Children
Nutrition of Infants
Nutrition of Toddlers
Nutrition of Children
Genetic disorders and genetic counseling
Diagnostic Procedures (venipuncture, urine collection, gastric aspiration etc.)
Therapeutic procedures (administration of fluids, intravenous route, spinal tap, etc.)
Reanimation, monitoring of the critically ill child
EEG
ECG
X-ray

PEDIATRICS

Second Semester

Location: I. Department of Pediatrics, Budapest, Bokay J. u. 54. I. floor

TOPIC

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.

PEDIATRICS

Second Semester

Practice

ECHO
Fever
Vomiting
Abdominal Pain diff. dg.
Diarhea
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.

**PSYCHIATRY**
Tutor: Dr. Imola Seres

**First Semester**

**Lectures**

Introductory lecture, curriculum and exams
Genes and environment interaction
Anxiety disorders: diagnosis and treatment
Affective disorders: diagnosis I
Affective disorders: diagnosis II
Alcohol abuse and dependence diagnosis and treatment
Psychosomatic disorders: diagnosis and treatment
Schizophrenia: diagnosis
Somatoform disorders, Somatisation and conversion disorders, hypochondriasis: diagnosis and their psychotherapy
Personality disorders: diagnosis and treatment
Substance abuse diagnosis and treatment
Geriatric disorders: diagnosis and treatment
Organic mental disorders: diagnosis and treatment
Classification of mental disorders

**First Semester**

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.

<table>
<thead>
<tr>
<th>Week</th>
<th>Practice</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>The psychiatric examination</td>
</tr>
<tr>
<td>2–5</td>
<td>Neurotic, stress-related and somatoform disorders</td>
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<tr>
<td>6</td>
<td>Eating disorders</td>
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<tr>
<td>7–10</td>
<td>Mood (affective) disorders (incl. suicide)</td>
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<tr>
<td>11–14</td>
<td>Organic mental disorders (incl. mental retardation)</td>
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</tbody>
</table>
Second Semester

Lectures

Child and adolescent psychiatry
Biochemical theories of mental disorders
Other psychotic disorders: diagnosis
Suicide and suicidal behaviour
Emergency psychiatry
Antipsychotic therapies
Anxiolytic therapies
Sleep disorders and their treatment
Family therapy, autogen training, hypnosis
Behaviour and cognitive therapies
Other psychotherapies
Crisis intervention and community psychiatry
Aftercare and rehabilitation of psychiatric patients
Consultation and liaison psychiatry

Second Semester

Week Practice
1–4 Schizophrenia, schizotypal and delusional disorders
5–6 Personality disorders
7–8 Alcohol/substance abuse and dependency
9 Gerontopsychiatry
10 Clinical psychology in psychiatry
11–12 Emergency psychiatry/crisis intervention
13 Cognitive and behavior therapy
14 Consultation /Questions and answers/; one/semester

FORENSIC MEDICINE

Tutor: Dr. Márta Hubay

First Semester

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

Second Semester

Lectures
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

FORENSIC MEDICINE

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 topics:

First Semester

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.
Second Semester

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. Péter Nyirády

Second Semester

The aim of the education:
Our aim is to teach our students for the basic knowledge the most important differential diagnostic steps, physical examination of urology and 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

Practice:
Taken at the Clinical Department of Urology after the lectures and requires two hours. During the practices all parts of urology are covered and as many physical examinations and procedures are showed, later done as possible.

Absence from the course: Only an official medical certificate is accepted.
Absence from the exam: Only an official medical certificate is accepted or it is evaluated individually.
**End-semester signature:** By the end of the semester exam has to be taken which is accepted if the student absolved all the practices except maximum 3 practices.

**Exam:** There is an oral exam. The result is depending on the practice score given by the tutor of the student and also on the examiner’s opinion. **Exam sign up:** Through the Neptun system. Modifying must be done minimum 24 hours before the date of the planned exam through the Neptun system.

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**ANAESTHESIOLOGY AND INTENSIVE THERAPY**

*Tutor: Dr. András Lorx*

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**First Semester**

**Lectures and Practice**

- Short history of Anesthesiology
- The pharmacology of Anesthesiology
  - a) Intravenous anesthetics
  - b) Volatile anesthetic agents
  - c) Opioid and other analgetics
  - d) Muscle relaxant drugs
  - e) Local anesthetics
  - f) Other drugs of importance for Anesthesia
- Anesthetic instruments
  - a) The anesthetic machine
  - b) Anesthetic systems
  - c) Checking of the anesthetic systems and the common faults
  - d) Instruments of monitoring
- Preoperative assessments
  - a) Functional loading of the operation
  - b) Preoperative examination, investigations
  - c) Estimation of the functional reserve of the patient
  - d) The anesthetic significance of the coexisting diseases
    - cardiac diseases
    - vascular diseases (including hypertension)
    - pulmonary diseases
    - neurological diseases (including head injury)
    - hepatic diseases
    - renal diseases
    - hematologic diseases
    - endocrine diseases
    - disorders of the fluid, ionic and acid/base balance
    - malignancies
    - infections
    - the polytraumatized patients
    - other conditions:
      - ...advanced age
      - ...neonates, infants
...pregnancy
...morbid obesity
...rare diseases

e) Preoperative therapy
f) Premedication
g) Choice of the method of Anesthesia

Lectures and Practice

The practical conduct of general Anesthesia

a) Preparation
b) Induction of Anesthesia
c) Maintenance of the patient airway
d) Intraoperative fluid management
e) Maintenance of the Anesthesia
f) Termination of the Anesthesia, recovery
g) Anesthetic complications

Regional anesthetic techniques

Pain relief

a) Acute pain (including postoperative pain)
b) Chronic pain

Postoperative complications

Emergency and critical care

Primary and advanced cardiopulmonary life support
Techniques and procedures of critical care

a) Techniques of airway maintenance
b) Techniques of intravenous access
c) Evaluation of the fluid, ionic and acid/base balance
d) Principles of fluid management
e) Transfusion, blood products
f) Principles of enteral and parenteral nutrition

g) Equipment and techniques of ventilatory therapy
h) Techniques of support and replacement of renal function
i) Critical care monitoring
j) Invasive techniques of critical care
k) Special pharmacology of critical care
   – inotropic drugs
   – use of antibiotics
   – anticoagulation
   – steroid treatment
   – other drugs
Lectures and Practice

Diseases requiring intensive therapy
a) Respiratory failure
   acute (including ARDS and asthmatic attack)
   chronic
b) Cardiovascular diseases
   acute myocardial infarction
   severe dysrhythmias
   heart failure
   thrombotic and embolic diseases
   aneurysms
c) Shock states
   hypovolaemic shock
   cardiogenic shock
   septic and toxic shock states
   anaphylactic reactions
d) Acute renal failure
e) Acute hepatic failure
f) Severe hematologic disorders (including DIC)
g) Gastrointestinal diseases leading to critical conditions
   (incl. pancreatitis)
h) Critical states of endocrinopathies
i) Neuromuscular diseases requiring intensive therapy
   (incl. head injuries)
j) Severe infections (including peritonitis, AIDS), Sepsis
k) Toxicology
l) Critical care of the traumatic patient
m) Burns, Hypothermic injuries
n) Problems related to obstetrics  Resuscitation of the newborn
o) Multiple organ failure

Lectures and Practice

Special topics of critical care
a) Policies of admissions and refusals of the ICUs
b) Prognostic score systems
c) Ethical and legal issues of critical care
d) Complications and risks of the intensive therapy
e) Policies of sedations and pain management
f) Military and civil disasters
g) Transport of the critically ill patient
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.

Syllabus (weekly schedule):

General Traumatology
1. Patient history, physical examination
2. Non-invasive and invasive instrumental examinations
3. Soft tissue damage, bone-joint injuries
4. Injury mechanisms and classifications
5. Pelvic and lower extremity injuries
6. Conservative fracture treatment methods
7. Identification and treatment of complications
8. Legal and medical insurance aspects of health care
9. Rehabilitation (physical therapy)

Specific Traumatology
1. Cranial injuries (facial and skull)
2. Spinal injuries
3. Shoulder and upper extremity injuries
4. Hand injuries
5. Pelvic and lower extremity injuries
6. Body cavity injuries (thoracal, abdominal, pelvic)
7. Polytrauma
8. Sport trauma, arthroscopic surgery
9. Reconstructive surgery, arthroplasty

During practices, students will have the opportunity to learn the following: physical examination of injured patients, bandaging, casting techniques, and the uses of orthoses 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. If there is an interest in attending on duty shifts, students may discuss this and make an appointment with their teacher, where they will have an opportunity to perform basic surgical interventions under supervision.
Attendance criteria and absences:

Lecture attendance:
Recommended. Attendance will not be taken.

Practice attendance:
During the course of the semester, three absences are allowed. Any further absence must be repeated in the following manner: One on-duty shift per absence at our department.

Verification of absences from practices or from the exam:
We can only accept hospital discharge papers for verification of more than three absences from practices or the absence from the exam, proving the student was continuously hospitalized during that time period. The written exam at the end of the semester is mandatory; the unjustified absence from the exam entails a failing mark.

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 lecture material will be discussed, disputed questions can be settled.

Criteria for the signature at the end of the semester:
Attendance of practices or repeating of unattended practices and the written exam result is required. We cannot verify the semester if the student was absent from more than three practices.

Grading:
1. Written (multiple choice test)
2. Retaking of the written exam is not possible. Repeating of the examination can be taken in the form of oral exam only. Our department will ensure 2 time periods per week for the repeated oral examination.

Type of exam: written (multiple choice test)
Make-up exam: oral

Exam requirements:
The knowledge of the given textbook, lecture and practice material.

List of textbooks, notes, study-aids and references:
1. 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
OPHTHALMOLOGY
Dept. of Ophthalmology
Tutor: Dr. Jeanette Toth

First Semester

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 crystalline 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.
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.
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.

OPHTHALMOLOGY
First Semester

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.
Ophthalmoscopy 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.

Practice:
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
General information
Tutor: Prof. Dr. Anita Kamondi
Tel.: 210-0330, Fax: 210-1368

Exams: At the end of the first semester tutors conduct a practical examination.
At the end of the second semester the semi-final exam consists of a practical (testing the neurological examination skills at the bedside) and a written theoretical part. Passing the practical exam is the prerequisite of taking the written exam. The written exam includes simple and multiple choice questions, slide presentation, patient and/or case presentation. The questions are based on the matter of neurology lectures. On event of failing either part of the exam the earliest possible retake is after 10 days. The retake theoretical exam is an oral exam. At the exam students must present their index book and in case of retake the permission from the Office of Dean.
Official textbooks for 5th year:
3. Lindsay, Bone, Callender: Neurology and Neurosurgery Illustrated. Churchill Livingstone

Other suggested books:
2. Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers

1st Semester

Week  Lecture title
1. Basic principles of neurological diagnosis. The anamnesis. The connection between symptoms, localization and causes of neurological diseases.
2. Patient examination I. Cranial Nerves (part 1).
3. Patient examination III. Motor system (part 1)
4. Patient examination IV. Motor system (part 2)
5. Patient examination II. Cranial Nerves (part 2)
6. Patient examination V. The sensory system
7. The cortex
8. The spinal cord. The peripheral nervous system.
10. The cerebellum
12. Inflammatory disorders, AIDS.
13. Tumors of the nervous system
14. Neuroradiology (CT, MRI, angiography)

Week  Practice
1. Basic principles of neurological diagnosis. The anamnesis. The connection between symptoms, localization and causes of neurological diseases.
2. Assessment of the paresis. Examination of muscle tone and trophy.
3. The mono- and polysynaptic reflexes. The pyramidal signs. The upper and lower motoneuron lesion.
5. Examination of the I. and II. Cranial nerve. The visual fields.
7. The V cranial nerve.
8. The facial nerve palsy.
10. Examination of the sensory system.
11. The coordination. The cerebellar functions (neo-, paleo-, and archicerebellum).
12. Examination of the spine and spinal cord. The vegetative functions.
   Signs of meningeal irritation.
13. The brainstem syndromes. The reticular activating system.
14. Practical exam

2nd Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Headache</td>
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<tr>
<td>2.</td>
<td>Aphasia</td>
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<tr>
<td>3.</td>
<td>Cerebrovascular diseases (part 1)</td>
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<tr>
<td>4.</td>
<td>Cerebrovascular diseases (part 2)</td>
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<tr>
<td>5.</td>
<td>Epilepsy</td>
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<td>6.</td>
<td>Multiple sclerosis</td>
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<td>7.</td>
<td>Movement disorders (part 1)</td>
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<tr>
<td>8.</td>
<td>Movement disorders (part 2)</td>
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<tr>
<td>9.</td>
<td>Aneurysm, subarachnoideal bleeding and vascular malformations</td>
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<tr>
<td>10.</td>
<td>Dementia</td>
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<tr>
<td>11.</td>
<td>Neuromuscular diseases. Encephalopathies</td>
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<tr>
<td>12.</td>
<td>Genetic abnormalities in neurologic disorders</td>
</tr>
<tr>
<td>13.</td>
<td>Written semifinal exam</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Diagnostic procedures I.: EEG, evoked potentials, EMG, Doppler, CSF</td>
</tr>
<tr>
<td>2.</td>
<td>Diagnostic procedures II.: Neuroradiology, X-ray, CT, MRI, etc.</td>
</tr>
<tr>
<td>4.</td>
<td>Hyperkinesia and dystonia.</td>
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<tr>
<td>7.</td>
<td>Memory dysfunction, dementia.</td>
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<tr>
<td>8.</td>
<td>The cognitive functions</td>
</tr>
<tr>
<td>10.</td>
<td>Examination of muscle disorders.</td>
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<tr>
<td>11.</td>
<td>Examination of polyneuropathies.</td>
</tr>
<tr>
<td>13.</td>
<td>Practical exam</td>
</tr>
<tr>
<td>14.</td>
<td>Consultation, questions and answers.</td>
</tr>
</tbody>
</table>

Neurology Examination Question List for Vth 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 |
| 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, subarachnoid 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

**EMERGENCY MEDICINE - OXIOLOGY**
Dept. of Anesthesiology and Intensive Therapy
Tutor: Dr. Krisztina Madách

Compulsory subject: Emergency Medicine and Prehospital Emergency Care (EMPEC) – program and topics

<table>
<thead>
<tr>
<th>Content</th>
<th>Responsible speciality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency patient evaluation – ABCDE approach and it’s patophysiological and clinical background.</td>
<td>E/I: 90</td>
</tr>
<tr>
<td>CPR II. ALS. In-hospital CPR. Postresuscitation life support (PLS).</td>
<td>E/I: 90</td>
</tr>
<tr>
<td>C. Differential diagnosis of chest pain in the field and in the ED. Process of ACS management from first responder to definitive treatment. Pulmonary embolism. Aortic dissection.</td>
<td>Together P:30 + E/I:60</td>
</tr>
</tbody>
</table>
C. Circulatory failure, hypotension, heart failure, hypertensive crisis. Pathophysiology, differential diagnosis, treatment in the field and in the ED. Peri-arrest arrhythmias.


Differential diagnosis and treatment of acute and chronic pain in the field and in the ED. Pain syndromes. Pain management, analgo-sedation, narcosis. Causes and management of fever on-the-scene and in the ED.

Gastrointestinal symptoms (vomitus, diarrhoea, obsipation, bloody stool). Measures in case of acute infectious disease.

Acute abdominal pain. Differential diagnosis and treatment of acute OB/GYN problems in the field and in the ED. Emergency management of labor and delivery out-of-hospital.

Prehospital and ED care of trauma and polytrauma.

Military and disaster medicine I.

Military and disaster medicine II.

Toxycology I. General principles of toxycology. Recognition and treatment of common poisonings.

Children in the field and in the ED. Emergency pediatrics.

Practices (15×45 min + 2×12 hours shift „on call duty”)

1×90 min basic emergency medicine hands on skill practice – (OMSZ / AITK / ED)

Airway management (OPA, LMA/LT, ET intubation, etc.)

Breathing (BMV)

IV access (practice on training manikins)

1×90 min CPR basic skills - AITK;

2×90 perc CPR simulations - AITK;

3×90 min case based learning (90 min OMSZ; 90min AITK; 90 min ED)

2×12 hours shift „on call duty” in the ED according to the rotation schedule;

OMSZ: National Ambulance Service

AITK: Dept. of Anesthesia and Intensive Therapy (Kútvölgyi Hospital)

ED: Emergency Department of Szt. Imre Hospital
PREHOSPITAL AND EMERGENCY MEDICINE (PEM) – Compulsory elective subject
Dept. of Anesthesiology and Intensive Therapy
Tutor: Dr. András Lorx

Program and topics

<table>
<thead>
<tr>
<th>Content</th>
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<tbody>
<tr>
<td>Military and disaster medicine III.</td>
<td>M-C-M</td>
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<tr>
<td>Military and disaster medicine IV.</td>
<td>M-C-M</td>
</tr>
<tr>
<td>Toxycology II. Recognition and management of concerning intoxications. Prehospital emergency care. Orientation and important measures in the field. Patient disposition.</td>
<td>P</td>
</tr>
<tr>
<td>CPR III. Resuscitation of newborns, infants and children.</td>
<td>E/I</td>
</tr>
<tr>
<td>CPR IV. Adult resuscitation in special situations (pregnancy, electrolyte disturbances, acute severe asthma, anaphylaxis, electric injuries, immersion, submersion, hypothermia, severe trauma, intoxication).</td>
<td>E/I</td>
</tr>
<tr>
<td>Recognition and management of acute metabolic crises.</td>
<td>E/I</td>
</tr>
<tr>
<td>Recognition and management of hemato-oncological emergencies.</td>
<td>E/I</td>
</tr>
<tr>
<td>Emergency care in ophthalmology and ENT.</td>
<td>E/I</td>
</tr>
<tr>
<td>Emergency care in urology and OB/GYN.</td>
<td>E/I</td>
</tr>
<tr>
<td>Psychological and social aspects of emergency medicine.</td>
<td>Together (P+E/I)</td>
</tr>
<tr>
<td>Law and ethics during prehospital care and in the ED.</td>
<td>Together (P+E/I)</td>
</tr>
<tr>
<td>Case discussion: Chest pain.</td>
<td>Together (P+E/I)</td>
</tr>
<tr>
<td>Case discussion: Dyspnea.</td>
<td>Together (P+E/I)</td>
</tr>
<tr>
<td>Case discussion: Abdominal pain.</td>
<td>Together (P+E/I)</td>
</tr>
<tr>
<td>Case discussion: Altered mental state.</td>
<td>Together (P+E/I)</td>
</tr>
</tbody>
</table>

Time distribution (min) P:45+E/I:45
FAMILY MEDICINE IN DAILY PRACTICE

**Director:** Prof. László Kalabay MD PhD  
**Tutor:** Péter Torzsa MD  
**Tel:** 355-8530,  
**e-mail:** ptorzsa@gmail.com  
**Duration:** 9 lectures and 3 seminars  
**Exam:** Test exam  
**Credit value:** 2 credit points  
**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.
- Video communication to improve communication skills.
- Arrangement for the 2 weeks practice (rotation).

ANTIBIOTIC THERAPY - infectology obligatory elective subject

2011/2012. I. semester  
**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:
4. Material of the lectures online availability

2010-2011. 1st semester - 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, tonsilopharyngitis). 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.
Tropical diseases. HIV and AIDS.

Important note: Attendance at 70% of the lectures is compulsory. The end semester grade is the result of the multiple choice test.

Recommended textbooks:
4. Figures of the lectures are available electronically
ELECTIVE SUBJECTS
(basic/pre-clinical/clinical modules) – curricula
It is compulsory to choose one subject each semester.

BASICS OF MEDICAL CHEMISTRY
Department of Medical Chemistry, Molecularbiology and Pathobiochemistry

Lectures: compulsory
Credit: 1

Topics:
1: Basics of atomic and molecular structure, periodic table, bondings.
5: Consultation: preparation for the 1st midterm. Focused on calculations: ionization, pH, buffer, solubility product.
7: Electrochemistry. Oxidation and reduction, redox systems in the living cells.
9: Calculations in electrochemistry and thermochemistry.
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 punctures, 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

CLINICAL IMMUNOLOGY
Lecturer: Prof. Dr. Péter Gergely

First Semester

Introduction to clinical immunology
Immunity to infection
Immune deficiencies
Lymphoproliferative disorders
Immunology of HIV disease
Allergic diseases. Food allergy
Skin diseases of immunopathological origin. Allergic skin diseases.
Lung diseases of immunopathological origin. Bronchial asthma and allergic rhinitis.
Tumor immunology.
Autoimmune diseases; Systemic autoimmune diseases.
Transplantation: Kidney transplantation. Bone marrow transplantation.
Immunology laboratory investigations. Immunomodulation: immunosuppression and immunostimulation.

Important: Presence at the 75% of the lectures is compulsory. Doctor’s certificate is required to justify absence.

Handouts will be distributed.

Recommended textbook:
Clinical Immunology (Brostoff, Scadding, Male, Roitt), Gower

INTRODUCTORY LECTURES OF TRADITIONAL CHINESE MEDICINE

The topics:
1. Chinese way of thinking about medicine – Introductory lecture
2. 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 - MEDICAL LITERATURE RESEARCH

Lecturer: Dr. Livia Vasas PhD. General Director – Central Library

Institute: Semmelweis University Central Library
Duration: One semester, 30×45 minutes (7×4 lessons)

SUGGESTED SEMESTER 1-10.

Exam-form: Practical mark
Credit-value: 3 credit-points
Minimum/maximum group-size: 8/30

The aim of the subject: Teaching students how to search in medical literature sources
Thematic: Medical e-catalogues, e-books, e-libraries, databases (Ovid/PubMed/Web of Science), MD Encyclopaedia, Web (WHO), Scientometry (IF, Citation)

Application: Judit Batiz; Tel.: 459-1500/55263;
Application deadline: 29th August – 2nd September, 2011
Precondition: There isn’t.

1. Introduction, technical details introduction of Central Library’s Homepage: www.lib.sote.hu and its facilities
   Useful Links, List of current periodicals, WebPac
   Basic concepts: book, periodicals, homepage and their identifiers, CD-ROM,
   Floppy file management (saving, copy files), email, mailing lists.
   Searching databases main concepts: bibliographic database, record, result list,
   thesauri, full text, abstract
   Organizing e-mail study groups
   Searching in the WePac and current periodicals list
   6 samples- Homework

2. Web Searching and database searching professional discussion lists and their role in scientific work
   Web Searching with different types of search engines, advanced searching
   with Boolean operators, relevancy and decision making
   MESH and PubMed Searching
   Model searching –on general exercises
   6 samples- Homework

3. Link collections and professional portal sites
   concept of a portal,
   what a medical portal should contain: conference news, research news and
   abstracts from current articles, professional mailing lists and chat rooms, links
   http://www.medbioworld.com/
   Medical Matrix:http://www.medmatrix.org/reg/login.asp
   http://www.lib.uiowa.edu/hardin/md/index.html; BioSites
   http://galen.library.ucsf.edu/biosites/
   to make a link collection from a declared subject- Homework
Searching International Library catalogues
Searching in Ulrich’s Plus periodical catalogue and form books in Books in Print database at the Ovid platform
Library of Congress: http://lcweb.loc.gov/
The British Library http://www.bl.uk/
Heidelberg University Catalogue
http://www.ub.uni-heidelberg.de/Englisch/
National Széchenyi Library http://www.oszk.hu/

How do we get from the abstract to the full article?
- practicing the proper search strategy

6 samples- Homework

5.
Information retrieval practical lesson
sample searching (bibliographic, statistical and web searching)
Consultation on search methods and results.
6 samples- Homework

6.
OVID databases
Evidence Based Medicine databases: the role of the EBM in research and practice
Full text journals in Ovid databases: 115 Lippincott Williams and Wilkins journals and 1500 journals of Science Direct, Cross Ref how they can appear by results –OPENLINK technology
MEDLINE,EMBASE, CINAHL databases which kind of information they contain
unique and general search fields. Theasauri and index- how they make easier searching
Citation manager: saving, e-mailing, printing and exporting records.
Model searching: 6 samples
Homework: searching on a subject

Database searching
Encyclopedias: Encyclopedia of Life Sciences, Encyclopedia of Forensic Medicine (multimedia documents)
Full text resources: Dictionary of Natural Products; Micromedex Poisindex, Identidex; Micromedex Drug Reax
Images .MD medical image database
Model searching: 6 samples
6 samples- Homework

8.
Reference Manager
the role of reference softwares in modern publishing

Literature searching: Importing and exporting crystalline records
(from Science Direct, Web of Science, OVID Medline, PubMed and e-journals hosted by Highwire)

creating own records

search facilities within our records and from PubMed;
data handling: spell checking, filtering duplicates

Homework: create your own database by collecting records

9.
E-journals

e-journals – main concepts: fulltext and its formats, e-journal types:
Online only or with existing Print edition. Free medical journals:
http://www.freemedicaljournals.com/; Online First publishing, DOI code

**Introduction of Host systems:** Sciencedirect, SpringerLink, Ingenta, Cross Ref system and linking in fulltext articles

**Homework:** collect 10 e-journals from own speciality

**Information retrieval practical lesson**

- sample searching (database, journal searching)
- Consultation on search methods and results. Reference Manager, e-journals, databases etc.

6 samples- **Homework**

**Impact factor (JCR)**

- Homework discussion
- calculating **Impact factor** and its role by measuring scientific publications
- List of Journals with IF: Journal Citation Report and its editions.

**Searching an exact data in JCR,** handling data: sorting and filtering journals

**Web of Science and its sections**

- general searching in the database model searching –guided
- **Homework:** bibliographic searching on an exact author

**Citation analysis**

- **Homework discussion**
- meaning of Citation analysis and its role by measuring scientific works
- preparing the citation analysis:
- Web of Science database cited reference search
- Saving references in the official format, special rules of the method:
  - self-citation, Identification of records
- **Homework:** analysis of a professor. (in print)

**Scientometric practical lesson**

- calculating **Impakt rystal and making citation analysis of given publication’s list**
- Correction and discussion on main rules

**Information retrieval-practical lesson**

- **Homework discussion**
- **model searching on 6 samples** – Bibliographic search, statistic search and Internet search for multimedia materials are included., consultation on the search methods and results, which was the proper search strategy.
- Summary of the course, consultation

**Exam:** 2 electronic tests during the semester, renewal opportunity for each tests.

**Proposed grade or exam test during the exam period.**
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, Tűzoltó 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
Alpha-fetoprotein (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 (Martin-Bell 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

ANAESTHESIA AND INTENSIVE THERAPY
Dept. of Anesthesiology and Intensive Therapy

First Semester

Lectures

Molecular aspects of anaesthesia
Sleep, depth of anaesthesia and awareness
Monitoring in anaesthesia and intensive therapy
Safety in anaesthesia and intensive therapy
Significance of coexisting diseases for anaesthesia
Applied physiology of respiratory therapy
The principles of the respiratory therapy
Haematology in anaesthesia and intensive therapy
Day-case anaesthesia. Anaesthesia of patients suffering from IHD
The policy of antibiotics
Multiple organ-systems failure
Endocrine and metabolic responses to surgery and anaesthesia
Interventional bronchoscopy
Acute and chronic pain
Moral and legal problems in anaesthesia and intensive therapy

Topics may change depending on lecturers’ availability.
NEONATOLOGY

Second Semester

Physiology of the Fetus and Newborn. Transition to Extrauterin Life.
Maternal and Fetal Problems in Neonatology. Prenatal Care.
Respiratory Disorders of Newborns.
Ventilation of the Neonate.
Cardiac Diseases of Newborns.
Surgical Diseases of Newborns.
Metabolic Problems of Newborns.
Parhophysiology of Body Fluids. Fluid and Electrolyte Management.
Neonatal Neurology.
Infections of the Newborns. Prevention and Treatment.
Neonatal Radiology.
Follow up of High-risk Newborns.

CLINICAL ENDOCRINOLOGY

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 chronic.
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. Lidia Sréter

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.
10. Dermatologic manifestations of hematological diseases and hematological symptoms of dermatologic diseases.
11. Immunocytopenias.
14. Infectious complications of hematological diseases

Actual Problems in Tropical Medicine
(An optional course for English speaking students 10 x 2 = 20 hours/year at Semmelweis University, Budapest)

Course co-ordinator: Agnes Axmann MD, PhD, DTM&H

1-2 lectures  
1. Definition & role of tropical medicine, it’s relationship with travel medicine. What is the travel medicine? Influence of the tropical climate ont he human health. Pre-travel examination. (Agnes Axmann MD, PhD)
2. Prevention of the diseases: chemoprophylaxis of malaria. The impact of vectors on the transmission of tropical diseases. (Agnes Axmann MD, PhD)

3-4 lectures  
1. Recent challenge of travel medicine: the Tsunami in South-Asia. Lecture of the Hungarian doctor, who gave a help at first in the Tsunami hit area, Thailand. (Agnes Axmann MD, PhD)
2. Cholera and differential diagnosis of diarrhoeal diseases. (Agnes Axmann MD, PhD)

5-6 lectures  
1. Malaria: one of the most important diseases originated from the Tropics. History of the disease. Aetiology, epidemiology and geographical distribution of drug resistant strains: A, B and C region by WHO. (Agnes Axmann MD, PhD)
2. Clinical course and treatment of uncomplicated and complicated malaria. Pathogenesis of cerebral malaria: the Glasgow coma scale. Disease prevention by vaccine (Agnes Axmann MD, PhD)
7-8 lectures 1. Tick-born diseases in Tropics: Lyme-disease, relapsing fever caused by Borrelia species, etc. (Andras Lakos MD, PhD)
2. Treatment of tick-born diseases (Andras Lakos MD, PhD)

9-10 lectures 1. Tuberculosis, as an emerging disease and global health problem. Etiology, epidemiology and the clinical course of the disease. (Somoskövi Ákos, MD, PhD)
2. Treatment of Tuberculosis. The World Health Organization DOT (directly observed treatment) protocol. (Somoskövi Ákos, MD, PhD)

11-12 lectures 1. Protozoan diseases of great importance: Leishmaniasis, African trypanosomiasis (sleeping sickness) (Agnes Axmann MD, PhD)
2. Intestinal protozoan infections: Giardia lamblia & Entamoeba histolytica infections. (Szenasi Zsuzsa Dr Biol., PhD)

2. Fluke infections: Oriental liver flukes, Lung flukes & intestinal flukes. Clinical course & treatment of the mentioned diseases (Agnes Axmann MD, PhD)

15-16 lectures Vaccines linked to international travels:
1. Vaccines against viral diseases: Yellow fever, Japonase-B encephalitis, rabies, hepatitis A & B (Jelenik Zsuzsa MD.)
2. Vaccines against bacterial diseases: Typhoid, cholera, meningococcus meningitis, plague etc. (Jelenik Zsuzsa MD)

17-18 lectures 1. Re-emerging bacterial diseases: plague, leprosy etc.
   History, etiology & epidemiology of diseases (Agnes Axmann MD, PhD)
2. The diagnosis, clinical course and treatment of plague and leprosy (Agnes Axmann MD, PhD, DTM&D)

19-20 lectures 1. Viral hemorrhagic fever: Dengue, yellow fever, Lassa, Ebola etc. (Sandor Dobi MD, PhD)
2. Travel to the tropics: a film made in Ethiopian Leprosy Center (ALERT) (Agnes Axmann MD, PhD)

Tropical medicine course: optional
Address: 1094 Budapest, Páva u 27. Tropical & Travel Medicine Institute

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


13. Consultation

Important: 3 absences are allowed. Doctor’s certificate is required to certify absence from the exam.

Exam requirement: written test


**CLINICAL CARDIOVASCULAR PHYSIOLOGY**

**AOKKIKCAR_1A**

*Elective course for medical students in the 3rd, 4th and 5th years.*

The purposes of the course are:

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. Biomechanical background of normal and pathological cardiovascular functions.
2. Hemodynamics of cerebral aneurisms
3. Recent results in control of cerebral blood supply, physiological and clinical aspects
4. Clinical physiology of the microcirculation
5. Age related changes in the vascular system, role of sexual hormons
6. Coronary circulation, possibilities of pharmaco-physiological interventions
7. Pathophysiology of chronic venous insufficiency
8. Role of endothelial mechanisms in clinical symptoms
9. Duplex ultrasonic investigation of large vessel function: measurement of vessel wall elasticity, Doppler-indexes, study of veins
10. Ultrasonic investigation of the human heart: theoretical background; 2D-, M-, Doppler-mode, color Doppler imaging, echocardiography; diagnostics of valve insufficiency and coronary diseases

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.
Further information is available on this web page: www.elet2.sote.hu

CARDIORESPIRATORIC AND NEUROPHYSIOLOGICAL MEASURING METHODS

Elective course for medical students in the 3-6th years
Course director: Dr. Habl. László Dézsi, Private Professor of Physiology, Semmelweis University
Invited lecturers:
Prof. Emer. Emil Monos, Professor of Physiology, Semmelweis University
Dr. Iván Füzes, Dipl. Electrical Engineer, Teacher of Physiology, Semmelweis University
Prof. Ákos Jobbágy, Professor of Electrical Engineering, Budapest University of Technology and Economics
Dr. Zsolt Farkas, Chief Physician (Children’s Hospital of Heim Pál)

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.

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 lecturers.

Time and location: 1st semester of the 2011/2012 academic year, Mondays at 17:00-18:45, in EOK Beznák lecture hall (1094 Budapest, Tuzoltó u. 37-47.). 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.
Further information: www.humanelettan.usn.hu
Detailed Program:
1. Historical introduction. Measurements in medicine. Specialty in design of medical devices (Dr. Dézsi/Dr. Füzes)
2. General metrology. Basics of measurement techniques and control theory (Dr. Füzes)
3. Sampling of continuous signals. Digitizing analogue signals (Dr. Füzes)
4. Computer acquisition and analysis of physiological data. Cardiovascular telemetry (Dr. Dézsi).
5. Invasive and noninvasive blood pressure measurements in the laboratory and clinics (Dr. Füzes)
6. Investigating the electrical activity of the heart. Principles of ECG amplifier design (Dr. Füzes)
7. Home monitoring of cardiovascular health status in humans (Dr. Jobbágy)
8. Investigation of adaptive processes in the cardiovascular system (Dr. Monos)
9. Direct and indirect methods to determine cardiac output and peripheral blood flow (Dr. Dézsi)
10. Experimental methods to study pulmonary function. Determination of blood gases, acid-base balance and blood glucose (Dr. Dézsi)
11. Neurophysiological measurements (action potentials, brain stem evoked potentials) (Dr. Füzes)
12. Significance of objective studies in the practice of audiology (Dr. Farkas)
13. Studying brain function by functional imaging systems (CT, MRI, PET, PET-CT) (Dr. Füzes)
14. Experimental methods to study nociception and pain (Dr. Dézsi)

MEDICINAL, EPIDEMIOLOGICAL, AND SOCIAL ASPECTS OF DRUG ABUSE
Department of Pharmacology and Pharmacotherapy
Course director: Prof. Dr. Susanna Fürst

Second semester

Code: AOFRMKAB_1A
Credit: 2

Topics:


Psychomotor stimulants. Pharmacological action of amphetamine, its derivatives (methamphetamine, MDMA—“Ecstasy”, etc.) and cocaine. Role of the dopaminergic transmission in the drug abuse.


Marihuana (hasis, THC) Pharmacological action of cannabinoids. Cannabinoid receptors and their endogenous ligands.

**Epidemiological data.** Significance of epidemiological data collection. Forms of questionnaires. Tendency of drug abuse, national (Hungarian) and international data. High risk groups.


**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.


**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

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**BASICS OF FAMILY MEDICINE**

2011/2012

Department of Family Medicine

Director: **Prof. Dr. László Kalabay**

Location: Kütvölgy 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. Torza 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
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 Development and Higher Education in the field of Medical Informatics
Director: Dr. Elek Dinya
Tutor: Dr. Mariann Szabó Dinya

2 hours/week

THEMES

- Data, information, knowledge and decision in the medicine and health care
- Classification and coding systems, ICD-10
- Informatics in the prevention
- Networking
- WEB 2.0 and the health care system
- Signal analysis and image processing
- Standards in the medical informatics
- Information systems in the health care
- The electronic patient record
- Knowledge management
- Data security in the health systems. Digital signatures
- Informatics of the primary health care and drug management
- Health care financing and informatics
- Health and health care statistics
- Telemedicine
JEWISH MEDICAL ETHICS I-II
Institute of Behavioral Sciences
Director: Prof. Dr. Ferenc Túry
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.

List of textbooks:

Obligatory: Handouts given during lectures

Fred Rosner: Pioneers in Jewish Medical Ethics, Jason Aronson, New Jersey, 1997
Rabbi Moshe Tendler–Fred Rosner: Practical Medical Halachah, Association of Orthodox Jewish Scientists, New Jersey 1990
Fred Rosner: Medicine and Jewish Law II, Jason Aronson, New Jersey, 1993

Semester I.

1-2. Lecture: The religious orders and the duty of saving a life
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
SLEEP MEDICINE
Institute of Behavioral Sciences
Lecturer: Prof. Dr. Ferenc Túry
Course Director: Dr. Márta Novák Ph.D.

Credit: 2

1. Introduction to sleep medicine
2. Physiology of sleep and alertness
3. Electrophysiology
4. Cardiovascular and respiratory functions in sleep
5. Significance and classification of sleep –wake disorders
6. Assessment and diagnosis of sleep-wake disorders
7. Insomnias
8. Circadian rhythm disorders
9. Parasomnias
10. Sleep-related breathing disorders: sleep apnea
11. Sleep-related movement disorders: restless legs syndrome and periodic limb movements in sleep
12. Pediatric sleep medicine
13. Sleep in special populations: aging and gender issues
14. Visit to the Sleep laboratory. Exam / evaluation

Subject material is distributed electronically. Websites and publications are available as well.

Recommended textbooks:

Important:
To participate on at least 75% of the total number of lessons is a prerequisite of getting the signature. One absence from the lectures (two lesson hours) is the maximum number permitted. The student can make up for the absence by preparing a study in a subject given by the teacher.

Semester requirement: test
Exam type: practice mark
Sign up for the exam: through the Neptun system.
Certifying absence from the exam: written certificate and request

CLINICAL ONCOLOGY
– elective for students in the 4th and 5th year

2 hours/week, 2 credits

2nd Department of Internal Medicine
Course Director: Prof. Dr. Lidia Sréter

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.
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

Lecturer: Dr. Róbert Langer
Department: Faculty of Medicine, Department of Transplantation and Surgery
Time: 14x90 minutes (on Tuesdays between 5 -6.30 p.m.)
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 Immunosuppression
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
Subject code: AOSGEN135_1A
Prerequisite subject: Immunology
Credits: 2

Second Semester

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 http://www.dgcisote.hu

GENETICS OF SEX
Department of Genetics, Cell and Immunobiology
Course director: Dr. Sára Tóth
Subject code: AOSGEN142_1A
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. Abnormalities in sex determination I.
5. Abnormalities in sex determination II.
6. Abnormalities 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
CHEMOTAXIS – its significance in biology and clinical sciences
Department of Genetics, Cell and Immunobiology
Course director: Dr. László Köhidai

Credits: 2

Second Semester

Lectures (2 hours per week):

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
<th>Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Migratory responses of cells – General significance of chemotaxis in biology</td>
<td>Kohidai László, MD, PhD</td>
</tr>
<tr>
<td>2.</td>
<td>Phylogeny of signaling molecules and their receptors with special respect to chemotaxis</td>
<td>Kohidai László, MD, PhD</td>
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<tr>
<td>3.</td>
<td>Chemotaxis in invertebrates and vertebrates</td>
<td>Kohidai László, MD, PhD</td>
</tr>
<tr>
<td>4.</td>
<td>Chemotaxis in inflammatory cells I.: Antigen presenting cell, monocytes-macrophages, eosinophils and neutrophils</td>
<td>Kohidai László, MD, PhD</td>
</tr>
<tr>
<td>5.</td>
<td>Chemotaxis in bacteria - A well studied signaling pathway</td>
<td>Kohidai László, MD, PhD</td>
</tr>
<tr>
<td>6.</td>
<td>Genetical backgrounds of bacterial chemotaxis</td>
<td>Kohidai László, MD, PhD</td>
</tr>
<tr>
<td>7.</td>
<td>Inflammation and chemotaxis</td>
<td>Kohidai László, MD, PhD</td>
</tr>
<tr>
<td>8.</td>
<td>Immunological aspects and their clinical implications in general</td>
<td>Kohidai László, MD, PhD</td>
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<tr>
<td>9.</td>
<td>Phagocytosis: the target reaction of chemotaxis</td>
<td>Szabó Rita, PhD</td>
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<td>10.</td>
<td>Chemotactic ligands – Characterization of their genomics and proteomics</td>
<td>Kohidai László, MD, PhD</td>
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<td>11.</td>
<td>Chemokines</td>
<td>Kohidai László, MD, PhD</td>
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<tr>
<td>12.</td>
<td>The optimal chemotactic ligand</td>
<td>Kohidai László, MD, PhD</td>
</tr>
<tr>
<td>13.</td>
<td>Clinical approaches – Tumor biology</td>
<td>Láng Orsólya, MD, PhD</td>
</tr>
<tr>
<td>14.</td>
<td>Does persist 'Life' without 'Chemotaxis'?</td>
<td>Kohidai László, MD, PhD</td>
</tr>
</tbody>
</table>

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
INFANT ASSESSMENT
1st Department of Pediatrics
Lecturer: Dr. C. F. Zachariah Boukydis

Second Semester

Credits: 2

Lectures (2 hours per week):

Teaching goals:
1. To teach methods of neurobehavioral assessment of full-term and at-risk (premature, drug-exposed; birth asphyxiated) infants.
2. To teach methods of using the neurobehavioral as a context for communicating with parents and caregivers.
3. To teach methods of evaluating fetal neurobehavior.

Themes (itemized list for each week):

Week 1  Introduction to the Course: Readings and practicum experience
         History and Philosophy of Neurological and Behavioral Assessment of Infants
         Research and Clinical Uses of Neurobehavioral Assessment of Infants

Week 2  Basic Issues in the Neurobehavioral Assessment of Infants
         Overview of Three Neonatal Neurobehavioral Assessments:
         NICU Network Neurobehavioral Scale [NNNS]
         Neonatal Behavioral Assessment Scale (NBAS)
         Assessment of Preterm Infant Behavior (APIB)

Week 3  Observation of Infant Neurobehavior
         1. Observation Framework
         2. Guidelines for Documenting Observations of Infant Neurobehavior
         3. The 4 A’s of Infancy

Week 4  Observation of At-Risk Infant Neurobehavior
         1. Observations and Clinical Documentation
         2. Clinical Screens (Neonatal Abstinence Scale)
         3. Developmental Screens (Denver 2 Scales of Infant Development)

Week 5  NICU Network Neurobehavioral Scale:
         Overview of the Assessment
         i. Reflexes
         ii. Behavioral Items
         iii. Stress Abstinence Scale
         Demonstration with Healthy Full-Term Infant

Week 6  NICU Network Neurobehavioral Scale: Part 2
         Issues in Scoring the Assessment
         Demonstration with Healthy Preterm Infant

Week 7  NICU Network Neurobehavioral Scale: Part 3
         Neurodevelopmental Research
         Clinical Applications
Week 8  Neurobehavioral Assessment of At-Risk Infants  
Review of Research on Early Neurobehavior and Outcome  
Preterm Infants  
Birth Asphyxiated Infants

Week 9  Neurobehavioral Assessment of At-Risk Substance Exposed Infants  
Review of Research on Early Neurobehavior and Outcome  
Substance-Exposed Infants  
Alcohol Exposed Infants  
Videotape of Assessment with Cocaine/Alcohol Exposed Infant

Week 10  Clinical Applications of Neurobehavioral Assessment  
Screening and Referral  
Early Intervention Services  
Primary Pediatric Care

Week 11  Clinical Applications of Neurobehavioral Assessment  
Screening and Referral for Early Regulatory Issues

Week 12  Developing Clinical Services to Integrate Neurobehavioral Assessment and Consultation  
NICU Discharge Programs  
Boarder Baby Programs  
Consultation to Drug Treatment Programs/ Mothers’ Homes

Week 13  Use of Neurobehavioral Assessment to Consult with Parents and Caregivers of At-Risk Infants  
Philosophy and Methods of Consultation  
Videotapes of Consultations with Parents of Preterm and Substance-Exposed Infants

Week 14  Prenatal Neurobehavioral Assessment  
Overview of the Fetal Neurobehavioral Assessment Scale (FENS)  
Continuities / Discontinuities Between Fetal and Neonatal Neurobehavior  
Use of Prenatal Ultrasound Screens to Observe Fetal Neurobehavior and Development Ultrasound Consultation (based on Observing Fetal Neurobehavior) with Mothers, Fathers and Families.

Requirements of attendences on courses, options of redoing missed courses:
Students must attend at least 11 of the 14 classes. If the student is not able to attend a class for reasons of illness, the student must provide a written letter from their doctor. Students are not allowed to miss more than three classes for illness reasons. If a student misses a class, there is no other opportunity to make up the course attendance.

Method of proving the absences (courses):
If you are absent from a class for illness reasons, you must provide a signed letter from your doctor.

Numbers, themes, timing, redoing of midterm examinations and demonstrations:

Following the seventh week, a 3 page reflection paper is due. The instructions for writing the paper will be give during the early weeks of the course. The paper will be graded. Failure to turn in the reflection paper will constitute a failing grade in the assignment. A student who does not turn in the reflection paper will be required to have a meeting with the course instructor or assistant instructor.
Requirements of signing the index books (acknowledgement of the semester, including the realization of individual tasks):

Students must: (1.) attend at least 11 of the 14 classes; (2.) complete the mid-term reflection paper; (3.) participate in class discussions; and (4.) complete the final reflection paper in order for the professor, Dr. Boukydis, to sign their index books.

Method of evaluation:
The final grade for the course will involve: 1. Satisfactory attendance; 2. Active participation in class discussion; 3. Passing grade in the mid-term reflection paper; and 4. Passing grade in the final reflection paper. The grades will be defined on the 3-scale evaluation system.

Type of examination:
There will be no final examination in this course. Students have to hand in a final reflection paper on the last day; 14th (class).

List of suggested or obligatory readings, literature:


Essentials About Consultation in the Perinatal Period; Observing Infants and Sharing Observations with Parents ; Use of Neurobehavioral Assessments as a Context for Consulting with Parents and in Prevention/Intervention; and Consults with Parents and Caregivers of At-Risk Infants: Prematurity and Substance-Exposure (Chapters 1-4) In CFZ Boukydis Consulting with Parents and Infants in the Perinatal Period: Baltimore, MD USA Brookes Publishing Co.


NEUROSURGERY – Introduction to neurosurgery with case presentations and operating room visit

Department of Neurology
National Institute of Neuroscience
Program director: Professor István Nyáry M.D., Ph.D.
Program secretary: Dr. Loránd Erőss M.D., Ph.D.

For 5th and 6th year students

Length of course: 14 weeks, 2 hours (lectures)/week
Final exam: test

Detailed program (weeks): Every lecture includes a summary of the topic, 2-3 relevant case presentations and if possible video presentation of surgeries.

1. Introduction to neurosurgery: history of neurosurgery, neuroanatomy basics, patient examination basics.
3. Diagnostics and surgical treatment of hydrocephalus and elevated intracranial pressure.
4. Diagnostics and surgical treatment of traumatic brain and spinal cord injuries.
7. Diagnostics and surgical treatment of degenerative spine diseases.
8. Diagnostics and surgical treatment of cerebrovascular accidents.
9. Diagnostics and surgical and/or endovascular treatment of vascular malformations in the brain.
13. Diagnostics and surgical treatment of peripheral nerve disease and infections of the nervous system.
14. Visit to the operating room.

Note: 2 absences are allowed. No possibility to make up of absences.
## OBLIGATORY ELECTIVE AND ELECTIVE SUBJECTS – SCHEDULE OF THE CLINICAL MODULE

### OBLIGATORY ELECTIVE SUBJECTS

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
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<tbody>
<tr>
<td>ADVSF105_1A</td>
<td>Antibiotic therapy &amp; infectology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>ADVANE104_1A</td>
<td>Anesthesia and Intensive Care</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Anesthesiology and Intensive Therapy (ADANEANE_1A)</td>
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<tr>
<td>ADVFRM252_1A</td>
<td>Medicinal, Epidemiological, and Social Aspects of Drug Abuse</td>
<td>2</td>
<td>–</td>
<td>2</td>
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<tr>
<td>ADVSB1132_1A</td>
<td>Family Surgery</td>
<td>2</td>
<td>–</td>
<td>2</td>
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<tr>
<td>ADVBL2112_1A</td>
<td>Clinical Endocrinology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>ADVNO1245_1A</td>
<td>Clinical Genetics</td>
<td>2</td>
<td>–</td>
<td>3</td>
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<td>Pre-clinical module</td>
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<tr>
<td>ADVBL2125_1A</td>
<td>Clinical Hematology</td>
<td>2</td>
<td>–</td>
<td>2</td>
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<tr>
<td>ADVKL157G1A</td>
<td>Clinical practice</td>
<td>–</td>
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<tr>
<td>ADVBL2150_1A</td>
<td>Clinical Oncology</td>
<td>2</td>
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<tr>
<td>ADVSBT214_1A</td>
<td>Organ Transplantation</td>
<td>2</td>
<td>–</td>
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<tr>
<td>ADVSL251_1A</td>
<td>Tropical Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>ADVINF108_1A</td>
<td>Health Informatics</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>ADVGY1120_1A</td>
<td>Neonatology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>ADVKIK102_1A</td>
<td>Clinical cardiovascular physiology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>ADVKIK099_1A</td>
<td>Clinical Physiology of Respiration and Respiratory Diseases</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
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</table>
# ELECTIVE SUBJECTS

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
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<tbody>
<tr>
<td>AOVSB2129_1A</td>
<td>Emergency Surgery</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Surgery I.</td>
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<tr>
<td>AOSBMK250_1A</td>
<td>Ultrasonography</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>AOSIMM146_1A</td>
<td>Clinical Immunology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>AOSMAG155_1A</td>
<td>Sleep Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pathophysiology and Clin. Lab, Diagnostics II.</td>
</tr>
<tr>
<td>AOSMMS174_1A</td>
<td>Traditional Chinese Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>For 3rd, 4th &amp; 5th year students</td>
</tr>
</tbody>
</table>
Faculty of Medicine
6th year
COMPULSORY INTERNSHIPS AND RESPONSIBLE DEPARTMENTS

Internal Medicine

1st Department of Internal Medicine
Budapest VIII., Korányi S. u. 2/A Phone: 459-1500 / ext. 51554
Head of the Department: Prof. Dr. Miklós Szathmári
Tutors: Prof. Dr. Ferenc Szalay, Dr. Margit Abonyi

3rd Department of Internal Medicine
1125 Budapest, XII. Kútvölgyi út 4. 12. Phone: 355-1122
Head of the Department: Prof. Dr. István Karádi
Tutor: Dr. Katalin Keltai

Surgery

1st Department of Surgery
Budapest VIII., Üllői út. 78. Phone: 313-5216 / ext. 52167
Head of the Department: Dr. László Harsányi
Tutor: Dr. Péter Kokas

Traumatology

Department of Traumatology
Budapest VII., Péterfy S. u. 14. Phone: 461-4723
Head of the Department: Prof. Dr. András Sárvány
Tutor: Dr. Miklós Szepes

Pediatrics

1st Department of Pediatrics
Budapest VIII., Bókay J. u. 53. Phone: 334-3186
Head of the Department: Prof. Dr. Tivadar Tulassay
Tutor: Dr. Erzsébet Horváth

2nd Department of Pediatrics
Budapest IX., Tűzoltó u. 7-9. Phone: 215-1380
Head of the Department: Prof. Dr. András Szabó
Tutor: Dr. Boglárka Bánsági

Obstetrics and Gynecology

1st Department of Obstetrics and Gynecology
Budapest VIII., Baross u. 27. Phone: 266-0473
Head of the Department: Prof. Dr. János Rigó
Tutors: Dr. Gyula Richárd Nagy
Dr. József Gábor Joó
Neurology
Department of Neurology
Budapest VIII., Balassa u. 6. Phone: 210-0330 / ext. 51123
Head of the Department: Prof. Dr. Dániel Bereczki
Tutor: Prof. Dr. Anita Kamondi

Psychiatry
Department of Psychiatry and Psychotherapy
Budapest VIII., Balassa u. 6. Phone: 210-0330 / ext. 51100 or 155-1122
Head of the Department: Prof. Dr. István Bitter
Tutor: Dr. Patricia Polgár

Family Medicine in Daily Practice
Department of Family Medicine
Budapest XII., Kútvölgyi út 4. Phone: 325-1100
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: 344-3737
Director: Dr. Gábor Göbl
Tutor: Dr. Erzsébet Márton
## STUDY PROGRAM

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Internship</th>
<th>Required number of weeks</th>
<th>Credits</th>
<th>Examination</th>
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<tbody>
<tr>
<td>AOBEL1BEL6SA</td>
<td>Internal Medicine</td>
<td>9</td>
<td>9</td>
<td>final #</td>
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<tr>
<td>AOBEL2BEL6SA</td>
<td>1 week Infectology</td>
<td></td>
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<td>final #</td>
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<tr>
<td>AOBEL3BEL6SA</td>
<td>Surgery (2 weeks Traumatology)</td>
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<td>final #</td>
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<tr>
<td>AOSZUJEGSA</td>
<td>Pediatrics</td>
<td>8</td>
<td>8</td>
<td>final #</td>
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<td>AOSZUJEGSA</td>
<td>1 week Infectology</td>
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<tr>
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</tbody>
</table>

# The grade influences the qualification of the diploma.

## Information

### on the rules applicable to the summer and 6th year internships abroad

The United States International Students’ Office contacted the Hungarian Accreditation Committee in relation to the continuous accreditation and review of foreign clinical practice positions. The Committee consulted the leaders of the University and, taking into consideration the opinion of the United States authorities, it will take into account the following criteria in selecting the foreign clinical practice positions and accepting the practice period spent abroad:

1. In the Member States of the European Union (and in Switzerland and Norway), clinical practice is accepted and recognised if it is earned at state-accredited university clinics or teaching hospitals. The legal ground for this is the mutual recognition of diplomas issued by accredited institutions.

2. Practice outside the European Union is only admissible at institutions where Semmelweis University has a bilateral study contract or if these places are being accredited by Semmelweis University.
At the present time, the following non-EU teaching institutions have a study contract in place with Semmelweis University:

1. University of California, Davis School Medicine, One Shields Avenue, Davis, California 95616, USA
2. State University of New York, School of Medicine and Biomedical Sciences, 501 Capen Hall, Buffalo, NY 14260-1600, USA
3. Saitama Medical School, Moroyama, Iruma-gun, Saitama 350-0495, Japan

In the future, internships spent elsewhere will be considered by the University as additional opportunities of gaining experience, but the student must also spend mandatory internships in the given periods in an appropriate Hungarian or EU-based clinical institution.

If a student wishes to spend their internship abroad, it is the student’s responsibility to obtain a valid accreditation certificate accepted at the given EU teaching institution and must submit it with the Dean’s approval.

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 6 hours per day (30 hours per week, including 1 week Infectology).
- 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, temperature, measuring weight and height 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.).
- Learn how to take venous blood.
- 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 at least twice per month.
- Consultations in gastroenterology, diabetes, hematology, endocrinology, cardiology, sonography, X-ray, ECG etc.
- Watch endoscopy performed.
- See the intensive coronary care unit.
– Be present at postmortems.
– 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.
– The students should practice the prescription of commonly used drugs.

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.
– Being on duty for 24 hours once a week.
– 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 IV 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

Requirements

2 week practice

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.
3. 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

The department will accept certificates issued by Departments of Traumatology or Departments of Orthopedics.
According to the curriculum, 6th year medical students should complete a 8-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 (Sternum puncture, 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
- Every day consultation about different Pediatric subjects (see enclosed list)

### Consultation

<table>
<thead>
<tr>
<th>Topic</th>
<th>Tutor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pediatric Oncology</td>
<td>Prof. Dr. Schuler</td>
</tr>
<tr>
<td>2. Epilepsy</td>
<td>Prof. Dr. Kálmánchey R.</td>
</tr>
<tr>
<td>3. Pediatric Endocrinology</td>
<td>Dr. Halász. Z.</td>
</tr>
<tr>
<td>4. Hypertension Disturbances of the lipid metabolism</td>
<td>Dr. Szamosi T.</td>
</tr>
<tr>
<td>5. Nutrition and Feeding</td>
<td>Dr. Tomsits E.</td>
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<tr>
<td>6. Disturbance in Sexual Differentiation</td>
<td>Prof. Dr. Sólyom</td>
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<tr>
<td>7. X-ray Diagnosis</td>
<td>Dr. Rudas G.</td>
</tr>
<tr>
<td>8. Diabetes Mellitus</td>
<td>Dr. Hosszú É.</td>
</tr>
<tr>
<td>9. Abdominal Pain (diff. dg.)</td>
<td>Dr. Hajmássy Zs.</td>
</tr>
<tr>
<td>10. Asthma Bronchiale</td>
<td>Dr. Németh Á.</td>
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<tr>
<td>11. Newborn Infant: Respiratory Disorders</td>
<td>Dr. Pataki M.</td>
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<tr>
<td>Topic</td>
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<tr>
<td>12. Diseases of the Urinary Tract</td>
<td>Dr. Visy M.</td>
</tr>
<tr>
<td>Obstructive Bronchitis</td>
<td></td>
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<tr>
<td>13. Genetic counselling</td>
<td>Prof. Dr. Fekete Gy.</td>
</tr>
<tr>
<td>14. Congenital Heart Diseases and the Treatment in Infanthood</td>
<td>Dr. Szabolcs J.</td>
</tr>
</tbody>
</table>

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.

### 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: Prof. Dr. Anita Kamondi
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 VIth year practices the Department shall
organize “early rotations” right after taking the Vth year semifinal exam.

Neurology rotation is 4 weeks long (when at Semmelweis University 3 weeks clinical practice+1 week
preparation for the exam). 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.

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Department of Neurology. To ease the scheduling of other VIth year practices the Department shall
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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;
2. 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
3. Lindsay,Bone,Callender:Neurology and Neurosurgery Illustrated. Churchill Livingstone
Other suggested books:
2. Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers

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, Transcranial 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.
   D. Define ataxia, dysmetria, wide-based gait, and discuss the localization.
   E. Define and differentiate involuntary movement disorders: tremor, rigidity, spasticity, athetosis, chorea, dystonias, myoclonus, tics.
   F. 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. Identify 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.
   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, mononeuropathy 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. Disorders of the innervation of pupils.
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 rystalline of aphasia
7. Classification of unconscious conditions
8. Examination of the unconscious patient
9. Unconsciousness due to metabolic origin
10. Emergency in Neurology
12. Traumatic intracranial bleeding
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.
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.
5. Syndromes of pons and mesencephalon lesions
6. The muscle tone control
7. Neuroanatomical basis of sensory disturbances
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. Cerebral dominance (functional brain asymmetry)
16. Classification of aphasia
17. Agnosia, apraxia, alexia, agraphia
18. The basal ganglia
19. Disorders of the thalamus
20. Localisation of memory disturbances
21. Imaging techniques (angiography, CT, MR, PET, SPECT )
22. Ultrasound examination of the cerebral vessels
23. EEG in the diagnostic workup
24. EMG, nerve conduction studies, transcranial magnetic stimulation and evoked potentials (BAEP, VEP, SSEP)
25. The lumbar puncture and the examination of cerebrospinal fluid
26. The cerebral circulation, and its regulation
27. Classification of cerebrovascular disorders
28. TIA
29. Cerebrovascular disorders in young adults
30. Treatment of cerebral ischemia
31. Classification of epilepsy
32. Diagnostic workup of epilepsy
33. Differential diagnosis of syncope and other types of disturbed consciousness
34. 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
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<thead>
<tr>
<th>Number</th>
<th>Topic</th>
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<tbody>
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<td>4.</td>
<td>Neurological consequences of AIDS</td>
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<tr>
<td>5.</td>
<td>Clinical types and treatment of multiple sclerosis</td>
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<tr>
<td>6.</td>
<td>Hystopathological classification of brain tumors</td>
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<td>7.</td>
<td>Brain tumors of childhood</td>
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<td>8.</td>
<td>Metastatic tumors of the brain</td>
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<tr>
<td>9.</td>
<td>Paraneoplasias of the nervous system (PML, neuropathies, cerebellar deg., Lambert-Eaton sy.)</td>
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<td>10.</td>
<td>Disorders associated with parkinsonian syndrome</td>
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<td>11.</td>
<td>Treatment of Parkinson’s disease</td>
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<td>12.</td>
<td>Hyperkinetic movement disorders</td>
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<td>13.</td>
<td>Differential diagnosis of tremor</td>
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<td>14.</td>
<td>Classification of encephalopathies</td>
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<td>15.</td>
<td>Primary degenerative dementias</td>
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<td>16.</td>
<td>Dementia in cerebrovascular disorders</td>
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<td>17.</td>
<td>Multisystem atrophy</td>
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<td>18.</td>
<td>Disturbed cerebrospinal fluid circulation (hydrocephalus)</td>
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<td>19.</td>
<td>Syndrome of brachial plexus damage</td>
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<td>20.</td>
<td>Syndrome of radial, ulnar and median nerve damage</td>
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<tr>
<td>21.</td>
<td>Syndrome of lumbosacral plexus damage</td>
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<td>22.</td>
<td>Etiology of polyneuropathies</td>
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<td>23.</td>
<td>Neuropathies in diabetes mellitus</td>
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<tr>
<td>24.</td>
<td>Inherited neuropathies (Charcot-Marie, Dejerine-Sottas, Refsum)</td>
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<tr>
<td>25.</td>
<td>Low back pain, and cervical disk disease</td>
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<td>26.</td>
<td>Cranio-cervical developmental malformations</td>
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<td>27.</td>
<td>Malformation of the spine and spinal cord</td>
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<td>28.</td>
<td>Symptoms of the disorder of spinal cord</td>
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<tr>
<td>29.</td>
<td>Motoneuron diseases (ALS, progr. Bulbar palsy)</td>
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<td>30.</td>
<td>Muscular dystrophies</td>
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<tr>
<td>31.</td>
<td>Miositis and myopathies</td>
</tr>
<tr>
<td>32.</td>
<td>Primary headache syndromes</td>
</tr>
<tr>
<td>33.</td>
<td>The neuralgias</td>
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<tr>
<td>34.</td>
<td>The physiological sleep and the sleep disorders</td>
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<tr>
<td>35.</td>
<td>Genetic background of muscle disorders</td>
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<tr>
<td>36.</td>
<td>Inborn metabolic disorders affecting the nervous system</td>
</tr>
<tr>
<td>37.</td>
<td>Trinucleotid repeat diseases (Huntington chorea, fragile X, dystrophia myotonica)</td>
</tr>
<tr>
<td>38.</td>
<td>Genetic background of dementias</td>
</tr>
</tbody>
</table>
The goals of the psychiatric practices (4 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 of the high prevalence and last but not least economical 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 know important details about 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 states, too.

In the 5th year students must base their knowledge on lectures and materials of practices, 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 the diseases. During 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 show this case report to the responsible tutor who will give a mark for it. Without the marked case report students are not allowed to take their exam. We have a certificate form on our website, with all the details students must bring from the hospital where they fulfilled their rotation. The link is: http://www.sote.hu/english/content/education/?inst_id=51&page_id=2

Objectives:

- 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 their schedule made by our training coordinator. Everybody has a tutor on the ward he or she belongs 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 outpatient department of our Clinic, which
is very useful because there are many patient examinations referred from the other departments of
the Semmelweis University. Therefore, they can gain an impression about the most important
psychiatric features of internal medicine, neurology, surgery etc. Students must join for one
all-night-duty and they have to take part 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.

Internship has to be completed at a Department of a University or in a Hospital/Teaching Hospital,
which has a contract with a University. Students completing the internship abroad have to present
a letter of evaluation indicating their performance during the internship and a grade from 5
(excellent) to 1 (failure).

Requirements
1. The 6th year includes a 4-weeks-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 Statement of Acceptance for the 4-weeks Psychiatry internship
requested from practice places abroad must state:
   a) The training place abroad is a teaching hospital
   b) The 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 8 hours on 15 (4x5) workdays at psychiatric wards.
   Students participate in the everyday work of the wards, in patients’ admission, in ward
   rounds and in therapeutic decisions. One all-night-duty is part of the rotation period.
4. Writing a case report during rotation period is a task for every student. A sample case report
   is available at the website of our department
   (http://www.sote.hu/intezetek/oktatas/7inst id=51 &page id=5).
5. Case reports should not include patients’ personal data (name, birth date, 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-satisfactory-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 in the 4th week of the
rotation, just after the completed total 4 weeks.
Signup 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 Register of observed psychiatric conditions that was signed continuously by the
tutor during the 5th and 6th year (also available at our website)
FAMILY MEDICINE IN DAILY PRACTICE

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

2 weeks = 10 workdays; working together with a GP tutor in his office and accompanying him/her on house calls:

4 consulting hours/day
10 house calls/2 weeks

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.

PREHOSPITAL EMERGENCY MEDICINE (OXYOLOGY)

Ambulance practice
National Ambulance Service
Lecturer: Dr. Gábor Göbl

Syllabus

During the 2 weeks (70 hours) 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”

GENERAL INFORMATION

The University grants students of foreign citizenship the permission to complete internships outside Hungary at an accredited university clinic or teaching hospital Please see the Information on the rules applicable to the summer and 6th year internships abroad after the Study Program!

Students who cannot pay the whole tuition fee in one sum can pay in two parts, in which case the first part will be due until July 31, 2011 and the second by the end of December, 2011.
Students who only complete the compulsory 2 weeks of Pediatrics in Hungary can ask for 20% reduction of their tuition fee under condition they hand in all the acceptance letters – that first have to be approved by the relevant Clinical Departments of Semmelweis University as well – latest until December 15, 2011. Please write a letter of request addressed to the Academic Program Director when applying for the 20% reduction!

If the tuition fee is paid in one sum, the reduction will be made in July. **In case of paying in two parts, the reduction will be made** from the 2nd part. 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.

**Please note:**

- that you have to sign up for the General Board Examination held in June latest until April 30, 2012! For the August exam latest until July 15, 2012 and for the November exam latest until October 15, 2012!
- that you have to leave your lecture book at the English Secretariat after each Final Examination (because the secretaries need it to do the administration, you will not loose or forget it abroad, etc.)
FACULTY OF DENTISTRY

(Provisional) SCHEDULE OF THE NEW CURRICULUM for years 1 - 5: introduction from the 1st year of the 2011/2012 academic year onwards
# Study Program 2011/12 academic year

## BASIC MODUL

### Faculty of Dentistry

#### 1st semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
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<tbody>
<tr>
<td>compulsory Anatomy, Histology,</td>
<td>C8L3P5</td>
<td>semifinal</td>
<td>Anatomy, Histology, Embryology I.</td>
</tr>
<tr>
<td>Embryology I.</td>
<td></td>
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</tr>
<tr>
<td>compulsory Physical Bases of Dental Materials</td>
<td>C2L2P0</td>
<td>semifinal</td>
<td></td>
</tr>
<tr>
<td>compulsory Medical Chemistry</td>
<td>C6L3P3,5</td>
<td>semifinal</td>
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</tr>
<tr>
<td>(Cellbiology)</td>
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<tr>
<td>compulsory Medical Biology</td>
<td>C3L2P1</td>
<td>final</td>
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<tr>
<td>(Cellbiology)</td>
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<tr>
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<td>pract. mark</td>
<td>Hungarian Medical Terminology I.</td>
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<tr>
<td>Terminology I.</td>
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<tr>
<td>obligatory elective Medical</td>
<td>C2L0P4</td>
<td>pract. mark</td>
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<tr>
<td>Terminology I.</td>
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<tr>
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**Total Credit** 25

#### 2nd semester

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<tbody>
<tr>
<td>compulsory Anatomy, Histology,</td>
<td>C7L3P4</td>
<td>semifinal</td>
<td>Anatomy, Histology, Embryology II.</td>
</tr>
<tr>
<td>Embryology II.</td>
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<tr>
<td>compulsory Biophysics</td>
<td>C5L2,5P3</td>
<td>final #</td>
<td>Physical Bases of Dental Materials</td>
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<tr>
<td>compulsory Biochemistry, Molecular and Cell biology I.</td>
<td>C7L3P4</td>
<td>semifinal</td>
<td>Medical Chemistry</td>
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<tr>
<td>compulsory Hungarian Medical</td>
<td>C2L0P4</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology II.</td>
</tr>
<tr>
<td>Terminology I.</td>
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<td></td>
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</tr>
<tr>
<td>compulsory General Dental Materials</td>
<td>C1L1P0</td>
<td>semifinal</td>
<td>Physical Bases of Dental Materials</td>
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<tr>
<td>obligatory elective First aid</td>
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<tr>
<td>obligatory elective Dental</td>
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<td>1-2 semesters compulsory subjects</td>
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<td>Practice (summer, 2 weeks)</td>
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<tr>
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<td>1-2 semesters compulsory subjects</td>
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<td>(summer, 2 weeks)</td>
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**Total Credit** 29
### 3rd semester

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<tr>
<td>compulsory Anatomy, Histology, Embryology III.</td>
<td>C7L3P4</td>
<td>semifinal</td>
<td>Anatomy, Histology, Embryology II.</td>
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<tr>
<td>compulsory Biochemistry, Molecular and Cellbiology II.</td>
<td>C6L3P3</td>
<td>semifinal</td>
<td>Biochemistry, Molecular and Cellbiology I.</td>
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<tr>
<td>compulsory Medical and Dental Physiology I.</td>
<td>C11L6P5</td>
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<td>Anatomy, Histology, Embryology II.</td>
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<tr>
<td>compulsory Odontotechnology and Prostodontics Preclinical I.</td>
<td>C3L1P2</td>
<td>pract. mark</td>
<td>General Dental Materials</td>
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<tr>
<td>compulsory Hungarian Medical Terminology III.</td>
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<td>pract. mark</td>
<td>Hungarian Medical Terminology II.</td>
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<td>compulsory Anatomy (Maxillofacial Anatomy) IV.</td>
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<td>Anatomy, Histology, Embryology III.</td>
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<tr>
<td>compulsory Biochemistry, Molecular and Cellbiology III.</td>
<td>C6L3P3</td>
<td>final #</td>
<td>Biochemistry, Molecular and Cellbiology II.</td>
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<tr>
<td>compulsory Medical and Dental Physiology II.</td>
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<td>Medical and Dental Physiology I.</td>
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<td>pract. mark</td>
<td>Odontotechnology and Prostodontics Preclinical I.</td>
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<tr>
<td>compulsory Conservative Dentistry and Endodontics, Pre-clinical I.</td>
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<td>pract. mark</td>
<td>Odontotechnology and Prostodontics Preclinical I.</td>
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<tr>
<td>compulsory Hungarian Medical Terminology IV.</td>
<td>C2L0P4</td>
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<td>Hungarian Language III.</td>
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<td>compulsory General Dental Preclinical Practice</td>
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# PRE-CLINICAL MODUL

## Faculty of Dentistry

### 5th semester

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<tr>
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<td>Conservative Dentistry and Endodontics, Pre-clinical II.</td>
<td>C4L1P3</td>
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<td>compulsory</td>
<td>General and Oral Microbiology</td>
<td>C4L2P2</td>
<td>final#</td>
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<tr>
<td>compulsory</td>
<td>General and Oral Pathophysiology</td>
<td>C4L2P2</td>
<td>final#</td>
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<td>compulsory</td>
<td>Basic Immunology</td>
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<td>compulsory</td>
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<td>C2L0P4</td>
<td>pract. mark</td>
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<tr>
<td>compulsory</td>
<td>Oral and Maxillofacial Surgery, Pre-clinical course</td>
<td>C2L0P2</td>
<td>pract.mark</td>
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<tr>
<td>compulsory</td>
<td>Pathology</td>
<td>C6L3P2</td>
<td>final#</td>
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<td>compulsory</td>
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<td>C3L1G2</td>
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<tr>
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<td>C4L1P3</td>
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### 6th semester

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<tr>
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<td>C4L1P3</td>
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<td>compulsory</td>
<td>Internal Medicine I.</td>
<td>C4L2P2</td>
<td>pract. mark</td>
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<tr>
<td>compulsory</td>
<td>Oral and Maxillofacial Surgery I.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
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<tr>
<td>compulsory</td>
<td>Oral Biology</td>
<td>C5L3P2</td>
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<td>Oral Pathology</td>
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<tr>
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<td>final#</td>
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<td>pract. mark</td>
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<tr>
<td>compulsory</td>
<td>Radiation protection</td>
<td>C2L1.5P1</td>
<td>semifinal</td>
</tr>
<tr>
<td>compulsory</td>
<td>Hungarian Dental Terminology II.</td>
<td>C2L0P4</td>
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<tr>
<td>compulsory</td>
<td>Dento-Alveolar practice (summer, minimum 1 week)</td>
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Elective subjects:
# CLINICAL MODUL

## Faculty of Dentistry

### 7th semester

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<th>examination</th>
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<tr>
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<td>C4L2P2</td>
<td>final#</td>
<td>Radiation protection</td>
</tr>
<tr>
<td>compulsory Conservative Dentistry and Endodontics II.</td>
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<td>Conservative Dentistry and Endodontics I.</td>
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<td>compulsory Internal Medicine II.</td>
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<tr>
<td>compulsory Pharmacology, Toxicology I.</td>
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<tr>
<td>compulsory Prosthodontics II.</td>
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<td>pract.mark</td>
<td>Pathology II.</td>
</tr>
<tr>
<td>compulsory Orthodontics Pre-Clinical</td>
<td>C1L0P1</td>
<td>pract. mark</td>
<td>Oral Biology</td>
</tr>
<tr>
<td>obligatory elective Neurorology</td>
<td>C1L1P0</td>
<td>semifinal</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>obligatory elective Psychiatry</td>
<td>C1L1P0</td>
<td>semifinal</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>obligatory elective Dental Ethics</td>
<td>C2L2P0</td>
<td>semifinal</td>
<td>Pathology</td>
</tr>
<tr>
<td>compulsory Gnathology</td>
<td>C3L1P2</td>
<td>final#</td>
<td>Prosthodontics I.</td>
</tr>
<tr>
<td>obligatory elective Public Health</td>
<td>C3L1,5P2</td>
<td>final#</td>
<td>General and Oral Microbiology</td>
</tr>
</tbody>
</table>

**Total Credit 39**

### 8th semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory Conservative Dentistry and Endodontics III.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Conservative Dentistry and Endodontics II.</td>
</tr>
<tr>
<td>compulsory Internal Medicine III.</td>
<td>C1L1P0</td>
<td>final#</td>
<td>Internal Medicine II.</td>
</tr>
<tr>
<td>compulsory Oral and Maxillofacial Surgery III.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Oral and Maxillofacial Surgery II.</td>
</tr>
<tr>
<td>compulsory Oral Diagnostics II.</td>
<td>C1L0P1</td>
<td>semifinal</td>
<td>Oral Diagnostics I.</td>
</tr>
<tr>
<td>compulsory Periodontology II.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
<td>Periodontology I.</td>
</tr>
<tr>
<td>compulsory Pharmacology, Toxicology II.</td>
<td>C3L1P2</td>
<td>final#</td>
<td>Pharmacology, Toxicology I.</td>
</tr>
<tr>
<td>compulsory Prosthodontics III.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Prosthodontics II.</td>
</tr>
<tr>
<td>obligatory elective Surgery</td>
<td>C3L2P1</td>
<td>final#</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>compulsory Implantology I.</td>
<td>C1L1G0</td>
<td>semifinal</td>
<td>Oral and Maxillofacial Surgery II.</td>
</tr>
<tr>
<td>compulsory General Dentistry practice (summer,4weeks)</td>
<td>C0L0P30</td>
<td>signature</td>
<td>1-8 semesters compulsory subjects</td>
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</table>

**Total Credit 25**
SEMMELEWEIS UNIVERSITY / FACULTY OF DENTISTRY

9th semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory</td>
<td>Clinical Dentistry I. *</td>
<td>C4L0P6</td>
<td>pract.mark</td>
</tr>
<tr>
<td>compulsory</td>
<td>Clinical Dentistry I. *</td>
<td>C4L0P6</td>
<td>pract.mark</td>
</tr>
<tr>
<td>compulsory</td>
<td>Conservative Dentistry and Endodontics IV</td>
<td>C3L0P3</td>
<td>pract.mark</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Forensic Dentistry</td>
<td>C1L1P0</td>
<td>semifinal</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Ophthalmology</td>
<td>C1L1P0.5</td>
<td>final#</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral and Maxillofacial Surgery IV.</td>
<td>C6L1P5</td>
<td>practice mark</td>
</tr>
<tr>
<td>compulsory</td>
<td>Implantology II.</td>
<td>C2L1G1</td>
<td>final#</td>
</tr>
<tr>
<td>compulsory</td>
<td>Orthodontics I</td>
<td>C6L1P5</td>
<td>practice mark</td>
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<tr>
<td>obligatory elective</td>
<td>Otorhinolaryngology</td>
<td>C1L1P0.5</td>
<td>final#</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Pediatrics</td>
<td>C1L1P0.5</td>
<td>semifinal</td>
</tr>
<tr>
<td>compulsory</td>
<td>Pedodontics I</td>
<td>C6L1P5</td>
<td>practice mark</td>
</tr>
<tr>
<td>compulsory</td>
<td>Periodontology III.</td>
<td>C3L1P2</td>
<td>practice mark</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Prehospital Emergency Medicine</td>
<td>C1L1P0</td>
<td>semifinal</td>
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<tr>
<td>compulsory</td>
<td>Prosthodontics IV.</td>
<td>C3L0P3</td>
<td>practice mark</td>
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</table>

Total Credit 38

* in the Dept. of Prosthodontics or in the Dept. of Conservative Dentistry

10th semester

<table>
<thead>
<tr>
<th>subjects code</th>
<th>subjects</th>
<th>credit</th>
<th>prerequisites code</th>
<th>prerequisites</th>
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</thead>
<tbody>
<tr>
<td>compulsory</td>
<td>Clinical Dentistry II. *</td>
<td>C4L0P6</td>
<td>practice mark</td>
<td>Clinical Dentistry I. * in the Dept. of Prosthodontics</td>
</tr>
<tr>
<td>compulsory</td>
<td>Clinical Dentistry II. *</td>
<td>C4L0P6</td>
<td>practice mark</td>
<td>Clinical Dentistry I. * in the Dept. of Conservative Dentistry</td>
</tr>
<tr>
<td>compulsory</td>
<td>Conservative Dentistry and Endodontics V</td>
<td>C3L0P3</td>
<td>final#</td>
<td>Conservative Dentistry and Endodontics IV</td>
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<tr>
<td>obligatory elective</td>
<td>Dermatology</td>
<td>C1L1P0.5</td>
<td>final#</td>
<td>Pharmacology, Toxicology II.</td>
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<tr>
<td>obligatory elective</td>
<td>Obstetrics and Family Planning</td>
<td>C1L1P0</td>
<td>semifinal</td>
<td>Internal Medicine III.</td>
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<tr>
<td>obligatory elective</td>
<td>Diploma Work</td>
<td>C20</td>
<td>9th semester’s subjects</td>
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<tr>
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<td>Oral and Maxillofacial Surgery V.</td>
<td>C4L1P3</td>
<td>final#</td>
<td>Oral and Maxillofacial Surgery IV.</td>
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<tr>
<td>compulsory</td>
<td>Oral Medicine</td>
<td>C1L1P0</td>
<td>final#</td>
<td>Periodontology III.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Orthodontics II</td>
<td>C5L1P4</td>
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<td>Orthodontics I</td>
</tr>
<tr>
<td>compulsory</td>
<td>Pedodontics II</td>
<td>C5L1P4</td>
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<td>Pedodontics I</td>
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<tr>
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<td>Periodontology III.</td>
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<tr>
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<td>Prosthodontics V.</td>
<td>C3L0P3</td>
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<td>Prosthodontics IV.</td>
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Total Credit 50

294
# STUDY PROGRAMME

## 1st semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
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</thead>
<tbody>
<tr>
<td>compulsory Anatomy, Histology, Embryology I.</td>
<td>C8L3P5</td>
<td>semifinal</td>
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</tr>
<tr>
<td>compulsory Physical Bases of Dental Materials</td>
<td>C2L2P0</td>
<td>semifinal</td>
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</tr>
<tr>
<td>compulsory Medical Chemistry</td>
<td>C6L3P3,5</td>
<td>semifinal</td>
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<tr>
<td>compulsory Medical Biology (Cellbiology)</td>
<td>C3L2P1</td>
<td>final</td>
<td></td>
</tr>
<tr>
<td>compulsory Hungarian Medical Terminology I.</td>
<td>C4L0P4</td>
<td>pract. mark</td>
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</tr>
<tr>
<td>obligatory elective Medical Terminology I.</td>
<td>C2L0P2</td>
<td>pract. mark</td>
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</tr>
<tr>
<td>compulsory Physical Education I.</td>
<td>C0L0P1</td>
<td>signature</td>
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</table>

**Total Credit 25**

## 2nd semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory Anatomy, Histology, Embryology II.</td>
<td>C7L3P4</td>
<td>semifinal</td>
<td>Anatomy, Histology, Embryology I.</td>
</tr>
<tr>
<td>compulsory Biophysics</td>
<td>C5L2,5P3</td>
<td>final#</td>
<td>Physical Bases of Dental Materials</td>
</tr>
<tr>
<td>compulsory Biochemistry, Molecular and Cellbiology I.</td>
<td>C7L3P4</td>
<td>semifinal</td>
<td>Medical Chemistry</td>
</tr>
<tr>
<td>compulsory Hungarian Medical Terminology II.</td>
<td>C2L0P4</td>
<td>pract.mark</td>
<td>Hungarian Medical Terminology I.</td>
</tr>
<tr>
<td>compulsory General Dental Materials</td>
<td>C1L1P0</td>
<td>semifinal</td>
<td>Physical Bases of Dental Materials</td>
</tr>
<tr>
<td>obligatory elective First aid</td>
<td>C0L0P1</td>
<td>pract.mark</td>
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</tr>
<tr>
<td>obligatory elective Medical Informatics</td>
<td>C3L1P2</td>
<td>semifinal</td>
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</tr>
<tr>
<td>compulsory Physical Education II</td>
<td>C0L0P1</td>
<td>signature</td>
<td></td>
</tr>
<tr>
<td>obligatory elective Dental Psychology</td>
<td>C2L2P0</td>
<td>semifinal</td>
<td></td>
</tr>
<tr>
<td>obligatory elective Medical Sociology</td>
<td>C2L1P1</td>
<td>semifinal</td>
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<tr>
<td>compulsory Dental Laboratory Practice</td>
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<td>1-2 semesters compulsory subjects</td>
</tr>
<tr>
<td>(summer, 2 weeks)</td>
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</tr>
<tr>
<td>compulsory Nursing Practice (summer, 2 weeks)</td>
<td>C0L0P30</td>
<td>signature</td>
<td>1-2 semesters compulsory subjects</td>
</tr>
</tbody>
</table>

**Total Credit 29**

Note: See the curricula of Dental Psychology and Medical Sociology in the 4th year!

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program.

Explanation:

# The grade influences the qualification of the diploma

C= Credit point  
L= Lecture (hours/week)  
P= Practice (hours/week)
LIST OF TEXTBOOKS

7. Tóth: Concise Inorganic Chemistry for Medical Students. (SOTE) (Bp.)
8. Laboratory Manual I-II. (Bp.)
9. Hrabák: Selected Collection of Chemical Calculations (SOTE) (Bp.)
10. Sasvári: Bioorganic Compounds (Bp.) SOTE

Recommended textbooks:

3. Sasvári-Müllner: Bioorganic Compounds 4 kötet. (Bp.)
# ANATOMY, HISTOLOGY AND EMBRYOLOGY

## Department of Anatomy, Histology & Embryology

Tutor: **Dr. Andrea Székely**

### First Semester

Lectures: 3 hours per week  
Laboratory: 5 hours per week, 3 hours Anatomy, 2 hours Histology

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The place of anatomy, histology and embryology in the medical curriculum, their nomenclature</td>
<td>Behaviour in the dissecting room. Bones and joints of the shoulder girdle and the arm. Demonstration: shoulder joint</td>
</tr>
<tr>
<td>2.</td>
<td>Structure of the limbs (bony skeleton, joints, muscles, groups of muscles, fasciae, histological specimens. fascial compartments, arteries, superficial and deep veins, nerves, innervation of the muscles and the skin</td>
<td>Behaviour in the histology lab. Use of the microscope. Preparation of the</td>
</tr>
<tr>
<td>3.</td>
<td>Animal tissues, epithelial cells, simple epithils</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Stratified epithelia</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Types and composition of joints (general arthrology)</td>
<td>Bones of the shoulder girdle and the upper extremity. Rules of the dissection (prevention of accidents). Dissection of the shoulder and elbow joints.</td>
</tr>
<tr>
<td>6.</td>
<td>Features of the skeletal musculature (general myology)</td>
<td>Dissection of the joints of the upper extremity. Dissecting of the upper extremity: removal of the skin, fascia brachii and antebrachii</td>
</tr>
<tr>
<td>7.</td>
<td>Shoulder joint and the muscles acting upon it</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Bones and joints of the hand</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Glandular epithelium</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Muscles of the hand</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Connective tissue, cells</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Connective tissue: fibers; types of the connective tissue</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Blood, hematopoesis</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Supporting tissue</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Bone formation</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Vertebrae, sacrum, vertebral column</td>
<td>TEST. Upper extremity</td>
</tr>
<tr>
<td>17.</td>
<td>Superficial and deep muscles of the back</td>
<td>CONNECTIVE TISSUE, CELLS. Various types of cells</td>
</tr>
</tbody>
</table>
### Lectures Dissecting room

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>18. Thorax, pectoral and intercostal muscles</td>
<td>Vertebræ, ribs, sternum (scar tissue); mast cells peri- (oneum); fat cells (tongue, skin).</td>
</tr>
<tr>
<td>20. Abdominal muscles, rectus sheath</td>
<td>Blood smear, bone marrow smear.</td>
</tr>
<tr>
<td>21. Diaphragm</td>
<td>CONNECTIVE TISSUE. TYPES. Mesenchyme umbilical cord; dense connective tissue (tendon); reticular tissue (lymph node); cell rich tissue (uterus).</td>
</tr>
<tr>
<td>23. Implantation, germ layers, embryonic disc</td>
<td>Fascia lata, fascia cruris, plantar aponeurosis.</td>
</tr>
<tr>
<td>25. Hip joint and the muscles acting upon it</td>
<td>Bones of the lower extremity.</td>
</tr>
<tr>
<td>27. Foot and calf, muscles of the sole,</td>
<td>Fascia lata, fascia cruris, plantar aponeurosis.</td>
</tr>
<tr>
<td>28. Neurulation. Folding of the embryo. Fetal membranes</td>
<td>BONE, BONE FORMATION. Bone, cross and longitudinal sections. Enchondral ossification the mesoderm (digit); intramembranous ossification (skull).</td>
</tr>
<tr>
<td>29. Early embryonic and placental circulation. Structure of the placenta the motor system</td>
<td>Knee joint, joints of the foot.</td>
</tr>
<tr>
<td>30. Muscle tissue I.</td>
<td>Extensor muscles of the thigh.</td>
</tr>
<tr>
<td>31. Muscle tissue II.</td>
<td>Peroneal muscles.</td>
</tr>
<tr>
<td>32. Herniae</td>
<td>TEST. Epithelial, connective and supporting tissues.</td>
</tr>
<tr>
<td>33. Herniae</td>
<td></td>
</tr>
<tr>
<td>34. Neuronal tissue: neurons and supporting cells derived from the neural tube</td>
<td></td>
</tr>
<tr>
<td>35. Neuronal tissue: neurons and supporting cells derived from the neural crest</td>
<td></td>
</tr>
<tr>
<td>36. Neuronal tissue: synapses, effectors, receptors</td>
<td></td>
</tr>
<tr>
<td>37. Sphenoid and ethmoid bones</td>
<td></td>
</tr>
<tr>
<td>38. Temporal bone</td>
<td></td>
</tr>
<tr>
<td>39. Calvaria, base and interior of the skull</td>
<td></td>
</tr>
<tr>
<td>40. Facial skeleton, orbit</td>
<td></td>
</tr>
<tr>
<td>41. Nasal cavity, paranasal sinuses</td>
<td></td>
</tr>
<tr>
<td>42. Oral cavity, pterygopalatine and infratemporal fossae</td>
<td></td>
</tr>
<tr>
<td>43. Mandible, temporomandibular joint</td>
<td></td>
</tr>
<tr>
<td>44. Atlantooccipital and atlantoaxial joints. Suboccipital muscles</td>
<td></td>
</tr>
<tr>
<td>45. Development of the skull. Fontanelles</td>
<td></td>
</tr>
</tbody>
</table>

### Histology lab.

<table>
<thead>
<tr>
<th>Lecture</th>
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</tr>
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<tbody>
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<td>CONNECTIVE TISSUE. TYPES. Mesenchyme umbilical cord; dense connective tissue (tendon); reticular tissue (lymph node); cell rich tissue (uterus).</td>
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<td>23. Implantation, germ layers, embryonic disc</td>
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<tr>
<td>32. Herniae</td>
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<td>35. Neuronal tissue: neurons and supporting cells derived from the neural crest</td>
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<td>36. Neuronal tissue: synapses, effectors, receptors</td>
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<tr>
<td>45. Development of the skull. Fontanelles</td>
<td></td>
</tr>
</tbody>
</table>
ANATOMY, HISTOLOGY AND EMBRYOLOGY

Lectures: 3 hours per week  
Laboratory: 4 hours per week, 2 hours Anatomy, 2 hours Histology

Second Semester

Lectures Dissecting room  
Histology lab.
1. Introduction. Significance of the vascular and lymphatic organs in the medical curriculum and in the medical practice  
Heart: surface structure, vessels, myocard  
VESSELS. Elastic artery (carotid artery); middle size artery and vein, arterioles, venules, capillaries (tongue)
2. Histology of the vessel wall  
Chambers of the heart, valves  
LYMPHATIC ORGANS.
3. Lymphatic organs: lymph node, spleen  
Lymph node, spleen
4. Lymphatic organs: thymus, tonsils  
Pericard. In situ heart dissection.  
LYMPHATIC ORGANS.
5. Surface structures of the heart, anulus fibrosus, myocard  
Demonstration of unfixed heart.
6. Chambers of the heart, valves  
HEART. Wall structure, conducting system.
7. Vessels of the heart, conducting system, topography. Pericard  
7. Vessels of the heart, conducting system, topography. Pericard
8. Development of the heart and the pericard I.
9. Development of the heart and the pericard II.
10. Viscera, introduction. Histological structure of the solid and hollow viscera  
TEST. Heart, anatomy and embryology  
DIGESTIVE SYSTEM. Lip, tongue, filiforme, fungiform and vallate papillae.
Muscles of the face (demonstration)  
Foliate papilla (demonstration)
12. Muscles of mastication. Tongue  
Tongue, cervical organs on the visceral complex  
DIGESTIVE SYSTEM.
Salivary glands (parotid, submandibular, sublingual); tooth (demonstration)
14. Development and histology of the teeth  
DIGESTIVE SYSTEM.
15. Development of the face, malformations  
Tooth development, esophagus
16. Pharynx, structure of the wall, soft palate  
Esophagus, aorta
17. Infrahyoid muscles, cervical fascia, para- and retropharyngeal space  
18. Esophagus, stomach: anatomy and histology  
19. Development of the foregut  
Abdominal organs, peritoneum.  
DIGESTIVE SYSTEM. Lip, stomach, cardia, pylorus
20. Small intestine: anatomy and histology  
Hepatoduodenal ligament, mesentery  
DIGESTIVE SYSTEM.
21. Colon, rectum: anatomy and histology  
Unpaired branches of the abdominal aorta, tributaries of the portal vein  
Duodenum, jejunum, ileum, colon, appendix
22. Liver and biliary apparatus: anatomy  
Demonstration of the abdominal visceral topography in the cadaver  
DIGESTIVE SYSTEM.
23. Liver and biliary apparatus: histology  
LIVER. Galbladder, pancreas cadaver. Larynx, trachea  
TEST. Lymphatic organs, vessels, heart, digestive system
24. Pancreas: anatomy and histology  
25. Development of the middle and hindgut  
Portal vein and tributaries  
26. Peritoneum  
27. Cartilages, joints and muscles of the larynx  
Demonstration of the abdominal visceral topography in the cadaver  
28. Skeleton of the larynx, laryngeal inlet, rima glottidis  
Pleur. Mediastinum.  
Lung, Mediastinum.
29. Trachea, lung: anatomy. Pleura  
30. Histology of the lung. Development of the respiratory system  
31. Kidney, ureter: anatomy  
32. Histology and vascular structure of the kidney  
TEST. Anatomy and embryology of the digestive and respiratory systems.  
RESPIRATORY SYSTEM. Larynx, trachea, lung.  
Demonstration: embryonal
Lectures Dissecting room
33. Urinary bladder: anatomy and histology.
   Female urethra
34. Development of the uropoetic system,
   malformations
35. Testis, spermigenesis, epididymis
36. Ductus deferens, spermatic cord,
   seminal vesicle, prostate, male urethra:
   anatomy and histology
37. Penis: anatomy and histology.
   Male penneum
38. Ovary and uterine tube: anatomy and
   histology, Oogenesis.
39. Anatomy of the uterus, broad ligament
40. Histology of the uterus, menstrualual
   cycle
41. Vagina, outer female genital organs.
   Female penneum
42. Development of the genital organs
43. Malformation of the gender, bisexuality
44. Separation of the body cavities.
   Development of the diaphragm
45. Development of the major arteries
   and veins. Fetal circulation

Histology lab.
Capsules of the kidney,
components of the renal hilum.
Aorta, inferior vena cava, ureter;
pelvic organs.
Retroperitoneum
Pelvic organs.
Peritoneum in the pelvis.
Pelvic organs, topography.
Perineum
Review
TEST. Urogenital system

Semester examination (semi-final)

GENERAL DENTAL MATERIALS
Lecturer: Dr. András Kóbor D.M.D.

Second Semester

Lectures (1 hour/week)
History of dental education
Impression materials I.
Impression materials II.
Metals, technologies
Casts, models and dies
Precious alloys, non precious alloys
Investment materials, flasking methods
Dental ceramics I- Silicate ceramics
Dental ceramics II- Oxidercamics
Dental resins
Luting cements
Restorative materials
Technologies: CAD/CAM,CNC, sintering
Auxiliary materials
Consultation
PHYSICAL BASES OF DENTAL MATERIALS
Tutor: Dr. István Voszka

First Semester
Lecture (2 hours/week)
1. Basic forms of material, atoms, interactions, bonds
   Fluids. Interface phenomena. Liquid crystals.
4. Methods for structure examination (diffraction, microscopic, spectroscopic methods)
6. Ceramics, polymers, composites.
10. Other physical (optical, electrical, thermal) properties of materials
11. Comparison of the properties of dental materials
13. Physical bases of implantology.

MEDICAL BIOLOGY (Cell Biology) – Department of Genetics,
Cell- and Immunobiology
Lecturer: Prof. Dr. András Falus

First semester
Credit: 3
Topics:
1. Eukaryotic cell organization.
5. Structure and function of endoplasmatic reticulum.
7. Endocytosis. Intracellular digestion
8. Protein and lipid transport mechanisms in eukaryotic cell.
9. Mitochondria and peroxisomes
12. Cells in their social context.
13. Cell cycle and its regulation
15. Light microscope and light microscopic microtechnique, light microscopic preparations
16. Stainings and cytochemical reactions
17. Immunocytochemistry
18. Electronmicroscope and electronmicroscopic microtechnique, ultrastucture of cell organelles
19. Tissue culturing
Important notes: No possibility to make up of absences.
Two written midterm exams.
No more than three absences from practice.
Requirement: Final exam (written)

Lecture presentations and additional texts are available on the homepage: www.dgci.sote.hu

FIRST AID
Course director: Dr. Gábor Gőbl
Tutor: Dr. Imre Engelbrecht

Second Semester

Topics
Dangerous scene. Safety measurements on the scene. Call for an ambulance.
Emotional viewpoints of managing emergencies.
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 + AED
BLS + AED
Fainting. Shock. Allergy
Poisioning. 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 performance of the above mentioned requirements at the last practice will be evaluated with “accepted” or “not accepted”.

SEMMELWEIS UNIVERSITY / FACULTY OF DENTISTRY
MEDICAL INFORMATICS
Institute of Development and Higher Education in the field of Medical Informatics
Director: Dr. Elek Dinya
Tutor: Dr. Mariann Szabó Dinya

GENERAL INFORMATION:
The program in Medical Informatics trains students in the application of computer and information sciences to the quantitative aspects and decision needs of the health and life sciences. Medical Informatics encompasses not only mathematics, statistics and computing, but also includes other engineering, management, and information sciences applied to problems arising in biology, medicine and the delivery of health care. In addition to basic biostatistician and computing techniques, it is necessary that students be familiar with other methodologies such as mathematical modeling, systems analysis, image and signal processing, management information systems and decision sciences. Possible areas of emphasis include health information systems, biomathematical modeling, evaluation of health programs, system development, clinical decision studies and WEB 2.0 solutions in health care system.

AIMS:
to discuss the structure and operation of state of art information technology tools in the health care
to teach medical students the basic principles of using information technology and general-purpose software in medical activity
to help students to learn skills of using telecommunication systems and information resources on the Internet in education, learning, research and clinical practice

REQUIREMENTS:
Practical course grade is obtained if the student has demonstrated the solution of the problem selected at the first lecture to the practice lecturer. Demonstration is associated which question-answering related to problem-solving.
Students are allowed to redo a failed demonstration twice in one examination period. Practice students may ask for help from the lecturer. - Signature is refused if the student’s absences exceeded 25% of all practices.

THEMES

<table>
<thead>
<tr>
<th></th>
<th>Lecture</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Health care and organizations. Data and information in health care. Types of clinical data (text, sound, image)</td>
</tr>
<tr>
<td>2</td>
<td>Data transmission and telecommunication. The internet</td>
</tr>
<tr>
<td>3</td>
<td>DBMS Database Management Systems. Electronic Patient Record</td>
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<tr>
<td>4</td>
<td>WEB 2.0 and the health care system. Mobile Communication</td>
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<tr>
<td>5</td>
<td>Security, Encryption and Digital Signature</td>
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<tr>
<td>6</td>
<td>Structuring and representing medical knowledge. Evidence and case bases.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Data manipulation in the computer. Working with text, image, sound and video</td>
</tr>
<tr>
<td>2</td>
<td>Getting Started With The Internet.</td>
</tr>
<tr>
<td>3</td>
<td>Database management programs, constructing a relational data base of students’ lecture books using Microsoft access.</td>
</tr>
<tr>
<td>4</td>
<td>Extracting data from a food database using MS Access.</td>
</tr>
<tr>
<td>5</td>
<td>Data manipulation and visualizations with Microsoft Excel.</td>
</tr>
</tbody>
</table>
Related reading:

J.H. van Bemmels: Handbook of Medical Informatics
Printed version: Bohn Stafleu Van Loghum, Houten/Diegem 1996
E-text: http://www.mihandbook.stanford.edu

See all the other detailed curricula at General Medicine, 1st year

**COMPULSORY SUMMER PRACTICE**

I.

*Nursing Course – 2 weeks (60’ hours)*

**Week 1**
An introduction to the structure of a hospital as an institution for attending patients.
1. In-patient department
2. Out-patient department
3. Auxiliary departments (X-ray, labs, physiotherapy, etc.)
4. Departments of Administration (warden’s office, cashier’s office, etc.)
5. Service departments (kitchen, storeroom, laundry, etc.)
Getting acquainted with the ward and its connected parts
Making beds with help and alone (for walking cases)
Making beds with turnable bedcase (for walking cases)
Use of comfort equipments (under supervision)
Disinfectants in the ward
Cleaning and sterilization of bedpans, urinals and spitoons
Helping with taking temperatures, sterilization of thermometers
Helping with serving food
Helping with feeding bed patients

**Week 2** (practicing the things learnt the previous week)
Helping with the patients’ placing in chairs, stretchers and wheelchairs
Helping with the washing of not seriously ill patients, mouth hygiene and nail care
Helping with the dressing and undressing of the patients
Taking temperatures
Practicing how to feel the pulse
Helping with changing clothes
Practicing to keep temperature and pulse charts
Working with syringe, practicing pumping
Helping to sterilize the syringe (the importance of sterilization)
Helping with preparing and sending samples to the labs, filling up guide slips
Staying in the lab for one day favourable in the department’s lab helping with and practicing urine analysis with reagents

Students are not allowed to do the course in a children’s ward.

II.

Dental Laboratory Technical Practice (60 hours)

Two weeks should be spent in a dental laboratory where students should practice dental laboratory procedures, casting, investing, setting up teeth and carving wax models. It is recommended to mix stones, plasters, pour impressions and make sculpture wax 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

Faculty of Dentistry
2nd year
### 3rd semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory Anatomy, Histology, Embryology III.</td>
<td>C7L3P4</td>
<td>semifinal</td>
<td>Anatomy, Histology, Embryology II.</td>
</tr>
<tr>
<td>compulsory Biochemistry, Molecular and Cellbiology II.</td>
<td>C6L3P3</td>
<td>semifinal</td>
<td>Biochemistry, Molecular and Cellbiology I.</td>
</tr>
<tr>
<td>compulsory Medical and Dental Physiology I.</td>
<td>C11L6P5</td>
<td>semifinal</td>
<td>Anatomy, Histology, Embryology II.</td>
</tr>
<tr>
<td>compulsory Odontotechnology I.</td>
<td>C3L1P2</td>
<td>pract.mark</td>
<td>General Dental Materials</td>
</tr>
<tr>
<td>compulsory Hungarian Medical Terminology III.</td>
<td>C2L0P4</td>
<td>signature</td>
<td>Hungarian Medical Terminology II.</td>
</tr>
<tr>
<td>compulsory Physical Education III.</td>
<td>C0L0P2</td>
<td>signature</td>
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<tr>
<td><strong>Total Credit</strong></td>
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</table>

### 4th semester

<table>
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<tr>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory Anatomy (Maxillofacial Anatomy) IV.</td>
<td>C5L3P2</td>
<td>final#</td>
<td>Anatomy, Histology, Embryology III.</td>
</tr>
<tr>
<td>compulsory Biochemistry, Molecular and Cellbiology III.</td>
<td>C6L3P3</td>
<td>final#</td>
<td>Biochemistry, Molecular and Cellbiology II.</td>
</tr>
<tr>
<td>compulsory Medical and Dental Physiology II.</td>
<td>C10L6P5</td>
<td>final#</td>
<td>Medical and Dental Physiology I.</td>
</tr>
<tr>
<td>compulsory Odontotechnology II.</td>
<td>C5L0P5</td>
<td>pract.mark</td>
<td>Odontotechnology I.</td>
</tr>
<tr>
<td>compulsory Conservative Dentistry and Endodontics, Pre-clinical I.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Odontotechnology I.</td>
</tr>
<tr>
<td>compulsory Hungarian Medical Terminology IV.</td>
<td>C2L0P4</td>
<td>pract.mark</td>
<td>Hungarian Language III.</td>
</tr>
<tr>
<td>compulsory Physical Education IV.</td>
<td>C0L0P2</td>
<td>signature</td>
<td></td>
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<tr>
<td><strong>Total Credit</strong></td>
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<td><strong>32</strong></td>
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</tbody>
</table>

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program.

Explanation:
- # The grade influences the qualification of the diploma
- * Physical Education I-IV. has to be completed until the end of the third year.
- C = Credit point
- L = Lecture (hours/week)
- P = Practice (hours/week)
LIST OF TEXTBOOKS

5. A.Newbrun: Cariology Quintessence. ISBN 0867152052

Recommended textbooks:

2. Ganong: Review of Medical Physiology. Lange
### First Semester

**Lectures:** 3 hours per week  
**Laboratory:** 4 hours per week

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The significance of the nervous system in the medical curriculum and practice.</td>
<td>Divisions of the brain meninges, arteries and veins of the brain, surface structure of the hemispheres</td>
<td></td>
</tr>
<tr>
<td>2. Development of the telecephalon, Meninges anatomy of the hemispheres, lateral ventricles</td>
<td>Basis cerebris.</td>
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<tr>
<td>3. Development and anatomy of the diencephalon.</td>
<td>Demonstration: dura maters, sinuses</td>
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<tr>
<td>4. Development and anatomy of the brain stem and cerebellum.</td>
<td>Lateral ventricles, third ventricle</td>
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<tr>
<td>5. Blood supply of the brain. Cerebrospinal fluid</td>
<td></td>
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<tr>
<td>6. Differentiation of the neural tube, development of the spinal cord</td>
<td></td>
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<tr>
<td>8. Neuronal architecture of the spinal cord: propriocceptive and withdrawal reflex arches</td>
<td></td>
<td>Spinal cord, spinal ganglion, medulla oblongata, mesencephalon</td>
</tr>
<tr>
<td>9. Neuronal architecture of the spinal cord: autonomous reflex arch, spinal pathways</td>
<td></td>
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</tr>
<tr>
<td>10. Nuclei and pathways in the brain stem I.</td>
<td>Cross sections of the brain stem.</td>
<td>Demonstration: spinal cord</td>
</tr>
<tr>
<td>11. Nuclei and pathways in the brain stem II.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Nuclei and pathways in the brain stem III.</td>
<td>Coronal and horizontal sections</td>
<td>Cerebellum, cerebral cortex</td>
</tr>
<tr>
<td>13. Microscopic structure and connections of the thalamic nuclei</td>
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<tr>
<td>14. Sensory pathways</td>
<td></td>
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<tr>
<td>15. Neural correlates of the pain sensation</td>
<td>Test. Anatomy of the brain and the spinal cord; nuclei, pathways (tracts), embryology. Regio (r.)</td>
<td></td>
</tr>
<tr>
<td>16. Cerebellar cortex</td>
<td>Frontalis, r. infraorbitalis et buccalis, r. supraclavicularis, r. Axillaris</td>
<td></td>
</tr>
<tr>
<td>17. Cerebellar pathways</td>
<td></td>
<td></td>
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<tr>
<td>18. Structure and connections of the basal nuclei (extrapyramidal system)</td>
<td></td>
<td></td>
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<tr>
<td>19. Motor pathways</td>
<td>R. frontalis, r. infraorbitalis et buccalis, r. supraclavicularis, r. axillaris</td>
<td></td>
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<tr>
<td>20. Patient demonstration</td>
<td></td>
<td></td>
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<tr>
<td>21. Cerebral cortex</td>
<td>R. parotideomasseterica, r. mediana colli, r. infraclavicularis, r. deltoidea</td>
<td></td>
</tr>
<tr>
<td>22. Trigeminal nerve</td>
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<tr>
<td>23. Facial nerve</td>
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<tr>
<td>24. Glossopharyngeal, vagus, accessory and hypoglossal nerves</td>
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<td></td>
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<tr>
<td>25. Olfactory and gustatory systems</td>
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<tr>
<td>26. Outer and middle coats of the eyeball</td>
<td></td>
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<tr>
<td>27. Lens, chambers of the eye, vitreous body, accommodation</td>
<td></td>
<td>Dissection of the eye</td>
</tr>
</tbody>
</table>
Lectures

28. Inner coat of the eyeball, retina

29. Outer eye muscles, movement of the eye

30. Protective and lacrimal apparatus of the eye

31. Optic nerve, visual pathway, visual cortex. Development of the eye

32. Outer ear, tympanic cavity, auditory ossicles. Demonstration: middle and inner ear

33. Bony and membranous labyrinth

34. Vestibular system

35. Organ of Corti


37. Limbic system

38. Hypothalamo-hypophyseal systems

39. Endocrine organs: pituitary, pineal gland

40. Endocrine organs: thyroid gland, parathyroid gland, Adrenal gland

41. Parasympathetic nervous system

42. Sympathetic nervous system

43. Enteral nervous system

44. Skin and appendages I.

45. Skin and appendages II., mammary gland

Dissecting room

R. submandibularis, trigonum caroticum, fossa scalenotrachealis.

R. submandibularis, trigonum caroticum, fossa scalenotrachealis.

R. submandibularis, trigonum caroticum, fossa scalenotrachealis.

Development of the eye

Development of the auditory and vestibular systems

In situ dissection of the brain

Endocrine organs. Pituitary, pineal gland, thyroid gland, parathyroid gland

Endocrine organs: pituitary, pineal gland, parathyroid gland

Endocrine organs: pituitary, pineal gland, parathyroid gland

Endocrine organs: pituitary, pineal gland, parathyroid gland

Tympanic cavity, inner ear

In situ dissection of the brain

In situ dissection of the brain

In situ dissection of the brain

Skin, Palmar (non-hairy) skin, axillary skin

Histology lab.

middle and inner ear

middle and inner ear

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5 Surface- and sectional anatomy III. Thorax I.
   TEST. Dorsal regions, spinal nerves.
   R. cubiti ant., r. carpi volaris, r. palmaris, r. genus ant.,
   r. dorsalis pedis, r. abdominis mediana, r. inguinalis

6 Surface- and sectional anatomy IV. Thorax II.
   R. cubiti ant., r. carpi volaris, r. palmaris,
   r. genus ant., r. dorsalis pedis, r. abdominis
   mediana, r. inguinalis

7 Surface- and sectional anatomy V. Abdominal cavity I.
   R. brachii ant., r. antebrachii ant., r. Subinguinalis, Review II.
   R. femoris ant., r. crus ant. Projection of the
   thoracic organs into the anterior thoracic wall

8 Surface- and sectional anatomy VI. Abdominal cavity II.
   R. brachii ant., r. antebrachii ant.,
   r. subinguinalis, r. femoris ant., r. crus ant.
   Dissection of the organs in the thoracic cavity

9 Surface- and sectional anatomy VII. Male pelvic organs and perineum
   Abdominal cavity III. Male pelvic organs and perineum
   Projection of the abdominal organs to the
   anterior abdominal wall. Dissection of the
   abdominal organs

10 Surface- and sectional anatomy VIII. Female pelvic organs and perineum
    Mediastinum, hilum of the lung, Celiac trunk, Review III.
    superior and inferior mesenteric arteries
    portal vein

11 Surface- and sectional anatomy IX. Skull (brain)
   Mediastinum, hilum of the lung, Celiac trunk,
   superior and inferior mesenteric arteries portal vein

12 Intracranial compartments
   TEST. Ventral regions, thoracic and abdominal cavities.
   Pelvic organs, internal iliac artery, pelvic
   venous plexus, Retroperitoneum

13 Presentation of the research activity of the Department of Anatomy
   Pelvic organs, internal iliac artery, pelvic
   venous plexus. Retroperitoneum
   Review IV.

14 Review of the embryology: circulatory and digestive organs
   Orbit, tympanic cavity. Perineum

15 Review of the embryology: respiratory and urogenital organs
   Orbit, tympanic cavity, nasal cavity, pharynx
   Perineum.
   TEST. Pelvic organs, perineum

Semester examination (final)
MEDICAL AND DENTAL PHYSIOLOGY
Department of Physiology
Course Director: Dr. Péter Várnai
Tutor: Dr. András Balla

The lecture hours per week are 6; the practice hours per week are 5.

### First Semester

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

### 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
- Simulated contraction on a nerve-muscle preparation
- Blood pressure measurement in humans
- Examination of the isolated frog heart (Straub heart preparation)
• Measuring ion transport across frog skin
• Investigation of frog nerve-muscle preparation
• Examination of complex action potential on frog ischiadic nerve
• Monitoring Blood Circulation, Nerve and Muscle Function on a Virtual Cat
• Human pulmonary function tests – Spirometry
• Recording and analyzing the human ECG
• Evaluation of acid-base parameters with the Siggaard-Andersen nomogram

**Second Semester**

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

**Practices**

• Human pulmonary function tests – Body plethysmography
• Measurement of cardiac output in rat
• Circulatory and respiratory reflexes in rabbit (Demonstration, Practice)
• Studies on circulatory reactions of a virtual rat
• Oral glucose tolerance test (OGTT)
• Human acid-base examinations (Astrup)
• Electromyography (EMG), nerve conduction velocity
• EEG-demonstration
• Electrooculography (EOG) and investigation of the vestibular system
• Human visual physiology
Function and pharmacology of the neuromuscular junction
CONSERVATIVE DENTISTRY AND ENDODONTICS
Tutor: Dr. Krisztna Márton

Second Semester

Phantom-course (Pre-clinical laboratory course)

**Lecture** (1 hour/week)
Introduction to operative dentistry

Clinical dental anatomy, histology.
Occlusion
Cariology: the lesion (macromorphology, enamel caries, dentinal caries, advanced carious lesion). Fundamentals in cavity preparation (nomenclature/caries, cavity from, cavity classification/)
Steps in cavity preparation by Black.
Cutting instruments and mechanical and biological considerations.
Class V. Facial Cavity preparation for amalgam and Tooth-Colored Material.
Class II. Cavity preparation for Amalgam.
Class III. Cavity preparation for Tooth-Colored Material.
Class IV. Disto-Incisal Cavity Preparation for Tooth-Colored Material.
Class II. Cavity preparation for Tooth Colored Material. Tunnel preparations for proximal Restorations.
Class II. Cavity preparations for Gold (metal) inlay and gold onlay restorations.
Class I, IV, V, VI. Cavity preparation for gold inlay restorations
Cavity preparations for Composit resin and porcelain inlay restorations.
Pin-retained restorations (type of pins, indications and contraindications).
Preparation for Porcelain Veneers.

**Manual training** (3 hours per week)
Introduction to practice: general
Department’s policy. Rules of the house.
Distribution of instruments.
Handing over of instruments.
Discussion of drilling methods
Drilling practice I.
Drilling practice II.
Drilling practice III. Practical exam
Grinding of extracted carious human teeth
Black’s class I. and V. cavity preparation for plastic restoration.

Preparation of class II. Cavities (I.)
Preparation of class II. cavities. (II.)
Preparation of class III. and IV. cavities
Cavity preparation by modified Black’s principles. Practical exam
Class I. and V. cavity preparation for inlay
Class II. cavity preparation for metal inlay
Class II. inlay cavity preparation.
Practical exam
Complete of the works.

**Note:** The maximum number of absences in a semester is 3.
During the semester 3 midterm examinations should be passed.
Practical course grade.
ODONTOTECHNOLOGY
Dental Technology
Lecturer: Dr. Péter Kivovics D.M.D.

First Semester

Lectures (1 hour/week)

History of Dental Technology
Dental technician as the member of the dental team
Placement of the dental technology in dentistry
Types of the prosthetic appliances
Impression and casting, types of casts
Types and use of articulators I.
Types and use of articulators II.
Setting up teeth at complete denture
Processing dentures
Impression and casting at fixed restorations
Metal casting for fixed restorations
Porcelain fused to metal restorations
Metal free fixed restorations
Casting of metal based removable partial dentures
Consult

Practice (2 hours/week)
Topics: construction of upper and lower complete denture
Examination: practical course grade

Second Semester

Lecture: –

Practice (5 hours/week)
Examination: Practical course grade.
ELECTIVE SUBJECT FOR Dentistry 2nd year

Title: ANATOMY OF DIAGNOSTIC IMAGING
Short title: Imaging anatomy
Elective course
Second Semester
Language: English
Course Director: Dr András Csillag, Professor in Anatomy
Program of course: Two lecture hours per week, in the spring semester, with mandatory test examination on the last class
Credit value: 2 credits
Eligibility: ED English students of second year (Anatomy III finished and passed) or higher forms
Venue: Auditorium of Dept. of Anatomy, Histology and Embryology,
Time: Thursdays at 5 o'clock pm

The aim of the course is to lay the anatomical foundation for the evaluation of modern diagnostic images of ever improving quality and definition. Furthermore, the course enables the utilization of relevant knowledge obtained by diagnostic imaging methods for the studying of anatomy. The course is recommended primarily for second year students as a supplement to anatomical studies but, due to its clinical relevance, the students of higher forms can also make good use of the course material. Tutored by anatomists, radiologists and other clinical specialists, the course deals with a systematic and topographic overview of the following problems: Introduction into diagnostic imaging techniques, the topography and imaging of the system of locomotion, lungs, pleura and mediastinum, the heart (MRI, echocardiography, coronarography), peripheral arterial system of limbs (including common variations and disorders), abdominal and pelvic organs (including fetal ultrasonography), sectional anatomy of the brain using 3T MRI images, other diagnostic imaging methods of the brain (CT, cerebral angiography, PET), experimental investigation of human subjects by fMRI, topography and imaging of the vertebral column, spinal cord, facial skeleton and cervical region, also including frequent disorders.

See all the other detailed curricula at General Medicine, 2nd year
### 5th semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory Conservative Dentistry and Endodontics, Pre-clinical II.</td>
<td>C4L1P3</td>
<td>semifinal</td>
<td>BASIC MODUL</td>
</tr>
<tr>
<td>compulsory General and Oral Microbiology</td>
<td>C4L2P2</td>
<td>final#</td>
<td>BASIC MODUL</td>
</tr>
<tr>
<td>compulsory General and Oral Pathophysiology</td>
<td>C4L2P2</td>
<td>final#</td>
<td>BASIC MODUL</td>
</tr>
<tr>
<td>compulsory Basic Immunology</td>
<td>C3L1G2</td>
<td>semifinal</td>
<td>Biochemistry, Molecular and Cellbiology III.</td>
</tr>
<tr>
<td>compulsory Hungarian Dental Terminology I.</td>
<td>C2L0P4</td>
<td>pract.mark</td>
<td>BASIC MODUL</td>
</tr>
<tr>
<td>compulsory Oral and Maxillofacial Surgery, Pre-clinical course</td>
<td>C2L0P2</td>
<td>pract.mark</td>
<td>BASIC MODUL</td>
</tr>
<tr>
<td>compulsory Oral Pathology I.</td>
<td>C2L2P0</td>
<td>semifinal</td>
<td>BASIC MODUL</td>
</tr>
<tr>
<td>compulsory Pathology I.</td>
<td>C5L3P2</td>
<td>semifinal</td>
<td>BASIC MODUL</td>
</tr>
<tr>
<td>compulsory Preventive Dentistry II.</td>
<td>C3L1G2</td>
<td>pract.mark</td>
<td>BASIC MODUL</td>
</tr>
<tr>
<td>compulsory Prosthodontics (Pre-clinical course)</td>
<td>C4L1P3</td>
<td>final#</td>
<td>BASIC MODUL</td>
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</tbody>
</table>

**Total Credit** 33

### 6th semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory Conservative Dentistry and Endodontics I.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Conservative Dentistry and Endodontics, Pre-clinical Course II</td>
</tr>
<tr>
<td>compulsory Internal Medicine I.</td>
<td>C4L2P2</td>
<td>pract.mark</td>
<td>General and Oral Pathophysiology</td>
</tr>
<tr>
<td>compulsory Oral and Maxillofacial Surgery I.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Oral and Maxillofacial Surgery, Pre-clinical course</td>
</tr>
<tr>
<td>compulsory Oral Biology</td>
<td>C5L3P2</td>
<td>final#</td>
<td>General and Oral Pathophysiology</td>
</tr>
<tr>
<td>compulsory Oral Pathology II.</td>
<td>C3L2P1</td>
<td>final#</td>
<td>Oral Pathology I.</td>
</tr>
<tr>
<td>compulsory Pathology II.</td>
<td>C3L1P2</td>
<td>final#</td>
<td>Pathology I.</td>
</tr>
<tr>
<td>compulsory Preventive Dentistry III.</td>
<td>C1L1P0</td>
<td>final#</td>
<td>Preventive Dentistry II.</td>
</tr>
<tr>
<td>compulsory Prosthodontics I.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Prosthodontics, Pre-clinical Course</td>
</tr>
<tr>
<td>compulsory Radiation protection</td>
<td>C2L1.5P1</td>
<td>semifinal</td>
<td>BASIC MODUL</td>
</tr>
<tr>
<td>compulsory Hungarian Dental Terminology II.</td>
<td>C2L0P4</td>
<td>final</td>
<td>Hungarian Dental Terminology I.</td>
</tr>
<tr>
<td>compulsory Dento-Alveolar practice (summer, minimum 1 week)</td>
<td>C0L0P30</td>
<td>signature</td>
<td>1-6 semesters compulsory subjects</td>
</tr>
</tbody>
</table>

**Total Credit** 32

Explanation

15 credits should be gained from the elective subjects during the 5-year studies

# The grade influences the qualification of the diploma

C = Credit point
L = Lecture (hours/week)
P = Practice (hours/week)
## ELECTIVE

<table>
<thead>
<tr>
<th>Semester</th>
<th>Subjects</th>
<th>Credit code</th>
<th>Examination</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Developmental Biology I.</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Developmental Biology II.</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>Developmental Biology I.</td>
</tr>
<tr>
<td>5</td>
<td>Traditional Chinese Medicine</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>for 3rd, 4th and 5th year students</td>
</tr>
<tr>
<td>1</td>
<td>TDK Work within the Union of Research Students</td>
<td>C1L1P0</td>
<td>pract. mark</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Anesthesiology and Intensive Therapy</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>4th and 5th year students</td>
</tr>
<tr>
<td>7</td>
<td>Antibiotic Therapy and Infectology</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>for 4th and 5th year students</td>
</tr>
<tr>
<td>8</td>
<td>Clinical Endocrinology</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>for 3rd, 4th and 5th year students</td>
</tr>
<tr>
<td>8</td>
<td>Tropical Medicine</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>4th and 5th year students</td>
</tr>
<tr>
<td>8</td>
<td>Ultrasoundography</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>4th and 5th year students</td>
</tr>
<tr>
<td>8</td>
<td>Medical, Epidemiological and Social Aspect of Drug Abuse</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>for 4th and 5th year students</td>
</tr>
<tr>
<td>1</td>
<td>Library Informatics</td>
<td>C3L2P0</td>
<td>pract. mark</td>
<td>for all students</td>
</tr>
<tr>
<td>1</td>
<td>History of Medicine</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>for all years</td>
</tr>
<tr>
<td>8</td>
<td>Clinical Hematology</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>for 4th and 5th year students</td>
</tr>
<tr>
<td>1</td>
<td>Jewish Medical Ethics I-II.</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>For all students</td>
</tr>
<tr>
<td>4</td>
<td>Anatomy of Diagnostic Imaging</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>Anatomy, Histology, Embryology III.</td>
</tr>
<tr>
<td>5</td>
<td>Psychosomatic Dentistry</td>
<td>C1L1P0</td>
<td>semi-final</td>
<td>Basic Module</td>
</tr>
<tr>
<td>6</td>
<td>Hypnotherapy for Dentists</td>
<td>C1L1P0</td>
<td>semi-final</td>
<td>Basic Module</td>
</tr>
<tr>
<td>8</td>
<td>Screening of Oral Cancer I.</td>
<td>C1L1P0</td>
<td>semi-final</td>
<td>Pathology II.</td>
</tr>
</tbody>
</table>
LIST OF TEXTBOOKS

8. A.Newbrun: Cariology Quintessence. ISBN 0-867152052

Recommended textbooks:

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)**

**Practices (2 hours per week)**
Gastric function Liver ECG-I (Rhythm, frequency, axis, development of various waves on the normal ECG) ECG-2 (Defects of excitation. ES) ECG-3 (Defects in conductance, blocks.) ECG-4 (Defects of repolarisation. Myocardial infarction) ECG-5 (Hypertrophy, hypokalemia) Midterm exam Urine analysis, renal function tests
**Lectures** (2 hours per week)
Changes in the release and activity of thyroid hormones and glucocorticoids. Short and long feedbacks.
Acute and chronic complications and oral side of diabetes. (Oral manifestations in diabetes.)
Pain sensation: central and oral mechanisms.
Pathophysiology of malignancies.
Acid-base regulation. Respiratory acidosis and alkalosis.

**Practices** (2 hours per week)
Proteins, malnutrition astric function
Salt and water metabolism
Lipid metabolism. Atherosclerosis
Diabetes
Clinico-chemical assays for endocrine disorders
Molecular laboratory diagnostic
Acid base analysis

**Note:** The maximum number of absences in a semester is 3
More than 3 absences invalidate the semester

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**ORAL PATHOLOGY**
1st Department of Oral, Dental and Maxillofacial Surgery
Lecturer: **Prof. Dr. Zsuzsa Suba**

**First Semester**

**Lecture**
Developmental disturbances in number of teeth. Developmental disturbances in shape and size of teeth.
Developmental disturbances in structure of the teeth.
Growth disturbances of teeth. Premature eruption, delayed eruption.
Disturbances of situation of the teeth. Impacted and embedded teeth. Lobodontia.
Developmental disturbances of the jaws and the temporomandibular joint.
Developmental anomalies of the face and soft oral tissue.
Developmental disturbances of the salivary glands. Etiology of malformations.
Discoloration of the teeth. Dental plaque. Dental calculus.
Hypercementosis. Resorption of the teeth.
Diseases of the pulp. Periapical lesions.
Homoiotransplantation.
Inflammation of the oral mucosa and tongue. Halitosis (Stink of the mouth.)
Cysts of jaws.
Cysts of the oral floor, neck and salivary glands.
Focal infection. Diseases of the jaws.
Physical, heat, chemical and electrical injuries of oral and paraoral structures.
Diseases of microbial origin of oral and paraoral structures.
Diseases of the blood and blood forming organs.
Injury from inorganic chemicals and disturbances of metabolism of oral and paraoral structures.
Avitaminosis. Mucocutaneous disorders.
Diseases of accessory nasal sinus. Diseases of the temporomandibular joint.
Diseases of the nerves and muscles, facial hemihyperplasia and hemihyoplasia.
Premalignant lesions
Benign oral epithelial tumors. Benign oral mesenchymal tumors.
Odontogenic tumors. Benign tumors of the jaws.

Note: Lectures and slide seminars in oral pathology will be held together.
The maximum number of absences in a semester is 3
More than 3 absences invalidate the semester

ORAL PATHOLOGY

Second Semester

Lecture and slide seminars (2 hours per week)

Malignant tumors of epithelial origin.
Malignant tumors of mesenchymal origin.
Malignant lymphomas.
Malignant odontogenic and non-odontogenic tumors of the jaws.
Staging and grading of oral tumors. Spread of oral and paraoral tumors.
Regional and general metastases of oral and paraoral tumors.
Etiology of paraoral tumors.
Diseases of oral and paraoral lymphoid tissue. Joining of diseases.
Diseases of salivary glands.
Benign tumors of salivary glands.
Malignant tumors of salivary glands.
Oral and paraoral syndromes.
General manifestations of oral diseases.
Forensic oral pathology.

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester
Lectures and slide seminars in oral pathology will be held together
# PATHOLOGY

1st Department of Pathology  
Course director and tutor: **Dr. Attila Zalatnai**

## First Semester

**Lectures  Practices**  
(3 hours per week)  (2 hours per week)

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction. Historical backgrounds.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Cell and tissue injury. Vascular and cellular events. Schematic meditors.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Acute inflammation. Morphological patterns.</td>
<td>HISTOLOGY</td>
</tr>
<tr>
<td>Chronic inflammation.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Extracellular matrix. Repair. Wound healing.</td>
<td>HISTOLOGY</td>
</tr>
<tr>
<td>Immunopathology. Cellular components. Immunologically mediate tissue injury.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Transplantation. Immunodeficiency. Autoimmune diseases.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Neoplasia. Classification. Histological diagnosis. Invasion and metastasis.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Growth patterns.</td>
<td></td>
</tr>
<tr>
<td>Carcinogenesis.</td>
<td></td>
</tr>
<tr>
<td>Epidemiology of malignancies. Prebiostomatosis. Screening.</td>
<td></td>
</tr>
<tr>
<td>Tumor therapy. Tumor immunology.</td>
<td></td>
</tr>
<tr>
<td>Benign and malignant tumors of epithelial and mesenchymal origin.</td>
<td></td>
</tr>
<tr>
<td>Developmental and genetic diseases.</td>
<td></td>
</tr>
<tr>
<td>Environmental and nutritional pathology</td>
<td></td>
</tr>
<tr>
<td>Hemodynamic diseases. Water and electrolyte disturbances.</td>
<td></td>
</tr>
<tr>
<td>Edema. Shock.</td>
<td></td>
</tr>
<tr>
<td>Embolism. Infarct.</td>
<td></td>
</tr>
<tr>
<td>Infectious and parasitic diseases. Viral and bacterial diseases.</td>
<td></td>
</tr>
<tr>
<td>Tuberculosis. Syphilis. Leprosy. Diseases caused by fungi, nematodes, cestodes.</td>
<td></td>
</tr>
<tr>
<td>Aneurysms. Tumors.</td>
<td></td>
</tr>
<tr>
<td>Heart diseases. Congenital, ischemic, hypertensive heart diseases.</td>
<td></td>
</tr>
<tr>
<td>Respiratory system. Pathology of larynx and trachea. Lung cancer.</td>
<td></td>
</tr>
<tr>
<td>Lesions affecting lung parenchyma.</td>
<td></td>
</tr>
<tr>
<td>Small and large intestine. Peritoneum.</td>
<td></td>
</tr>
<tr>
<td>Acute and chronic hepatitis.</td>
<td></td>
</tr>
<tr>
<td>Liver cirrhosis. Toxic injury. Tumors</td>
<td></td>
</tr>
</tbody>
</table>
# PATHOLOGY

## Second Semester

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1 hour per week)</td>
<td>(2 hours per week)</td>
</tr>
</tbody>
</table>

### Lecture

- Urinary tract and male reproductive system
- Gestational trophoblastic disease.
- Pathology of the breast.
- Disorders of the mononuclear phagocyte system. Acute and chronic myeloproliferative syndromes.
- Endocrine system.
- Head and neck pathology.
- Bones and joints, skeletal muscles.
- Pediatric oncology.
- Nervous system. Trauma. Circulatory and inflammatory diseases.
- Demyelinating and metabolic diseases.
- Tumors of the nervous system. Peripheral nervous system.
- Pathology of the skin.
- Clinicopathological conference

### Laboratory

- AUTOPSY
- HISTOLOGY

### SEMESTER EXAMINATION (SEMIFINAL)

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.
GENERAL AND ORAL MICROBIOLOGY

Department of Medical Microbiology
Program Director and tutor: Prof. Dr. Károly Nagy
Tutor: Dr. Zsuzsanna Csukás

First Semester

Lectures (2 hours per week)
Introduction to microbiology. General bacteriology (morphology, physiology and cultivation of bacteria). Bacterial genetics.
Infections and diseases (pathogenesis of bacterial infection, virulence, importance of biofilm formation). Specific and non-specific host defences. Active and passive immunization.
Sterilization and disinfection. Antibacterial chemotherapy (mode of actions, resistance, side effects).
Gram-positive facultative and obligate anaerobic cocci. Gram-negative facultative anaerobic, microaerophilic and obligate anaerobic cocci and cocccobacilli.
Gram-positive aerobic and anaerobic rods. Gram-positive spore-forming rods.
Gram-negative facultative anaerobic rods. Gram-negative anaerobic rods.
Mycobacteria.
Rickettsia, Chlamydia.
Mycoplasma.
Spirochetes. Importance of bacterial infections involving the oral, perioral tissues and salivary glands.
Medical importance of fungi (general mycology, chemotherapy of fungal infections). Importance of fungal infections involving the oral and perioral tissues.
Protozoa (general characterization and the most important human pathogenic protozoa). Helminths (general characterization and the most important human worms).

Practices (2 hours per week)
Introduction to basic microbiology. Microscopic examination of bacteria (staining procedures).
Cultivation of aerobic and anaerobic bacteria (culture media, colony morphology of bacteria).
Methods used for sterilization and disinfections (physical and chemical possibilities).
Antibiotic susceptibility of bacteria
In vitro antigen-antibody reactions (serological methods).
Gram-positive and -negative cocci and coccobacilli
Gram-positive rods (Corynebacterium, Lactobacillus, Actinomyces).
Gram-negative rods (Enterobacteriaceae)
Gram-negative anaerobic rods (Bacteroides, Prevotella, Porphyromonas, Fusobacterium, Leptotrichia). Gram-positive spore-forming aerobic and anaerobic rods (Bacillus, Clostridia).
Medically important fungi
Medically important protozoa.
Medically important helminths.
General virology (cultivation of viruses, cell-virus interactions, serological tests and molecular techniques used in laboratory diagnosis of viral diseases)
Lectures (2 hours per week)

Practices (2 hours per week)
Pathogenesis and symptomatology of viral diseases. 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. András Falus
Tutor: A. Kristóf Fülöp, PhD
Subject code: FOKGEN037_1A
Prerequisite subject: Medical Biochemistry, Molecular and Cell Biology III.

Credits: 3

<table>
<thead>
<tr>
<th>Lectures (2 hr / week)</th>
<th>Practices / Seminars (1 hr / week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The roles, processes, organs and cells of the immune system</td>
<td>Basic terms, organs and cell of the immune system</td>
</tr>
<tr>
<td>2. Principles of natural immunity</td>
<td>Methods based on antigen-antibody interactions</td>
</tr>
<tr>
<td>3. The complement system</td>
<td>Flow cytometry</td>
</tr>
<tr>
<td>4. Acute phase reaction, neuro- and psychoimmunology</td>
<td>Immunoserology</td>
</tr>
<tr>
<td>5. Antigen, antigen presentation and MHCs</td>
<td>Cell culturing</td>
</tr>
<tr>
<td>6. Antigen receptors and their formation</td>
<td>Immunization and vaccination</td>
</tr>
<tr>
<td>7. T lymphocytes and cell-mediated immune response</td>
<td>Migration of immune cells, homing and extravasation</td>
</tr>
<tr>
<td>8. B lymphocytes and humoral immune response</td>
<td>Screening methods for autoantibodies, HLA typing</td>
</tr>
<tr>
<td>9. Hypersensitivity</td>
<td>Midterm test</td>
</tr>
<tr>
<td>10. Immunology of transplantation and pregnancy</td>
<td>Hypersensitivity I.</td>
</tr>
<tr>
<td>11. Natural and pathological autoimmunity</td>
<td>Hypersensitivity II.</td>
</tr>
<tr>
<td>12. Immune response in infections, immunodeficiencies</td>
<td>Biological therapies</td>
</tr>
<tr>
<td>13. Tumor immunology</td>
<td>Immunological databases, prediction servers, simulations</td>
</tr>
<tr>
<td>14. Immunopharmacology, immunogenetics and review</td>
<td>Case studies</td>
</tr>
</tbody>
</table>

The order of lessons may change.

Attendance of a minimum of 75% of the lessons is necessary for the end-term signature.

Exam: written test in the exam period.

Literature:
Hand-out: on www.dgci.sote.hu
CONSERVATIVE DENTISTRY AND ENDOdontics
Tutor: Dr. Krisztina Márton

First Semester

Phantom-course (Pre-clinical laboratory course)

Lectures (1 hour/week)

- Amalgam and tooth color restorations (indications and contraindications, mixing amalgam, mercury hygiene, silicate cement, acrylic resin, composite resin).
- Amalgam restorations (indications; contraindications; inserting cement bases; mixing amalgam; mercury hygiene, finishing and polishing restoration).
- Tooth-colored restorations (acrylic resin, acid etch technique, matrices for composite resins, reading bonding, agent along with either self-curing or light-activated composite resin, insertion of composite resins, finishing composite resin, glazing the restoration).
- The rubber dam.
- Direct gold restoration (inlay).
- Indirect inlay-onlay restoration.
- The dental pulp. Diagnosis of pulpal damage.
- Endodontic morphology and access cavities.
- Introduction; modern endodontics; scope of endodontics. General and systemic aspects of endodontics (the differential diagnosis of dental pain, examination, systemic disease and endodontics; endodontics and infective endocarditis).
- Basic instrumentation in endodontics.
- Conventional root canal therapy: preparation of the root canal system.
- Conventional root canal therapy: medicaton.
- Conventional root canal therapy: root filling.
- Surgical endodontics.
- Preparation for restoration of the endodontically treated tooth the pinledge restoration; onlay restoration; veneers techniques; crowns.

Practices/Manual training (3 hours/week)

- Cavity preparation from mirror view (indirect method)
- Pulp protection, plastic restorations.
- Finishing and polishing of amalgam restorations.
- Class III., IV., V. restorations.
- Cavity preparation in extracted teeth.
- Esthetic restoration in extracted teeth.
- Direct filling restorations. Practical exam.
- Access cavity preparation.
- Working length determination.
- Cleaning and shaping of root canal I.
- Cleaning and shaping of root canal II.
- Obturation of root canal I.
- Obturation of root canal II.
- Completion of the root canal filling.
- Reconstruction of root canal treated teeth.

Note: The maximum number of absences in a semester is 3. During the semester three midterm examinations should be passed. Practical course grade
CONSERVATIVE DENTISTRY AND ENDODONTICS

Second Semester

<table>
<thead>
<tr>
<th>Lectures (1 hour/week)</th>
<th>Practices (3 hours/week)</th>
<th>Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment of the patients in lying position “four-handed” method</td>
<td>Clinical practice</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Morphology, histology and physiology of dental pulp</td>
<td>Clinical practice</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Treatment plan Clinical practice</td>
<td>Clinical practice</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Isolation in Operative Dentistry and Endodontics</td>
<td>Clinical practice</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Aetiology of dental caries. Current concept of dental caries</td>
<td>Clinical practice</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Systemic factors in development of dental caries</td>
<td>Clinical practice</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Equipment and instruments of cavity preparation</td>
<td>Clinical practice</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Caries therapy (I): amalgams</td>
<td>Clinical practice</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Caries therapy (II): composite restorations</td>
<td>Clinical practice</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Caries therapy (III): glass ionomers</td>
<td>Clinical practice</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Adhesive filling-technique and materials</td>
<td>Clinical practice</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Preventive stand points in modern therapy of restorations</td>
<td>Clinical practice</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>The anatomy of teeth and pulp tissues</td>
<td>Clinical practice</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Pathological alterations of pulp and periapical tissue</td>
<td>Clinical practice</td>
<td>Clinical practice</td>
</tr>
</tbody>
</table>

During the second semester students have to make:

- 3 amalgams fillings
- 3 esthetic fillings
- 15 hours assistance

**Note:** The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester.

Practical course grade
# Preventive Dentistry II

**Department of Conservative Dentistry**  
**Lecturer:** Prof. Dr. Ida Nyárasdy

## First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (1 hour/week)</th>
<th>Practices (2 hours/week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>Possibilities in prevention of orthodontic anomalies</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Oralhygiene</td>
<td>Effect of alimentation in baby-and childhood on development of mandibula and maxilla and on the formation of parafunction</td>
</tr>
<tr>
<td>8.</td>
<td>Fluorides</td>
<td>Demonstration of oral hygiene /HPK Orthodontic and Dental Department/</td>
</tr>
<tr>
<td>9.</td>
<td>Collective and individual fluoride-prevention</td>
<td>Clinical infection control</td>
</tr>
<tr>
<td>10.</td>
<td>Other possibilities in caries prevention /sugar-substitutes, rysta-possibilities/</td>
<td>The role of trace elements and vitamins in maintaining oral health</td>
</tr>
<tr>
<td>11.</td>
<td>Fissure-sealant</td>
<td>The role of certain nutrient – groups in maintaining oral health</td>
</tr>
<tr>
<td>12.</td>
<td>Caries incipient and remineralisation</td>
<td>Caries diagnostic 2.</td>
</tr>
<tr>
<td>13.</td>
<td>Prevention of iatrogen traumas; infection control</td>
<td>Possibilities of caries-risk, CRT-test, definition of saliva – secretion, pH measurement Plaque-removal; scaling, Polishing, finishing</td>
</tr>
<tr>
<td></td>
<td>Prophylaxe of pregnant mothers, the elderly and other handicapped patients.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Realization of complex prevention, unity of preventive and curative supply. Recall-system. Dental care</td>
<td></td>
</tr>
</tbody>
</table>
PREVENTIVE DENTISTRY III
Department of Conservative Dentistry
Lecturer: Prof. Dr. Ida Nyárasdy

Second Semester

Week | Lectures
--- | ---
1. | Prevention in the intrauterine life to the age of three
2. | Integrated preventive dentistry – orthodontics
3. | Oral hygiene – toothpastes
4. | Environmental dangers
5. | Dental public health programs. Primary and secondary prevention in screening program for oral cancer
6. | Integrated preventive dentistry – preventive fillings
7. | Integrated preventive dentistry – finishing, polishing of fillings
8. | Integrated preventive dentistry – prosthodontics
9. | Cervical sensitivity, dentinal hypersensitivity and erosion
10. | Care of handicapped and hospitalized patients
11. | The role of dental hygienists in dental practice
12. | Dentine hypersensitivity and dentine erosion
13. | Biofilm
14. | Oral prevention during pregnancy

PROSTHODONTICS

First Semester

Lectures (1 hour per week)

- Types of dental restorations. Prosthetic
- Establishment and instrumentation of
- Impression taking procedures for
- Shade determination
- Determination of centric occlusion and centric relation
- Anatomy of the remaining teeth.
- Cephalometric landmarks
- Impression taking for fixed restorations
- Preparation for fixed restorations
- Preparation and impression taking procedures for post and cores

Practices (3 hours per week)

- Description of hand-tools and laboratory appliances equipment
- Upper first-anatomical impression on the dental clinic phantom head
- Lower first-anatomical impression on complete dentures phantom head
- Cast construction
- Special tray construction
- Second – functional – impression
- Fabrication of lower and upper bite-block I.
- Fabrication of lower and upper bite-block II.
- Midterm test

SEMMELEweis UNIVERSITY / FACULTy OF DENTISTRY

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PROSTHODONTICS

Second Semester

Lectures (1 hour per week)

- The reasons and the consequences of the tooth loss
- Complains, medical history, extra-oral and intra-oral examination, treatment plans, and prognosis at endentulous patient
- Infection control in dentistry. The upper and the lower denture bearing area
- First impression, casting, outline of the special tray
- Second (working) impression, mucostatic and mucodisplacive techniques. Beading and boxing, casting of working impression
- Basic gnathology. (OVD, RVD, freeway space, RCP, ICP, Posselt diagram)
- Basic gnathology. (canine guidance, unilateral and bilateral balanced occlusion)
- Jaw registration. (type of articulators, face bow registration)
- Mounting in articulator, setting up the teeth
- Try-in procedure, flasking and packing (processing) at complete denture
- Fitting and advice to the patient. Short time and long time recall procedures
- Complex functional approach. Implant techniques
- Emergency denture. Immediate denture.
- Copy denture
- Relining, rebasing, repairing of complete denture
- Consultation

Practices (3 hours per week)

- Tooth preparation on lower 7 with shoulder
- Tooth preparation on lower 5 with a shoulder
- Construction of wax occlusal record, impression of the opposing dental arch and a lower precision impression
- Die construction
- Cast construction, mounting on casting
- Construction of adapted caps on lower abutments (7 and 5), wax patterns
- Construction of wax pattern of a lower bridge (5–7). Investment of the wax pattern.
- Midterm test: Technology and materials of fixed appliances
- Preparation of lower 4 for a 4/5 crown, preparation of lower 3 for a post-core crown
- Finishing the casts, application, framework try-in on phantom-head
- Acrylic facing and a wax pattern for an acrylic crown on lower 3
- Investment of wax patterns, for 4/5 and a post and core crown

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 two midterm examinations should be passed. Closing semi-final
**INTERNAL MEDICINE**  
**3rd Department of Internal Medicine**  
**Tutor:** Dr. László Jakab

**Second Semester**

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practices (2 hours per week)</th>
</tr>
</thead>
</table>
| Introduction to internal medicine.  
History taking.  
Physical examination.  
Pneumonias. Syndromes of the respiratory system.  
Bronchiectasis. Lung abscess, Pulmonary embolism.  
Chronic aspecific respiratory disorders.  
Tumors of the lung.  
Disorders of the cardiovascular system.  
Physical examination.  
Examination of the peripheral blood vessels.  
Coronary heart disease.  
Acute myocardial infarction.  
Acute heart failure. Shock.  
Chronic heart failure.  
Rheumatic fever, Valvular heart disorders.  
Infective endocarditis. Disorders of the pericardium.  
Cor pulmonale.  
Cardiac arrhythmas. Conduction disturbances.  
Hypertension.  
Atherosclerosis. Thromboangitis obliterans.  
Raynaud’s phenomenon.  
Headache. Dental relation of the heart diseases. | The bases of the diagnostic procedures in the internal medicine.  
(The exact preparation of the patient’s case history, the methods of physical examination of the patients).  
The medical examination of the heart and lung (percussion, auscultation).  
The investigation of the peripheral arterial pulse rata and blood pressure.  
Practicing injection technique.  
The physical examination of the abdominal organs.  
The medical considerations of dentistry and dental considerations of internal medicine.  
Consultation.  
Consultation. |

**Note:** The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester Practical course grade.
ORAL AND MAXILLOFACIAL SURGERY
Tutor: Dr. Attila Szűcs

Preclinical training

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  
The removal of teeth/ practice on phantom  
The removal of teeth/ practice on phantom  
Semester closing midterm (oral + practical)  
Practicing, repetition

Second Semester

**Week  Lectures** (1 hour per week)

The history of oral surgery  
Clinical examination and diagnostics  
Pain control. The physiologic and psychologic aspects of pain  
The mode of action of local anaesthetics.  
The pharmacological properties of local anaesthetic drugs  
The technique of local anaesthesia Part I. (anaesthesia of teeth)  
The technique of local anaesthesia Part II. (Matas, block of n. alv. sup. ant., anaesthesia of the tongue, the lip, the bucca)  
The technique of local anaesthesia Part III. (Inflammed tissues, trismus)  
Summarising clinical implications /video/  
Complications of local anaesthesia.  
Conscious sedation in dentistry  
Indication and contraindication of tooth removal  
Operation technique of dentoalveolar surgery Part I. (surg. tools, flaps, suturing)  
Operation technique of dentoalveolar

**Practices** (3 hours per week)

Surgical anatomy of the jaws and teeth  
Local anesthesia  
Oral and maxillofacial surgical instruments  
Clinical diagnosis, medical examination of the patients  
Midterm demonstration  
Practicing simple tooth extraction  
Practicing tooth extraction  
Minor oral surgery  
Minor oral surgery
surgery Part II. (complications of tooth removal, surgical root removal) (video)
Problems with the eruption of teeth.
The removal of the impacted teeth
Guest speaker
Midterm exam
Consultation

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)
The oral mineralized tissues –
Amelogenesis-dentinogenesis – cementogenesis
dentin and cementum. Microanatomy and
and structures of enamel, physiology and innervation
of the pulp. – Chemistry of formation and solubilization
of the various calcium phosphate salts. Crystallography
of bioapatite and other calcium phosphate
Mechanism of biological calcification
– Principles of demineralization-remineralization-
phenomena – The inorganic and organic composition
of teeth – Role of fluoride and carbonate in calcium
and dental tissue phosphate solubility demineralization
-remineralization-phenomena
Abnormal development and mineralization of renamel,
dentin and cementum – Pulpal mineralization and
dentin-pulp phenomena; dentin permeability –
Nutrition and hormonal influences on the oral
mineralized tissues
The salivary glands and saliva – Ultrastructure and innervation
– The physiology of salivary gland secretion

Practices (2 hours per week)
Hematology I.
Cellular components of
the whole blood
The function of the individual cells.
Normal blood cell values
Cellular elements of the bone marrow
Methods for examining the peripheral
blood smear and the bone marrow.
Hematology II.
Immature cellular forms
The red and white blood cell series

Hematology III.
White blood cell disorders
Disorders related to segmented cells.
Disorders related to mononuclear cells

Hematology IV. Malignant white cell
disorders
Part I. Classification of leukemias. Acute
leukemias Cytochemical differentiation of
acute leukemias Plasma cell dyscrasias
Hematology V.
Malignant white cell disorders. Part II.
Chronic leukemias. The importance of
of saliva on oral tissues.

Nutritional and hormonal influences on salivary gland function and saliva composition. – Immune and non-immune defense mechanisms – Salivary secretion of drugs – S. gland regeneration sideoblastic, hemolytic anemia.

Oral motor and sensory system – Ultrastructure of temperature, touch, pressure and taste receptors of the oral cavity. – Physiology of pain in the oro-facial region and its control. – Physiology of temperature and touch perception in the oro-facial region – Dentin sensitivity and its control. Biochemistry and physiology of taste perception

Biomechanics and structure of the temporomandibular joint – Neuro-physiology of mastication – Kinesology and electromyography of oral musculature – Phenomenon of deglutition – Microcirculation and innervation of the tongue – Role of the tongue in speech and other oral phenomena. Physiology of olfaction – Food consistency and its effects on oral phenomena

The oral mucosa and periodontium – Ultrastructure of oral mucosa – epithelial cell and oral mucosa metabolism – Epithelial cell adhesion and aggregation. Bacterial tooth and epithelial interaction. Transmucosal absorption. – The physiology and composition of sulcular fluid. – Microcirculation of the gingiva and periodontium – The biochemistry of the structure proteins of the periodontium – Ultrastructure of alveolar and associated bone – Physiology of bone remodeling, mechanical effects on bone – Physiology of bone remodeling, mechanical effects on bone eruption and resorption – Oral immunological mechanism – Nutritional and hormonal influences on the oral mucosa and periodontium


Aging – Nutrition

Aging Nutrition Part Two

Hemostasis and fibrinolysis – Physiology and biochemistry – Activators and inhibitors of blood clotting and fibrinolysis – Thrombosis and bleeding disorders: etiology, oral symptoms in the early diagnosis of leukemias

Hematology VI.

Abnormalities of red blood cell production. – Classification of anemias. – Aplastic, iron deficiency, Abnormalities of red blood cell production. Platelet disorders. – Foliate- and Vit. B12-deficiency anemia

Polycythemia, erythrocytosis.

Midterm exam of hematology

Determination of salivary flow rate and collection of samples for analysis

Measurement of fluoride concentration

Immunologic techniques

Oral clearance measurements

Oral cytology

Faculty of Dentistry
pathomechanism, oral symptoms, differential diagnosis
Inflammation – cardinal signs – fever – changes in RES
– vascular permeability – cellular reactions – chemical
mediators – inflammation and repair
The biological effects of ionizing radiation – The sources
of ionizing radiation in the environment – General and
specific effects: cell and genedamages – Radiation
diseases and its consequences – Oral symptoms of
therapeutic irradiations and the management of head
and neck irradiated patients

Note: A final exam will be organized at the end of the semester. During the semester one midterm
examination (hematology) should be passed. The mark of that will also be considered when
establishing the mark of the final. During the final examination there are the following
requirements:
a.) to reach the minimum level of a written theoretical evaluation, b.) to present
orally two of the main theoretical questions, and also, c.) to present one question of the
subject-specific practices.
In the case of an invalid midterm the examination will start with
assessing the knowledge of hematology. Under the minimum level of passing hematology (mark
2) there is no possibility of continuing of the final. A failed exam can be retaken at least one
week after the first one.
The maximum number of absences from practice in a semester is 3!
More than 3 absences invalidate the semester.

RADIATION PROTECTION
department: Independent Division of Radiology
Lecturer: 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

COMPULSORY SUMMER PRACTICE

MINIMUM 1-WEEK – 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

Faculty of Dentistry
4th year
# STUDY PROGRAMME

## 7th semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory</td>
<td>General and Dental Radiology</td>
<td>C4L2P2</td>
<td>final#</td>
</tr>
<tr>
<td>compulsory</td>
<td>Conservative Dentistry and Endodontics II.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
</tr>
<tr>
<td>compulsory</td>
<td>Internal Medicine II.</td>
<td>C3L2P1</td>
<td>semifinal</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral and Maxillofacial Surgery II.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
</tr>
<tr>
<td>compulsory</td>
<td>Periodontology I.</td>
<td>C2L2P0</td>
<td>semifinal</td>
</tr>
<tr>
<td>compulsory</td>
<td>Pharmacology, Toxicology I.</td>
<td>C2L1P1</td>
<td>semifinal</td>
</tr>
<tr>
<td>compulsory</td>
<td>Prosthodontics II.</td>
<td>C7L1P6</td>
<td>semifinal</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral Diagnostics I.</td>
<td>C2L1P1</td>
<td>pract. mark</td>
</tr>
<tr>
<td>compulsory</td>
<td>Orthodontics Pre-Clinical</td>
<td>C1L0P1</td>
<td>pract. mark</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Neurology</td>
<td>C1L1P0</td>
<td>semifinal</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Psychiatry</td>
<td>C1L1P0</td>
<td>semifinal</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Dental Ethics</td>
<td>C2L2P0</td>
<td>semifinal</td>
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<tr>
<td>compulsory</td>
<td>Gnathology</td>
<td>C3L1P2</td>
<td>final#</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Public Health</td>
<td>C3L1,5P2</td>
<td>final#</td>
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</tbody>
</table>

**Total Credit**: 39

## 8th semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory</td>
<td>Conservative Dentistry and Endodontics III.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
</tr>
<tr>
<td>compulsory</td>
<td>Internal Medicine III.</td>
<td>C1L1P0</td>
<td>final#</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral and Maxillofacial Surgery III.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral Diagnostics II.</td>
<td>C1L0P1</td>
<td>semifinal</td>
</tr>
<tr>
<td>compulsory</td>
<td>Periodontology II.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
</tr>
<tr>
<td>compulsory</td>
<td>Pharmacology, Toxicology II.</td>
<td>C3L1P2</td>
<td>final#</td>
</tr>
<tr>
<td>compulsory</td>
<td>Prosthodontics III.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Surgery</td>
<td>C3L2P1</td>
<td>final#</td>
</tr>
<tr>
<td>compulsory</td>
<td>Implantology I.</td>
<td>C1L1G0</td>
<td>semifinal</td>
</tr>
<tr>
<td>compulsory</td>
<td>General Dentistry practice (summer, 4 weeks)</td>
<td>C0L0P30</td>
<td>signature</td>
</tr>
</tbody>
</table>

**Total Credit**: 21

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)
LIST OF TEXTBOOKS

7. Rajna Péter: Ideg- és elmegyógyászati szakkifejezések
Handouts for the lectures in Dentsoc will be accesible on the homepage of the Institute of behavioural Sciences: www.magtud.sote.hu.

Recommended textbooks:

PHARMACOLOGY, TOXICOLOGY

Lecturer: Dr. Valéria Kecskeméti
Tutor: Dr. Zsuzsanna Gyarmati

First Semester

**Lectures** (1 hour per week)

- Drugs, receptors and pharmacodynamics
- Pharmacokinetics: Absorption, distribution
- Drug biotransformation
- Introduction to Autonomic Pharmacology
- Cholinoreceptor-activating drugs
- Cholinoreceptor-blocking drugs
- Adrenoceptor-activating drugs
- Adrenoceptor-blocking drugs
- Local anesthetics I.
- Local anesthetics II.
- General anesthetics
- Opioid analgesics and antagonist
- Principles of antimicrobial drug action
- Penicillins, cephalosporins
- Tetracyclines, chloramphenicol
- Sulfonamides – Drugs with specialized indications – Antifungal agents

**Practices** (2 hours per week)

- Drug interactions (agonists, antagonists)
- Factors influencing pharmacokinetic.
- Drugabuse, dependency, Allergy.
- Basic and clinical evaluation of new drugs
- Prescription writing
- Ganglionic blocking drugs
- Skeletal muscle relaxants
- Clinical pharmacology of alpha-, beta-receptor blocking drugs
- Smooth muscle relaxants
- Prescription writing
- The alcohol
- Antiepileptic drugs
- Antiseptics, disinfectants
- Disinfectants
- Aminoglycosides
- Antimycobacterial drugs
- Antiviral chemotherapy Urinary antiseptics
PHARMACOLOGY, TOXICOLOGY

Second Semester

**Lectures** (1 hour per week)
- Drugs used in congestive heart failure
- Cardiac glycosides
- Vasodilators
- Antihypertensive drugs
- Drugs used in disorders of coagulation
- Histamine, Histaminereceptor antagonists
- Pharmacology of gastrointestinal tract
- Sedative-Hypnotics
- Antipsychotic agents

**Practices** (2 hours per week)
- Diuretic agents
- Antiarrhythmic drugs
- Agents used in hyperlipid
- Agents used in anemia
- Bronchodilators
- Prescription writing
- Drugs of abuse
- Psychomimetic drugs

**Lectures** (1 hour per week)
- Antidepressant drugs
- Nonsteroidal anti-inflammatory drugs; nonopioid analgetics
- Cancer chemotherapy
- Adrenocorticosteroids, adrenocortical antagonists
- Agents that affect bone mineral homeostasis
- Agents that affect the other endocrine system
- Stomatological appearance of drug toxicity

**Practices** (2 hours per week)
- Management of Parkinsonism
- Prescription writing
- Consultation
- Drugs used in gastrointestinal diseases
- Dermatologic pharmacology
- Consultation

INTERNAL MEDICINE

3rd Dept. of Internal Medicine
Tutor: Dr. László Jakab

First Semester

**Lectures** (2 hours per week)
- Immunologic principles. Lymphocytic system.
- Immunoglobulins. Types of immunologic reactions.
- Polycythemia. Agranulocytosis. The leukemias.
- Plasma cell disorders. Multiple myelomas.
- Waldenström’s macroglobulinemia.


**Lectures** (2 hours per week)


**Note:** The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. Semi-final examination
INTERNAL MEDICINE

Second Semester

**Lectures** (1 hour per week)

- Primary glomerular disorders. Nephritic syndrome.
- Tumors of the stomach.
- The malabsorption syndrome.
- Colonic and rectal neoplasms.
- Acute abdomen. Mechanical obstruction and ileus.

**Practices** (1 hour per week)

- The medical examination of patients with diseases of the kidney and urinary tract.
- The medical examination patients with diseases of the kidney and urinary tract.
- The medical examination of patients with diseases of the gastrointestinal system.
- The medical examination of patients with diseases of the gastrointestinal system.
- Dental correlations in patients with the diseases of the gastrointestinal system.
- The medical examination of patients with diseases of the liver and biliary tract.
- The medical examination of patients with diseases of the liver and biliary tract.
- The medical examination of patients with diseases of the pancreas.

**Lectures** (2 hours per week)

- Disorders of the gall bladder and the biliary tract. Disorders of the pancreas.

**Practices** (2 hours per week)

- The medical examination of patients with diseases of the pancreas. Consultation.
- The medical examination of patients with diseases of the pancreas. Consultation.
- The medical examination of patients with diseases of the pancreas. Consultation.

**Note:** The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. Final examination.

CONSERVATIVE DENTISTRY AND ENDODONTICS

Tutor: Dr. Krisztina Márton

First Semester

<table>
<thead>
<tr>
<th>Lectures (1 hour per week)</th>
<th>Practices (3 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection control</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Root canal treatment: preparation of access cavity</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>determination of working length, importance of X-ray in Endodontics</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Root canal treatment: cleaning and shaping</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Root canal treatment: making preparation of the root-canal for filling, Obturation of the root canal</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Reconstruction of root-canal treated teeth: post &amp; core</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Indications and methods of endodontics surgery</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Emergency treatment in Endodontics</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Complications and failures in the course of root canal treatment</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Endodontic microbiology</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Endodontic Periodontic Interrelationship</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>New instruments in endodontics (The Endox-Endodontic System)</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Caries therapy. Cast metal restoration</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Caries therapy: ceramic and composite inlays</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Preparation for Crown</td>
<td>Clinical practice</td>
</tr>
</tbody>
</table>

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester Practical course grade

CONSERVATIVE DENTISTRY AND ENDODONTICS

Second Semester

<table>
<thead>
<tr>
<th>Lectures/Seminars (1 hour per week)</th>
<th>Practices (3 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preventive Endodontics: protecting the pulp</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Evaluation of success and failure in Endodontics</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Esthetic dentistry: Bleaching discolored teeth. Internal and External</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Direct fillings of molars: amalgam or composite</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Local anesthesia in Conservative Dentistry and its complications</td>
<td>Clinical practice</td>
</tr>
</tbody>
</table>

During the first semester students have to make:

4 amalgam fillings
4 esthetic restorations
1 root-canal filling
15 hours assistance
Treatment of cervical lesion
New equipment and methods in Conservative Dentistry
Indications and techniques of veneer
Discussion of thesis of diploma work
Discussion of thesis of diploma work
Special dental treatment of some general diseases
(AIDS, hepatitis, diabetes, epilepsy, etc.).
Principles of the Oral Health Insurance System.
"Anatomie" of dental praxises.
Management of Traumatized Teeth
Special cavity preparation. (Tunnel, slot, mini cavities)

**Note:** The maximum number of absences students in a semester is 3. More than 3 absences invalidate the semester.

Practical course grade.

**PROSTHODONTICS**

**First Semester**

**Lectures** (1 hour per week)

- The reasons and the consequences of tooth loss
- Partially dentate patients
- Infection control in prosthodontics
- Psychology and psychopathology of denture intolerance
- Fix appliances, types of crown and bridges

**Practices** (6 hours per week)

- Partially dentate patients
- Partially dentate patients

**Lectures** (1 hour per week)

- Tooth preparation I.
- Tooth preparation II.
- The adhesive bridges
- Impression for fix restorations
- Fixed partial dentures
- Dowel restorations
- Removable partial denture
- Major connectors of upper and lower RPD
- Indirect and direct retainers of RPD
- Clinical and laboratorial steps of fixed partials dentures
- Consultation

**Practices** (6 hours per week)

- Partially dentate patients
- Partially dentate patients

**Note:** The maximum number of absences in a semester is 3 weeks.

- More than 3 absences invalidate the semester
- During the semester one midterm examination should be passed
- Semifinal examination.
### PROSTHODONTICS

**Second Semester**

<table>
<thead>
<tr>
<th>Topics</th>
<th>Lectures</th>
<th>Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis and treatment planning</td>
<td></td>
<td>Partially dentate patients</td>
</tr>
<tr>
<td>Oral health for the partially edentulous patient</td>
<td></td>
<td>Partially dentate patients</td>
</tr>
<tr>
<td>Principles of partial denture design</td>
<td></td>
<td>Partially dentate patients</td>
</tr>
<tr>
<td>Construction of removable partial dentures</td>
<td></td>
<td>Partially dentate patients</td>
</tr>
<tr>
<td>Classification of the partially edentulous dental arches</td>
<td></td>
<td>Partially dentate patients</td>
</tr>
<tr>
<td>Treatment planning for the class 0., 1A. and 1B. dental arches</td>
<td></td>
<td>Partially dentate patients</td>
</tr>
<tr>
<td>Treatment planning for the class 2A. dental arches</td>
<td></td>
<td>Partially dentate patients</td>
</tr>
<tr>
<td>Treatment planning for the class 2B. dental arches</td>
<td></td>
<td>Partially dentate patients</td>
</tr>
<tr>
<td>Treatment planning for the class 2A/1. and 3. dental arches</td>
<td></td>
<td>Partially dentate patients</td>
</tr>
<tr>
<td>Maxillo-facial prosthetics</td>
<td></td>
<td>Partially dentate patients</td>
</tr>
<tr>
<td>Partially dentate patients</td>
<td></td>
<td>Partially dentate patients</td>
</tr>
<tr>
<td>Implants in prosthodontics</td>
<td></td>
<td>Partially dentate patients</td>
</tr>
<tr>
<td>Partially dentate patients</td>
<td></td>
<td>Partially dentate patients</td>
</tr>
<tr>
<td>Orthodontic aspects of prosthodontics</td>
<td></td>
<td>Partially dentate patients</td>
</tr>
<tr>
<td>Consultation</td>
<td></td>
<td>Partially dentate patients</td>
</tr>
</tbody>
</table>

**Note:**
The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester one midterm examination should be passed. Practical course grade.

### SURGERY

I. Department of Surgery
Department Section of Surgery
Tutor: **Prof. Dr. József Sándor**

**Second Semester**

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery of the neck. Thyroid and parathyroid</td>
<td>Visiting patients’ ward</td>
</tr>
<tr>
<td>Surgical treatment of the chest wall, breast, pleura, lung and mediastinum</td>
<td>Visiting operating theater</td>
</tr>
<tr>
<td>Oesophageal surgery (injuries, diverticula, malignant diseases)</td>
<td>Visiting patients’ ward</td>
</tr>
<tr>
<td>Gastric and duodenal surgery (benign diseases)</td>
<td>Visiting operating theater</td>
</tr>
<tr>
<td>Gastric and duodenal surgery (malignant diseases)</td>
<td>Visiting patients’ ward</td>
</tr>
<tr>
<td>Surgery of gall-bladder and extrahepatic biliary system</td>
<td>Visiting operating theater</td>
</tr>
</tbody>
</table>
Surgery of the small intestines and colorectum (benign and malignant diseases)  
Appendicitis  
Surgery of the liver, pancreas and spleen. (injuries, inflammatory diseases and tumors)  
Bowel obstructions  
Hernias  
Basic principles in vascular surgery  
Shock. Cardiopulmonary resuscitation. intensive therapy  
General principles of traumatology.  
First aid.  
Traumatological management of catastrophes.  
Burned patients.  
Urology Consultation Visiting patients’ ward

Note: The maximum number of absences in a semester is 3. Practical course grade  
More than 3 absences invalidate the semester.  
Final examination

ORAL AND MAXILLOFACIAL SURGERY  
Tutor: Dr. Attila Szűcs

First Semester

Lectures (1 hour per week)  
Pyogenic dental inflammations I. (General aspects)  
Pyogenic dental inflammations II. (periodontitis, periostitis) Dental focus  
Pyogenic dental inflammations I. Cellulitis Osteomyelitis, specific inflammations of the maxillofacial region.  
Cystic lesions of the maxillofacial soft tissues. Dental and surgical aspects of the maxillary sinus  
Diseases of the salivatory glands. Odontogenic cysts I. Odontogenic cysts II. Odontogenic cysts III Surgical endodontics. I. Surgical endodontics. II. Dental implantology Preprothetic surgery Consultation

Practices (3 hours per week)  
Practicing minor oral surgery Practicing minor oral surgery Practicing minor oral surgery Practicing minor oral surgery Practicing minor oral surgery Practicing minor oral surgery Practicing minor oral surgery Practicing minor oral surgery Consultation

Note: The maximum number of absences in a semester 3. More than 3 absences invalidate the semester. During the semester three midterm examinations should be passed. Practical course grade
ORAL AND MAXILLOFACIAL SURGERY

Second Semester

Lectures  (1 hour per week)       Practices  (3 hours per week)

Developmental anomalies of the face Part I. (Cleft lip and palate)
Developmental anomalies of the face Part II. (Craniofacial malformations, cleft face)
Developmental anomalies of the face Part III. (Dysgnathias)
The diseases of the salivary glands Part. I. (Pathology)
Vascular anomalies in the head and neck region Practicing minor oral surgery
(Diagnosis and management)
The diseases of the salivary glands Part. II. (Differential diagnosis and treatment)
Maxillofacial traumatology Part I. (General rules, soft tissue injuries)
Maxillofacial traumatology Part II. (Polytraumatised patients)
Maxillofacial traumatology Part III. (Fractures of the mandible)
Maxillofacial traumatology Part I V. (Fractures of the midfacial bones)
Maxillofacial traumatology Part V. (Posttraumatic deformation and its correction)
Differential diagnosis and treatment of facial pain
Case Demonstration
Guest speaker
Consultation

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
Semifinal examination

Midterm Demonstration
Practicing minor oral surgery
Consultation
ORTHODONTICS PRE-CLINICAL

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
Subject code: FOGFKFSP_1A
Credit code: K1E0G1
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
ORAL DIAGNOSTICS
Section of Oral Diagnostics
(Orális Diagnosztikai Részleg)
address: Bp. VIII., Szentkirályi u. 47, 1088,
Tel.: 459-1500/59161, 317-1044
Tutor: Prof. Dr. Gábor Nagy D.M.D Ph.D
email: oral@fok.usn.hu

Fourth year 1st semester

Week Lecture (1 hour/week) Practice (1 hour/week)

1. The Diagnostic method. Medical and dental history. The importance of “Oral diagnosis”.
2. Clinical evaluation. Extraoral and intraoral physical examination. Stomato-oncological screening,
4. Molecular oral Diagnostics
7. Up-to-date diagnosis of the periodontal tissues.
9. Diagnosis of the salivary glands.
10. Diagnosis of the TMJ disorders and Differential diagnosis of orofacial pain
11. Clinical evaluation of dental conditions, and malocclusion
   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 official documentation.)

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 – 2.00 p.m.
Semifinal exam will be organized at the end of fourth 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:
2. BC Decker Inc Hamilton London 2002

Recommended books
3. “hand-outs” will be prepared and presented for the students by the lecturers

Fourth year 2nd 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 official 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 – 2.00 p.m.**

Semifinal exam will be organized at the end of fourth 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:**
2. BC Decker Inc Hamilton London 2002

**Recommended books**
3. “hand-outs” will be prepared and presented for the students by the lecturers
GENERAL AND DENTAL RADIOLOGY
Department of Prosthodontics
Lecturer: Dr. Csaba Dobó Nagy

First Semester

**Lectures** (2 hours per week)
- Radiation physics
- Dental caries
- Pulp cavity
- Extraction of the teeth
- Root canal therapy
- Periapical lesions
- Periodontal disease
- Cysts of the jaws
- Hypercementosis
- Excessive bone formation
- Injuries to teeth
- Osteomyelitis
- Tumors
- Apicoectomy
- Anomalies
- Salivary gland diseases
- Resorption of the teeth
- Radiation biology
- Health physics
- Long-cone paralleling technique
- Traditional extraoral radiographic examinations
- Panoramic technique I.
- Panoramic technique II.

**Practices** (2 hours per week)
- Normal radiographic anatomy: Tooth anatomy (lecture)
- Normal radiographic anatomy: Anatomic landmarks of the maxilla (lectures)
- Normal radiographic anatomy: Anatomic landmarks of the mandible (lecture)
- Development of the teeth, Deciduous teeth (lect.)
- Recognition of the teeth, anatomic landmarks and caries
- Development of the teeth, deciduous teeth, extraction of the teeth
- Periapical lesions
- Periodontal disease
- Cysts of the jaws
- Hypercementosis
- Excessive bone formation
- Injuries to teeth
- Osteomyelitis
- Tumors, apicoectomy
- Anomalies
- Review
- View of the examination radiographs I.
- View of the examination radiographs II.

**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.
Final exam
PSYCHIATRY
Tutor: Prof. Dr. István Bitter
Department of Psychiatry and Psychotherapy

Lectures: 0.5/week, practices: 0.5/week

Examination: Semi-final


Schedule
Subject of psychiatry, classification of disorders, diagnostic methods (lecture)
Case demonstration (psychiatric interview, signs and symptoms )
Affective disorders (lecture)
Case demonstration (depression)
Anxiety, anxiety disorders, somatoform disorders (lecture)
Case demonstration (anxiety disorder)
Organic psychiatry (lecture)
Case demonstration (dementia)
Substance related disorders (lecture)
Case demonstration (alcohol abuse)
Schizophrenia and associated disorders (lecture)
Case demonstration (schizophrenia)
Psychotherapy (lecture)
Emergency in psychiatry, legal aspects (lecture)
Case demonstration, consultation (Z. Hidasi)

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. Semi-final exam: oral exam (based on 2x11 questions)

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:
– Attendance 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:

Suggested reading:

PERIODONTOLOGY I, II
Department of Periodontology

First Semester

Lectures (1.5 hours per week)

Second Semester

Lectures (1 hour per week)  Practices (3 hours per week)
Introduction to Periodontology  Clinical practice
The morphology of the periodontium, histology and embryology of the periodontium
The dental plaque. Its origin and role in the periodontal diseases. Periodontal microbiology
Oral immunobiology  Clinical practice
Oral immunopathology
Drugs and chemicals used in the periodontology
Pathomechanism of the periodontal disease
Clinical forms of periodontal diseases
Acute necrotizing ulcerative gingivitis
Pregnant gingitis, Periodontal diseases with endocrine background.
Midterm Demonstration  Clinical practice
Clinical practice  Clinical practice
Clinical practice  Clinical practice
Lectures (1 hour per week)
- Non-plaque related periodontal conditions
- Oral mucous membrane diseases located on the gingiva
- Periodontal diseases of the child and adolescents
- Epidemiology of the periodontal diseases
- Periodontal diseases and the patients’ behavior
- Periodontitis as a behavioral disease
- Oral prophylaxis and prevention of periodontal diseases
- Measures of individual and group education and motivation
- Periodontal charting, periodontal indices
- Medical and dental history of the periodontal patients
- General appraisal of the etiology of periodontal disease
- Rational for therapy, Consultation

Practices (3 hours per week)
- Clinical practice
- Midterm Demonstration

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

PUBLIC HEALTH
Tutor: Dr. András Terebessy

English Dental

Lectures (1.5 hours per week)
- Definition of Public Health; Past, present and future of Public Health
- Demography: International and Hungarian situation
- General epidemiology Analytical and intervention methods on field of chronic non-communicable diseases
- Lifestyle: smoking, alcohol consumption, drug-abuse
- Epidemiology and prevention of non-communicable diseases I
- Epidemiology and prevention of non-communicable diseases II
- Epidemiology and prevention of Cancer
- Environmental health: water, soil, air
- Occupational health
- Basics of healthy diet; Nutrition disorders

Practicals (2 hours per week)
- Introduction Basic demographical data
- Public Health Program of EU
- Visit into the Central Kitchen of the University
- Practical aspects of epidemiological investigations: study-planning and analysis
- Dentist’s task on prevention of non-communicable diseases I: smoking, alcohol consumption and drug-prevention
- Dentist’s task on prevention of non-communicable diseases II: HBP-prevention
- Dentist’s task on prevention of non-communicable diseases III: cancer-prevention Screening-screening programs
- Dentist’s task on environmental health problems
- Dentist’s task on occupation diseases prevention
- Assessment of nutritional status; nutritional disorders;
Lectures (1.5 hours per week)
- Mother-, child and youth health care
- General Epidemiology of communicable diseases – International and Hungarian aspects
- Nosocomial Infections Reemerging, emerging and deliberately emerging infections
- Ethic of Public Health
- Structure and financing of Health Care Systems

Practicals (2 hours per week)
- Basics of healthy diet; Computer planning and controlling diet in public catering
- Family planning, Youth health
- General epidemiology of communicable diseases
- Immunization, Vaccination programs
- Sterilization, disinfection
- Laboratory investigations in case of communicable diseases
- Nosocomial infections
- Food-hygiene; food-borne diseases

DENTAL PSYCHOLOGY
Institute of Behavioral Sciences
Code: FOKMAG019_1A
Credit: 2
Lecturers: Prof. Dr. Ferenc Túry/Dr. Piroska Balog
2010-2011. 2nd 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 Psychotherapeutic methods, Dr. György Purebl
3+4 Principles of perception, pain, consciousness, emotions and communication - and their relations to dentistry. Gábor Suhai
5+6 Stress and stress management programs. Dr. Adrienne Stauder
7+8 Conscious states, sleep, dreaming, general anesthesia. Dr. Róbert Bódizs
9+10 Dental anxiety and music therapy. Dr. László Harmat
11+12 Health psychology and behavior, Dr. Róbert Bódizs
13+14 Techniques of establishing rapport with patients in fear and basics of formulating positive suggestions in dental practice. Gábor Suhai
15+16 Altered states of consciousness, dental anxiety and suggestive communication (I.) Gábor Suhai
17+18 Altered states of consciousness, dental anxiety and suggestive communication (II.) Gábor Suhai
19+20 Affects, emotion and motivation. Dr. György Purebl
21+22 Dental consequences of eating disorders. Bernadett Babusa
23+24 Problems with personality disordered patients in dental practice. Dr. László Harmat
25+26 Fables and imagination in dental practice. Éva Pollák
27+28 Review.
Department: Institute of Behavioral Sciences
Department of Psychology
NET Building, 20th floor
1089, Budapest, Nagyvárad tér 4.
Tel: 210-2953
Secretary: NET Building, 20th floor, Room-2005. tel: 2102930/ 56114.
Course Leader: Dr. Piroska Balog
NET 20th floor, room 2011
Tel: 210-2930/ 56403, e-mail: balopir@net.sote.hu
Further information: www.behsci.sote.hu

Lecturers:
Dr. György Purebl purgyor@net.sote.hu
Dr. Róbert Bódizs bodrob@net.sote.hu
Dr. Adrienne Stauder staadr@net.sote.hu
Dr. László Harmat laszloharmat@yahoo.com
Bernadett Babusa bernadett.babusa@gmail.com
Éva Pollák evipoll@yahoo.com
Gabor Suhai shgabor@gmail.com

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

Certifying absence from exam:
A telephone message to the secretary of the Institute or an email message to the course leader.

Recommended text books:
DENTAL ETHICS

First Semester

Bioethics
Course Syllabus.
Institute of Behavioral Sciences
Tutor: 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

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 (Practices)
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 (Lecture)
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 (Practices)
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 (Lecture)
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 (Practices)
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 (Lecture).
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 (Practices)
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 (Lecture)
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.)

10. week (Practices)
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 (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?
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 (Practices)
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 (Lecture)
Ethical questions of organ- and tissue transplantation.
Some problems of justice concerning kidney transplantation and chronic haemodialysis.
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 (Practices)
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:
Jozsef Kovacs, 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 Building, 19th, 20th floor
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
13. Organ donation from 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

Important: To participate on at least 75% of the total number of lessons is a prerequisite of getting the signature. (One absence from the lectures and two absences from the practices is the maximum number permitted.) The student can make up for the absences in practices held at other times elsewhere. 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.

MEDICAL SOCIOLOGY (Dentsoc)

Code: FOMAGSZO_1A

2nd semester

Hour/semester: 15
Credit: 2

Responsible person and Institute for the course: Dr. Zsuzsa Szántó; Institute of Behavioural Sciences

Lecturers: Dr. Zsuzsa Szántó
Dr. Katalin Kovács
Dr. Bea Dávid
Dr. Fruzsina Albert

Goals of the subject:
– To introduce to the students 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.
Syllabus of the subject:

<table>
<thead>
<tr>
<th>Week</th>
<th>Class type</th>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lecture</td>
<td>Introduction. Changing patterns of disease</td>
</tr>
<tr>
<td>2</td>
<td>Lecture</td>
<td>Health and illness behaviour.</td>
</tr>
<tr>
<td>3</td>
<td>Lecture</td>
<td>Social inequalities in health and mortality.</td>
</tr>
<tr>
<td>4</td>
<td>Seminar</td>
<td>Health and illness behaviour.</td>
</tr>
<tr>
<td>5</td>
<td>Seminar</td>
<td>Social inequalities in health and mortality.</td>
</tr>
<tr>
<td>6</td>
<td>Lecture</td>
<td>Health professions</td>
</tr>
<tr>
<td>7</td>
<td>Seminar</td>
<td>Health professions</td>
</tr>
<tr>
<td>8</td>
<td>Lecture</td>
<td>National variations of health care</td>
</tr>
<tr>
<td>9</td>
<td>Lecture</td>
<td>Health care and health policy</td>
</tr>
<tr>
<td>10</td>
<td>Lecture</td>
<td>Midterm examination</td>
</tr>
<tr>
<td>11</td>
<td>Seminar</td>
<td>Chronic illness and disability</td>
</tr>
<tr>
<td>12</td>
<td>Seminar</td>
<td>Ageing and care of the elderly</td>
</tr>
<tr>
<td>13</td>
<td>Seminar</td>
<td>Gender aspects of health</td>
</tr>
<tr>
<td>14</td>
<td>Seminar</td>
<td>Doctor-patient relationship</td>
</tr>
</tbody>
</table>

The course includes: lectures, seminars, laboratory exercises - 7 lectures, 7 seminars, 1 midterm exam.

**Course requirements, methods of monitoring:**
To obtain signature for absolving the course students have to participate at a minimum of 10 classes. Participation is documented through catalogues. A midterm exam is taken after the 8th lecture. It is also required to submit a home paper or a class presentation in course-related topics by the end of the semester. The course ends with an exam; the grade may include the results of the midterm and the home assignment.

**Supplement possibilities:** based on the SE's exam regulation.
Absence may be justified by a medical document at the next class. One seminar per semester can be supplemented by an extra assignment given by the teacher or attending the same class with another group.

**Textbook:**

2. Handouts for the lectures will be accessible on the homepage of the Institute of Behavioural Sciences: www.magtud.sote.hu.
GNATHOLOGY – lectures and practices
Department of Prosthodontics
Lecturer: Prof. Dr. Péter Hermann

Week | Lecture
--- | ---
1. | Introduction into the physiology of the stomatognathic system. Morphology of the masticatory system. Occlusion.
2. | Mandibular positions.
3. | Movements of the mandible.
5. | Types of articulators.
7. | Mandibular positions.
8. | Centric occlusion.
10. | Types of articulators.
11. | Mounting of the articulators.
12-13-14 | Waxing up occlusal surface of different teeth: maxillary incisor and canine and occlusal surface of premolar and molar.
Practical examination

ORAL IMPLANTOLOGY – lecture
Department of Oral and Maxillofacial Surgery and Dentistry
Lecturer: Prof. Dr. Tamás Divinyi

Course Syllabus:
COMPULSORY SUMMER PRACTICE
4-weeks 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!
CLINICAL MODULE

Faculty of Dentistry
5th year
<table>
<thead>
<tr>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
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</thead>
<tbody>
<tr>
<td>compulsory Clinical Dentistry I. *</td>
<td>C4L0P6</td>
<td>pract.mark</td>
<td>Prosthodontics III</td>
</tr>
<tr>
<td>compulsory Clinical Dentistry I.</td>
<td>C4L0P6</td>
<td>pract.mark</td>
<td>Conservative Dentistry and Endodontics III.</td>
</tr>
<tr>
<td>compulsory Conservative Dentistry and Endodontics IV</td>
<td>C3L0P3</td>
<td>pract.mark</td>
<td>Conservative Dentistry and Endodontics III.</td>
</tr>
<tr>
<td>obligatory elective Forensic Dentistry</td>
<td>C1L1P0</td>
<td>semifinal</td>
<td>Pharmacology, Toxicology II.</td>
</tr>
<tr>
<td>obligatory elective Ophthalmology</td>
<td>C1L1P0.5</td>
<td>final#</td>
<td>Pathology II.</td>
</tr>
<tr>
<td>compulsory Oral and Maxillofacial Surgery IV</td>
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<td>practice mark</td>
<td>Oral and Maxillofacial Surgery III.</td>
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<tr>
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<tr>
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</tr>
<tr>
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<td>final#</td>
<td>Pathology II.</td>
</tr>
<tr>
<td>obligatory elective Pediatrics</td>
<td>C1L1P0.5</td>
<td>semifinal</td>
<td>Internal Medicine III.</td>
</tr>
<tr>
<td>compulsory Pedodontics I</td>
<td>C6L1P5</td>
<td>practice mark</td>
<td>Conservative Dentistry and Endodontics III.</td>
</tr>
<tr>
<td>compulsory Periodontology III.</td>
<td>C3L1P2</td>
<td>practice mark</td>
<td>Periodontology II.</td>
</tr>
<tr>
<td>obligatory elective Prehospital Emergency Medicine</td>
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<td>semifinal</td>
<td>Internal Medicine III.</td>
</tr>
<tr>
<td>compulsory Prosthodontics IV.</td>
<td>C3L0P3</td>
<td>practice mark</td>
<td>Prosthodontics III.</td>
</tr>
</tbody>
</table>

*in the Dept. of Prosthodontics or in the Dept. of Conservative Dentistry
### 10th semester

<table>
<thead>
<tr>
<th>subjects code</th>
<th>subjects</th>
<th>credit</th>
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<tbody>
<tr>
<td>compulsory</td>
<td>Clinical Dentistry II. *</td>
<td>C4L0P6</td>
<td>practice mark</td>
<td>Clinical Dentistry I. * in the Dept. of Prostodontics</td>
</tr>
<tr>
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<td>Clinical Dentistry II. *</td>
<td>C4L0P6</td>
<td>practice mark</td>
<td>Clinical Dentistry I. * in the Dept. of Conservative Dentistry</td>
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<tr>
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<td>Conservative Dentistry and Endodontics V</td>
<td>C3L0P3</td>
<td>final#</td>
<td>Conservative Dentistry and Endodontics IV</td>
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<tr>
<td>obligatory elective</td>
<td>Dermatology</td>
<td>C1L1P0.5</td>
<td>final#</td>
<td>Pharmacology, Toxicology II</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Obstetrics and Family Planning</td>
<td>C1L1P0</td>
<td>semifinal</td>
<td>Internal Medicine III</td>
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<tr>
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<td>Diploma Work</td>
<td>C20</td>
<td></td>
<td>9th semester’s subjects</td>
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<tr>
<td>compulsory</td>
<td>Oral and Maxillofacial Surgery V.</td>
<td>C4L1P3</td>
<td>final#</td>
<td>Oral and Maxillofacial Surgery IV</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral Medicine</td>
<td>C1L1P0</td>
<td>final#</td>
<td>Periodontology III</td>
</tr>
<tr>
<td>compulsory</td>
<td>Orthodontics II</td>
<td>C5L1P4</td>
<td>final#</td>
<td>Orthodontics I</td>
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<tr>
<td>compulsory</td>
<td>Pedodontics II</td>
<td>C5L1P4</td>
<td>final#</td>
<td>Pedodontics I</td>
</tr>
<tr>
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<tr>
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<td>Prosthodontics V.</td>
<td>C3L0P3</td>
<td>final#</td>
<td>Prosthodontics IV</td>
</tr>
</tbody>
</table>

**18 credits** should be gained from the **elective subjects** during the 5-year studies – see the elective list after the 3rd year study program.

**Explanation**

- # The grade influences the qualification of the diploma
- C= Credit point
- L= Lecture (hours/week)
- P= Practice (hours/week)
LIST OF TEXTBOOKS


Recommended textbooks:

8 Online: www.lib.sote.hu – Adatbázisok, adattárák – OVID – Books@OVID – Dermatology – Fitzpatrick’s Dermatology in General Medicine
First Semester

**Lectures** (1 hour per every 2nd week)

The role of otorhinolaryngology in dentistry and medicine. Clinical anatomy of the ear. Diseases of the external ear.

Acute and chronic otitis media. Etiology, diagnosis, complications and therapy.

Types of hearing losses. Fundamental audiological diagnostic methods. Surgical management of hearing losses. Otosclerosis and cochlear implant.


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.

Clinical aspects of diseases of the mouth and pharynx. Diseases of the labial, oral and laryngeal mucosa.

Anatomy and physiology of the larynx. Disorders of the voice. Infections and tumors of the larynx and their management.


**Practices** (0,5 hour per every 2nd week)

Routine clinical examinations in practice.


Routine audiology. Operating theater. Video demonstration.


Direct and indirect laryngoscopy. Videostroboscopy and fiberoscopy.
PEDIATRICS AND INFECTIOUS DISEASES
2nd Department of Pediatrics
Tutors: Dr. Tamás Bense  
Dr. András Kelecsényi

First Semester

Lectures
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  
Malignant Diseases in Childhood  
Kidney and Urinary Tract Diseases  
Allergic Diseases

PROSTHODONTICS

First Semester

Clinical practices: 2 hours/week. Integrated practices: 5 hours/week.  
Treatment of partial edentulousness, fixed and removable dentures.  
No lectures.

Second Semester

Clinical practices: 2 hours/week, and 4 hours/week practices integrated with the conservative dentistry. Complex treatment of different cases.  
No lectures.
CONSERVATIVE DENTISTRY  
Tutor: Dr. Krisztina Márton

First Semester

No lectures  Practices (3 hours/week)
Clinical dentistry 6 hours/week

Second Semester

No lectures  Practices (3 hours/week)
Clinical dentistry 6 hours/week

During the first semester the students have to make:
5 amalgam fillings, 7 esthetic restorations, 2 root-canal fillings, 1 inlay
During the second semester the students have to make:
5 amalgam fillings, 7 esthetic restorations, 2 root-canal fillings, 1 inlay

ORAL AND MAXILLOFACIAL SURGERY  
Tutor: Dr. Attila Szűcs

First Semester

Lectures (1 hour / week)  Practices (5 hours / week)
Precanceroses.
Benign tumors of the soft tissues in the head and neck region.
Malignant tumors of the head and neck region. I.  (Diagnostics, pathology, epidemiology)
Malignant tumors of the head and neck region. II.  (Surgical therapy)
Malignant tumors of the head and neck region. III.  (Complex therapy)
Secondary treatment of cleft lip and palate. Orthognatic Surgery
Biomaterials.
Esthetical consideration in maxillofacial surgery
Risk patient treatment in oral surgery I.  (internal diseases, fainting, antifebrile and painkiller treatment)

Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Lectures (1 hour / week)

- Sinus lifting
- Dentoalveolar deformities
- Guest speaker
- Consultation

Practices (5 hours / week)

- Practicing minor oral surgery
- Midterm Demonstration
- Practicing minor oral surgery
- 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

ORAL AND MAXILLOFACIAL SURGERY

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)
- Peripheral 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
Department of Orthodontics and Pediatrics Dentistry

First Semester

**Lectures** (1 hour/week)

- The subject, the connection and significance of pedodontics.
- Induction of caries, caries theories, and indices.
- General aspects of caries prevention.
- Possibilities of caries prevention and fluoride prophylaxe.
- Development of the teeth, anatomy and dentition of primary teeth.
- Structure and physiology of the hard dental tissues, and its practical significance.
- Disturbances of development of the permanent and primary teeth.
- Caries of primary teeth. Treatment of caries of primary teeth.
- Consecutive illnesses of caries of primary teeth.
- Mechanism of second dentition.
- Physiological and pathological phenomena in second dentition.
- Caries and treatment of permanent teeth.
- Endodontic treatment of immature teeth.
- Consultation.

**Practice** (5 hours/week)

- Treatment of patients.
- Type of evaluation: Practical grade (1-5 grading system)

PEDODONTICS

Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (1 hour/week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Radiology in pedodontics.</td>
</tr>
<tr>
<td>2</td>
<td>Minor oral surgery in pedodontics, local anaesthesia.</td>
</tr>
<tr>
<td>3</td>
<td>General anesthesia.</td>
</tr>
<tr>
<td>4</td>
<td>Prothesis in pedodontics.</td>
</tr>
<tr>
<td>5</td>
<td>Traumatic injuries of primary and permanent teeth.</td>
</tr>
<tr>
<td>6</td>
<td>Complex therapy of traumatic injuries of permanent teeth.</td>
</tr>
<tr>
<td>7</td>
<td>Parodontology and oral diseases in childhood.</td>
</tr>
<tr>
<td>8</td>
<td>Administration of medicine in pedodontics.</td>
</tr>
</tbody>
</table>
ORTHODONTICS

First Semester

Lectures (1 hour/week)

The subject, the significance of orthodontics, and its relation to caries and parodontology.
Etiology, acquired and hereditary anomalies.
Orthodontic elements, terminology.
Relationship between function and anomalies. Angle diagnostic system.
X-ray diagnosis, evaluation of teleradiogram.
The date of the beginning of treatment and the length of treatment time.
Basic principle of orthodontic treatment. Biological and mechanical fundamentals.
Classification of orthodontic appliances. The appliances' historical survey.
Removable appliances. Active and passive plates.
Removable appliances. Functional jaw orthopedic appliances.
Elements of fixed appliances.
Types and characters of orthodontic arches.
Multiband systems I. (edgewise, light-wire, twin-wire)
Multiband systems II. (bioprogressive, straightwire)
Appliances used rarely in Hungary (head-gear, face-bow, quad helix, hyrax)

Practice (5 hours/week)

Treatment of patients.
Type of evaluation: Practical grade (1-5 grading system)
ORTHODONTICS

Second Semester

Week | Lectures (1 hour/week)
1. Direct bonding.
2. Treatment of Angle class I. anomalies. Local anomalies.
3. Treatment of Angle class I. general anomalies.
4. Treatment of Angle class II. anomalies.
5. Treatment of Angle class III. anomalies.
6. Orthodontic treatment by missing teeth.
7. Complex therapy of cleft lip and palate.
10. Surgical and orthodontic treatment of mandibular and maxillary prognathism.
11. Adult treatment in orthodontics.

Practice (4 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

Department of Periodontology

First Semester

 Lectures (1 hour/week) | Practices (2 hours/week)
--- | ---
Introduction: What is the clinical periodontology is? | Clinical practice
The rational of periodontal cause related therapy | Clinical practice
Clinical and radiological periodontal diagnostics | Clinical practice
Oral hygiene, Gingival and Periodontal indices | Clinical practice
The treatment of periodontal emergency cases | Clinical practice
The stages of the comprehensive periodontal treatment I. | Midterm Demonstration
The stages of the comprehensive periodontal treatment II. | Clinical practice
Professional oral hygiene I. Supragingival scaling | Clinical practice
Professional oral hygiene II. Supragingival scaling | Clinical practice
Professional oral hygiene III. Correcting plaque retention factors | Clinical practice
Oral hygiene education, tooth brushing | Clinical practice
**PERIODONTOLOGY**

**Second Semester**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (Part One)</th>
<th>Seminar (2 hours/week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reevaluation II. Correcting phase in periodontal surgery</td>
<td>Literature review</td>
</tr>
<tr>
<td>2</td>
<td>Correcting periodontal surgery - Mucogingival surgery I.</td>
<td>Literature review</td>
</tr>
<tr>
<td>3</td>
<td>Mucogingival Surgery Gingival esthetics II.</td>
<td>Literature review</td>
</tr>
<tr>
<td>4</td>
<td>Periodontal regeneration</td>
<td>Literature review</td>
</tr>
<tr>
<td>5</td>
<td>Periodontal regenerative processes - biological barrier membranes</td>
<td>Literature review</td>
</tr>
<tr>
<td>6</td>
<td>Periodontal regenerative processes – growths factors and other biochemical means</td>
<td>Literature review</td>
</tr>
<tr>
<td>7</td>
<td>Prosthodontic rehabilitation I.</td>
<td>Clinical case conference</td>
</tr>
<tr>
<td>8</td>
<td>Prosthodontic rehabilitation II. The white esthetics</td>
<td>Clinical case conference</td>
</tr>
<tr>
<td>9</td>
<td>Periodontal follow-up – periodontal maintenance</td>
<td>Literature review</td>
</tr>
<tr>
<td>10</td>
<td>Perio – endodontic relationship</td>
<td>Literature review</td>
</tr>
<tr>
<td>11</td>
<td>The evaluation of the success of the comprehensive periodontal treatment</td>
<td>Differential diagnosis</td>
</tr>
<tr>
<td>12</td>
<td>The occlusion and the periodontium</td>
<td>Consultation</td>
</tr>
<tr>
<td>13</td>
<td>Consultation</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Written final exam – periodontal diagnostics</td>
<td></td>
</tr>
</tbody>
</table>

**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 final exam.
ORAL MEDICINE

Head of department: Prof. Dr. István Gera
Lecturer: Dr. Péter Windisch

First semester

Lectures (1 hour/week)
- Introduction: The role of Oral Medicine in the whole discipline of stomatology
- The significance of laboratory investigation in dentistry
- Primary and secondary basic lesions
- The signs and symptoms of drug side effects
- Mucous membrane immunity (in details: alimentary track)
- Mucous membrane immunity II. Its clinical relevance
- The biochemistry and immunology of inflammation
- Inflammation of bacterial origin in the oral cavity
- Oral signs of neuroendocrine diseases
- Viral diseases
- Fungal diseases
- The signs and symptoms of temporomandibular joint disorders
- Oral manifestations of immuno deficiencies
- Allergic diseases in the oral cavity
- Autoimmune diseases in the oral cavity
- Aphthous ulcers in the oral cavity

Practice within the period

Midterm Demonstration

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

---

ORAL MEDICINE

Second 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
Week  Lectures

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 final exam

PREHOSPITAL EMERGENCY MEDICINE
National Ambulance Service
Program Director: Dr. Gábor Göbl
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 oxylogy
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.
## Second Semester

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction to Dermatology.</strong> Diagnostic procedures, anatomy, functions of skin comparing to oral mucosa. <strong>Elementary lesions. Autoimmune bullous diseases.</strong></td>
<td>Dr. Márta Marschalkó (Deputy: Dr. Norbert Wikonkál)</td>
</tr>
<tr>
<td><strong>Sexually transmitted diseases (syphilis, gonorrhoea, NGU, HPV).</strong></td>
<td>Dr. Márta Marschalkó (Deputy: Dr. Péter Holló)</td>
</tr>
<tr>
<td><strong>AIDS, herpes virus infections.</strong></td>
<td>Dr. Péter Holló (Deputy: Dr. Márta Marschalkó)</td>
</tr>
<tr>
<td><strong>Skin tumors. Malignant melanoma, basal cell carcinoma, squamous cell carcinoma. Benign tumors, paraneoplastic syndromes.</strong></td>
<td>Dr. Norbert Wikonkál (Deputy: Dr. Péter Holló)</td>
</tr>
<tr>
<td><strong>Allergic skin diseases, drug allergy. Dermatitis, eczema, implication for dentists.</strong></td>
<td>Dr. Márta Marschalkó (Deputy: Dr. Nóra Erős)</td>
</tr>
<tr>
<td><strong>Atopic dermatitis, urticaria, psoriasis.</strong></td>
<td>Dr. Péter Holló (Deputy: Dr. Márta Marschalkó)</td>
</tr>
<tr>
<td><strong>Bacterial skin diseases.</strong></td>
<td>Dr. Norbert Wikonkál (Deputy: Dr. Márta Marschalkó)</td>
</tr>
<tr>
<td><strong>Cutaneous and mucosal diseases caused by fungi. Treatment modalities.</strong></td>
<td>Dr. Nóra Erős (Deputy: Dr. Norbert Wikonkál)</td>
</tr>
<tr>
<td><strong>Dermatological treatment.</strong></td>
<td>Dr. Gyöngyvér Soós (Deputy: Dr. Péter Holló)</td>
</tr>
<tr>
<td><strong>Seborrheic dermatitis, acne. Cutaneous and oral manifestations of internal diseases.</strong></td>
<td>Dr. Nóra Erős (Deputy: Dr. Márta Marschalkó)</td>
</tr>
</tbody>
</table>
OBSTETRICS AND FAMILY PLANNING
2nd Dept. of Obstetrics and Gynaecology
Head of Department: Prof. Dr. Attila Pajor
Tutor: 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.

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.
Glaucoma (pathomechanismus).
Glaucoma (conservative and surgical treatment).
**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.

**FORENSIC DENTISTRY**  
Department of Forensic Medicine  
Tutor: Dr. Mártan Hubay

**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
ELECTIVE SUBJECTS FOR Dentistry 3rd, 4th and 5th year

First Semester

PSYCHOSOMATIC DENTISTRY - lectures
Department of Prosthodontics
Dental Centre, first floor, room no. 135
from 7.00 to 7.45 a.m. on Wednesdays
Tutor: Dr. Tibor Károly Fábián
Exam: written test
Credit: 1

1. Concept of psychosomatic dentistry, its major domains and perspectives
2. Psychophysiological peculiarities of the orofacial region, mechanisms of somatization
3. Psychosomatic diagnostics, patient-assistant-dentist interrelationships
4. Concept of initial psychosomatic therapy, practical guidelines for dentists
5. Several methods of psychotherapy and their use in psychosomatic dentistry
6. Several methods of physical therapy and their use in psychosomatic dentistry
7. Evaluation of complementary and alternative therapies; placebo and nocebo effects
8. Anxiety and dental fear. Patient management possibilities
9. Psychogenic orofacial pain and its treatment. View-points of dentists
10. Psychogenic neuromuscular symptoms and their treatment. View-points of dentists
11. Psychosomatics of oral inflammations and allergic reactions
12. Psychosomatics of denture intolerance and orthodontic treatments
13. Psychosomatics of salivation problems and pseudoneurological symptoms
14. Consultation, written exam (test)

Second Semester

HYPNOTHERAPY FOR DENTISTS - lectures
Department of Prosthodontics
Dental Centre, first floor, room no. 135
from 7.00 to 7.45 a.m. on Wednesdays
Tutor: Dr. Tibor Károly Fábián
Exam: written test
Credit: 1

1. Concept of hypnotherapy. Importance and perspectives in dentistry
2. Concept of altered states of consciousness, theories of hypnosis
3. Concept of dissociation. Hypnotic phenomena
4. Hypnotic susceptibility, hypnability, trance deepness, related measuring scales
5. Indications, contraindications and documentation of dental hypnotherapy
6. Rapport, hypnosis induction and deepening of hypnosis
7. Therapeutic suggestions, utilization of the altered state of consciousness
Postgraduate courses

Postgraduate courses are available at the Faculty of Dentistry at Semmelweis University, ending with a specialty exam in the following fields:
1. Pedodontics
2. Orthodontics
3. Periodontology
4. Dentoalveolar Surgery
5. Conservative and Prosthetic Dentistry.

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

Clinical screening of oral malignancies I.

Section of Oral Diagnostics
(Orális Diagnosztikai Részleg, Bp. VIII., Szentkirályi u. 47. 1088
Tel.: 459-1500/59164, 317-1044, fax: 459-1500/59165)
Tutor: Prof. Dr. Gábor Nagy D.M.D., Ph.D

I. Theoretical background

Incidence of intraoral tumours is very high, and Hungary has a leading position 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. Opportunistic screening
   This means the comprehensive dental examination of a particular patient attending a dental service. This screening is not only concentrating on detection of oral premalignancies oral malignancies, but also other developmental and inflammatory lesions.

Basic investigative methods of head and neck region
- detailed case history (with special aspects on tumors, life style, persistent, 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 patients could be enhanced 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, morbidity and mortality data
2. Etiological factor and pathomechanism 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. lightning devices)
11. Contemporary diagnostic possibilities and a multidisciplinary cooperation
12. Social and dental rehabilitation after the treatment of oral cancer
13. Consultation / Examination
<table>
<thead>
<tr>
<th>1st semester</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
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<tbody>
<tr>
<td>General and Inorganic Chemistry I. Practice GYASKASHG1A</td>
<td>–</td>
<td>5</td>
<td>5</td>
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<td>practical course grade</td>
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<tr>
<td>General and Inorganic Chemistry I. GYASKASKE1A</td>
<td>4+1</td>
<td>–</td>
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<td>Introduction to Health Informatics I. Practice GYINFBEIG1A</td>
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<tr>
<td>Introduction to Health Informatics I. GYINFBEIE1A</td>
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<td>–</td>
<td>2</td>
<td>–</td>
<td>semi-final</td>
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<td>Biophysics I. Practice GYFIZBIFG1A</td>
<td>–</td>
<td>3</td>
<td>2</td>
<td>–</td>
<td>practical course grade</td>
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<td>History of Sciences, Propedeutics GYEYTTPE1A</td>
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<td>Subjects</td>
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<td>Prerequisites</td>
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<td>Anatomy Practice GYHUMANANAG1A</td>
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<td>Hungarian Language II. * GYLEKMSZG2A</td>
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</tbody>
</table>

* The grade influences the qualification of the diploma
** Obligatory courses
** Obligatory elective courses: (2 credit points).
List of textbooks

7. Mihalik: Botany for Students of Pharmacy. (Szeged)
11. Kőrösi: Inorganic Chemistry. (Szeged)

Recommended textbooks:

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
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.
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.

MATHEMATICS
University Pharmacy, Department of Pharmacy Administration
Tutor: Dr. Andrea Meskó

Second Semester

Lectures: 2 hours per week
Practicals: 1 hour per week

Analysis of variance. The F test. 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.
Radius of convergency.

BIOLOGY I.
Tutor: Dr. Valéria László

1st Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The cell membrane: structure and function</td>
<td>The light microscope in use</td>
</tr>
<tr>
<td>2.</td>
<td><strong>Structure and function of the nucleus I</strong></td>
<td>General view of the cell. Light and electron microscopic microtechnique.</td>
</tr>
<tr>
<td>3.</td>
<td><strong>Structure and function of the nucleus II</strong></td>
<td>Cell nucleus. Cyto(histo)chemistry</td>
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<tr>
<td>4.</td>
<td>Endoplasmic reticulum and the ribosomes</td>
<td>Endoplasmic reticulum</td>
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<tr>
<td>5.</td>
<td>Golgi complex, secretion and protein transport</td>
<td><strong>Golgi complex</strong></td>
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<tr>
<td>6.</td>
<td>Lysosomes, endocytosis, vesicular transport</td>
<td>Midterm (written)</td>
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<tr>
<td>7.</td>
<td>Structure and function of mitochondria and peroxisomes</td>
<td>Secretion. Immunohistochemistry</td>
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<tr>
<td>8.</td>
<td>The cytoskeleton,</td>
<td>Endocytosis. Cellular digestion. Enzyme-histochemistry</td>
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<tr>
<td>9.</td>
<td>Cellular movement</td>
<td>Cell and tissue culture</td>
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<tr>
<td>10.</td>
<td><strong>Cell adhesion, cell junctions</strong></td>
<td>Store and supply of energy. Mitochondria. Peroxisome.</td>
</tr>
<tr>
<td>11.</td>
<td>Extracellular regulation of cells, <strong>signal transduction I</strong></td>
<td>Cytoskeleton and cellular movement</td>
</tr>
<tr>
<td>12.</td>
<td><strong>The cell cycle and its regulation I</strong></td>
<td>Cell surface differentiation, ultrastructure of cellular junctions</td>
</tr>
<tr>
<td>13.</td>
<td>The cell cycle and its regulation II</td>
<td>Midterm (written)</td>
</tr>
<tr>
<td>14.</td>
<td>Cellular aging and programmed cell death (apoptosis)</td>
<td>Cell death (necrosis and apoptosis)</td>
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</table>
# BIOLOGY II.

## Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Practices</th>
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<tbody>
<tr>
<td>1.</td>
<td>Meiosis</td>
<td>Typical and atypical mitosis</td>
</tr>
<tr>
<td>2.</td>
<td>Introduction to human genetics; human genom</td>
<td>Meiosis and gametogenesis</td>
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<tr>
<td>3.</td>
<td>Mutations and polymorphisms I.</td>
<td>Cytogenetics I</td>
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<tr>
<td>4.</td>
<td>Mutations and polymorphisms II.</td>
<td>Cytogenetics II</td>
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<tr>
<td>5.</td>
<td>Epigenetics</td>
<td>Introduction to humangenetics; special methods of humangenetics</td>
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<tr>
<td>6.</td>
<td>Cytogenetics I</td>
<td>Molecular genetics I</td>
</tr>
<tr>
<td>7.</td>
<td>Cytogenetics II</td>
<td>Molecular genetics II</td>
</tr>
<tr>
<td>8.</td>
<td>Autosomal (monogenic) inheritance</td>
<td>Gene expression analysis on protein level</td>
</tr>
<tr>
<td>9.</td>
<td>Role of sex in inheritance</td>
<td>Medical applications of genetic methods: monogenic inheritance</td>
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<tr>
<td>10.</td>
<td>Genetics of sex</td>
<td>Medical application of genetic methods: complex traits (disorders)</td>
</tr>
<tr>
<td>11.</td>
<td>Genetics and genomics of complex traits (disorders)</td>
<td>Medical applications of genetic methods: practice</td>
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<tr>
<td>12.</td>
<td>Genetic aspects of development and cancer</td>
<td>Midterm II (written)</td>
</tr>
<tr>
<td>13.</td>
<td>Gene and genome manipulations</td>
<td>Consultation</td>
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<tr>
<td>14.</td>
<td>Theoretical background of reparative medicine</td>
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BIOPHYSICS
Tutor: Dr. Károly Módos

First Semester

Lectures (2 hours per week)
- Introduction; structure of matter; interactions
- Gases, crystals, liquids, Boltzmann distribution
- Properties of condensed matter
- Liquid crystals, membranes
- Structural organization of macromolecular systems
- Radiations, light, optics
- Wave and corpuscular nature of light
- Light absorption and emission, light scattering, vision
- Electromagnetic radiations, thermal radiation
- Luminescence
- Lasers
- X-radiation
- Ionizing radiations, radioactive decay

Laboratory (3 hours per week)
- Laboratory safety rules
- Data processing
- Emission spectroscopy. Light sources
- Spectrophotometry
- Optical lenses; light microscope
- Detection of nuclear radiations
- Oscilloscope
- Radioactive power of an X-ray tube
- Special light microscopes
- Gamma energy determination
- Electronic blood particle counting
- Picoscale
- Determination of skin-impedance
- Concentration determination with refractometer
- Isotope diagnostics
- Repetition, consultation

BIOPHYSICS

Second Semester

Lecture (2 hours per week)
- Transport phenomena, flow of fluids and gases
- U V-dosimetry
- Diffusion, osmosis
- Thermodynamic aspects of transport processes
- 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 (3 hours per week)
- Dosimetry
- Amplifier
- The attenuation of gamma-radiation
- Pulse generators
- Sine wave oscillators
- Audiometry
- Densitography (CT)
- Calculations
- Flow of fluids. Electric model of vascular system
- Electrocardiography
- Diffusion
- Sensory function
- Repetition
- Repetition
First Semester

**Lectures** (3 hours per week)

Elementary particles: quarks, leptons, gauge particles, electron, proton, neutron.
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.
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.
The phase diagram of water. Crystal structures, unit cell. The rate of crystallization. Sublimation.
Determination of MM by colligative properties.
PRACTICAL GENERAL AND INORGANIC CHEMISTRY
Tutor: Dr. Szabolcs Béni

First Semester

Lectures (2 hours per week)
- Methods of purification of chemical substances. Recrystallization.
- Sublimation.
- Ion exchange. Distillation.
- Chemical purification.

- Preparation of inorganic compounds.
- Stoichiometry of chemical reactions.
- Theoretical yield, actual yield and percent yield. Types of chemical reactions.
- Acid-base reactions. Preparation of inorganic compounds by acid-base reactions.
- Acid-base properties of salt solutions, hydrolysis.
- Thermal decomposition of inorganic compounds (acids, bases, salts).
- Preparation of Mg metal sample.
- Preparation of inorganic compounds by oxidation-reduction reactions.
- Complex formation reactions. Naming of complex ions and coordination compounds.
- Methods of preparation of double salts and coordination compounds.
- Calculation of pH in solutions of acids and bases.
- Buffer solutions and their functions, calculation of pH of buffer solutions.
- Precipitation reactions. Equilibria in precipitation reaction.
- Problem-solving in general chemistry. (Calculation of molar masses of nonelectrolytes from colligative properties).
- Problem solving in general chemistry (Electrochemistry)

Practicals (5 hours per week)
- Safety instructions. General instructions on the requirements. Recrystallization of KA1(SO4)2. 12 H2O. Sublimation of iodine.
- Chemical purification of sodium chloride. Water purification using ion exchange resins.
- Distillation of hydrochloric acid.
- Preparation of CuSO4. 5 H2O

- Preparation of (NH4)2SO4, H3BO3 from borax (Na2B4O7).
- Preparation of CaHPO4. Observation of hydrolysis of some salts.
- Observation of thermal decompositions. Determination of the mass of a

- Observation of some oxidation-reduction Reactions.
- Preparation of metallic copper and metallic manganese.
- Preparation of metallic copper and FeSO4

- Preparation of precipitated sulfur.
- Experimental observation of direction of redox reactions (standard potentials).
- Preparation of a double salt (Mohr salt, (NH4)2 Fe(SO4)2. 6 H2O
- Preparation of a buffer solutions.
- Preparation of Cu(NH3)4 SO4 and Co Hg(SCN)4 coordination compounds.
- Qualitative comparison of solubility products.
- Observation of osmosis.
- Dependence of the reaction rate on concentration and temperature.
- Observation of catalysis.
- Decomposition of hydrogen peroxide.
- Closing inventory. Problem-solving.
Second Semester

3 hours per week (lecture)

Weeks  Introduction
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.

**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 compounds 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.
### Weeks Introduction

**Chemistry of coordination compounds**
- The dynamics of coordination compounds: Complex equilibria, ligand exchange rates. The coordination chemistry of alkali metal ions. (Hostguest complexation.)

**Metals in biology**
- Metals in biominalization. Metal-induced toxicity. The biomedical use of metal complexes and metal complexation.

**The chemistry of the environment**
- A brief overview of the chemistry of the litosphere, hydrosphere and atmosphere.

### ANALYTICAL CHEMISTRY I.

**Qualitative Chemical Analysis**

**Lecturer:** Dr. István Szalai  
**Practical:** Dr. István Szalai  
**Tutor:** Dr. Krisztina Kurin-Csörgéi

### Second Semester

**Lectures** (2 hours per week)

**Practicals** (5 hours per week)
Lectures (2 hours per week)


Summary of properties of elements and reactions of Group III cations. Solubility and complex ion equilibria and application in qualitative analysis of ions.


Classification of anions into analytical groups. Group reagents for qualitative analysis of anions. Oxidation-reduction. Oxidation-reduction reactions in qualitative chemical analysis.


Practicals (5 hours per week)


PHARMACEUTICAL BOTANY
Department of Plant Anatomy
Tutor: Dr. Béla Dános

Second Semester

Week Lectures
1 Introduction. The Plant Kingdom. The botanical sciences. Pharmaceutical Botany, the program of the lectures.
2 Compartmentalization and metabolic pathways in plant cells.
3 Chloroplast and photosynthesis. Starch formation and degradation.
5 Mitochondrion and respiration.

Practicals (Tutor: Dr. Gyöngyi Szedlay)

7 Amino acid and protein metabolism. The N cycle. Protein bodies, protein mobilization. Protein secretion.
8 Formation of alkaloids and phenolics. Lignification. Vacuole, cell sap, osmoregulation, crystal formation, autophagy, autolysis.
9 Nucleic acid metabolism. The nucleus. Plant specificities of mitosis and meiosis.
10 Organizational types of plants. The cormophyte plant body. Tissues, tissue system. Meristems.
11 Dermal tissue system.
12 Conductive tissue system.
13 Ground tissue system.
14 Secretory structures.

1st Test Work. Stem morphology (buds).
Monocots: analysis of a living plant.
Analysis of dicots representing ancestral type (Ranunculaceae).
Simple tissues, meristems.
Dermal tissue system, trichomes.
2nd Test Examination
Analysis of living plants (Rosaceae, Apocynaceae), medicinal plants.
Conductive tissue system.
Ground tissue system.
Analysis of living plants (Papaveraceae, Primulaceae).
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
Tutor: Dr. Ágnes Csáky

Second Semester

The aim of the subject is to introduce to the fundamentals of the structure of the human body and by this teach the essential terms used in the communication between pharmacists and physicians. The topic anatomy also serves as a preliminary study for later clinical subjects and deals with the basic methods of morphological research. The programme refers to anatomical books and periodicals helping the pharmacists to complete their knowledge in necessary.

Lecture

1 Introduction, general Embryology
2 Basic tissue
3 Bone, joint and muscle types
4 Ossification, development of the vertebral column
5 Heart and its development
6 Blood vessels
7 Blood, development of the blood cells
8 Lymphatic organs
9 Respiratory organs
10 Development of lung and intestines

Practice

Microscopy: stratified epithelium, connective tissue, cartilage, bone
Microscopy: arteries and veins, blood, lymphatic vessels, spleen, palatine, tonsil
Macroscopy: bones and joints of the shoulder girdle and upper limb
Macroscopy: bones and joints of the pelvis girdle and lower limb
Microscopy: lung, submandibular gland, liver, pancreas
Lecture Practice
11 Intestinal tract. Macroscopy: vertebral column and skull
12 Digestive glands
13 Kidney
14 Ureter, urinary bladder, urethra
15 Inner and outer genitals
16 Development of the urogenital organs
17 Endocrine gland
18 Development of the nervous system
19 Spinal cord
20 Oblongate medulla, pons, mesencephalon
21 Diencephalon, neurosecretion
22 Cerebral cortex
23 Cerebellum, extrapyramidal system
24 Olfactory and limbic systems
25 Eye, optic tracts and centers
26 Auditory and static system
27 Gustatory buds, skin and accessory organs
28 Development of the sensory organs
29–30 Repetition, complementary day for holidays

HISTORY OF PHARMACY, PROPEDEUTICS
University Pharmacy, Department of Pharmacy Administration
Lecturer: Prof. Dr. Ágnes Kéry
Tutor: Dr. Andrea Balázs
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. Knowledge of medicine and pharmacy in Egypt.
4 The Arabs and the European Middle Ages. Transit ways of knowledge. 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.
9 Definition of drugs. Aspects of classification. Classification of drugs according to their origin and on the basis of strength.
### Week Lectures (2 hours per week)

10 Classification of drugs by their pharmaceutical action, use and by the place of application.  
Drug and doses. Specially named doses.  
11 Drug utilization. How could be influenced the increased drug consumption?  
Narcotic controls.  
Pharmaceutical literature: treatises, pharmacopeias, formularies, journals, periodicals.  
13 Ordering of drug preparation. Pharmacy, galanic laboratories, pharmaceutical factories.  
14 Pharmacists, connections with physicians, etc.  
Health for all – all for health by the year 2000.

### FIRST AID
Institute of Traumatology  
Tutor: Dr. Miklós Szebeny

#### Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
</tr>
</thead>
</table>
| 1–2  | Introduction. The purpose of the education of first aid.  
Initial assessment and management. |
| 3–4  | Mechanical injuries; open-closed.  
Hemorrhage, control of hemorrhage. |
| 5–6  | Thoracic and abdominal traumas.  
7–8  | Unconscious patient. Endocrine emergencies. |
Cardiorespiratory emergencies. |
| 11–12| Resuscitation theory and practice. |
| 13–14| Thermal and chemical injuries.  
Transport of injured patients. |

**Practice:** Reanimation
INTRODUCTION TO HEALTH INFORMATICS

Institute of Development and Higher Education in the field of Medical Informatics

Director: Dr. Elek Dinya

Tutor: Dr. Mariann Szabó Dinya

1 lect. + 1 pract/ week / two semesters

1. GENERAL INFORMATION:

The program in Medical Informatics trains students in the application of computer and information sciences to the quantitative aspects and decision needs of the health and life sciences. Medical Informatics encompasses not only mathematics, statistics and computing, but also includes other engineering, management, and information sciences applied to problems arising in biology, medicine and the delivery of health care. In addition to basic biostatistical and computing techniques, it is necessary that students be familiar with other methodologies such as mathematical modeling, systems analysis, image and signal processing, management information systems and decision sciences. Possible areas of emphasis include health information systems, biomathematical modeling, evaluation of health programs, system development, clinical decision studies and WEB 2.0 solutions in health care system.

2. AIMS

To discuss the structure and operation of state of art information technology tools in the health care to teach medical students the basic principles of using information technology and general-purpose software in medical activity to help students to learn skills of using telecommunication systems and information resources on the Internet in education, learning, research and clinical practice

3. REQUIREMENTS:

The student is allowed to take the semi-final examination

1st semester: presented the masterwork completed during the practices and his/her absences did not exceed 25% of all practices.

2nd semester: passed the two midterm written examinations and his/her absences did not exceed 25% of all practices.

Semi-final examination is in written form.

THEME/ 1. semester

| 1. e-HEALTH | lecture |
| 2. Networks and telecommunication. The Internet | lecture |
| 3. Data handling by computer | lecture |
| 4. The World Wide Web – WEB 2.0 and the health care system | lecture |
| 5. Data manipulation | lecture |
| 6. Databases | lecture |
| 7. Digital signature, e-card | lecture |
**THEME/ 1. semester**

| 1.2 Computer platforms and computer architectures | practice |
| 2. Getting familiar with the Internet (E-mail, news groups, Telnet, FTP) | practice |
| 3. Browsing and searching on the Web | practice |
| 4. Hypertext document. How to create Web pages | practice |
| 5. Handling text, image, sound and moving images in computers | practice |
| 6. Creating database | practice |
| 7. Working with clinical trial database using Excel | practice |
| 8. JAVA, AJAX and RSS in WEB 2.0 applications | practice |

**THEME/ 2. semester**

| 1. The knowledge in medicine and pharmacy | lecture |
| 2. Drug and pharmacotherapeutic databases on the Net | lecture |
| 3. Statistical tools of drug development | lecture |
| 4. Wireless Communication | lecture |
| 5. Computer-aided drug design | lecture |
| 6. Data Analysis with SPSS | lecture |
| 7. How to read scientific articles? | lecture |

| 1. Electronic medical knowledge bases practice (Medline, Micromedex, Cochrane Library, ...) | practice |
| 2. Diet planning using Excel | practice |
| 3. Mobile communication | practice |
| 4. How to create a presentation. Electronic slide show and animation. Presentation with PowerPoint. | practice |

HUNGARIAN LANGUAGE, TERMINOLOGY – See information before the Study Programs!
# STUDY PROGRAMME

## Second Year

<table>
<thead>
<tr>
<th>3(^{rd}) semester</th>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical Chemistry (quantitative) I, GYASKAKKG1A</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>GYASKANKG1A</td>
<td>General and Inorganic Chemistry II, Mathematics II.</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Physical Chemistry I, GYFKTFIKE1A</td>
<td>4</td>
<td>–</td>
<td>4</td>
<td>GYASKASKKE2A</td>
<td>Analytical Chemistry (qualitative) Mathematics II.</td>
<td>semi-final</td>
</tr>
<tr>
<td>Pharmaceutical Botany II, Practice GYNOVGYNG2A</td>
<td>–</td>
<td>3</td>
<td>2</td>
<td>GYGENBIOE2A</td>
<td>General and Inorganic Chemistry II, Mathematics II.</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Pharmaceutical Botany II, GYNOVGYNE2A</td>
<td>1</td>
<td>–</td>
<td>2</td>
<td>GYGENBIOE2A</td>
<td>Biophysics II.</td>
<td>final #</td>
</tr>
<tr>
<td>Organic Chemistry I, Practice GYSZKSZKG1A</td>
<td>–</td>
<td>5,5</td>
<td>5</td>
<td>GYASKASKKE2A</td>
<td>Analytical Chemistry (qualitative) Introduction to Health Informatics II.</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Organic Chemistry I, GYSZKSZKE1A</td>
<td>4</td>
<td>–</td>
<td>5</td>
<td>GYASKASKKE2A</td>
<td>General and Inorganic Chemistry II, Mathematics II.</td>
<td>semi-final</td>
</tr>
<tr>
<td>Physical Education III, GYTSITSNG3A</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>GYTSITSNG2A</td>
<td>Physical Education II.</td>
<td>signature</td>
</tr>
<tr>
<td>Hungarian Language III, * GYLEKMSZG3A</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>GYLEKMSZG1A</td>
<td>Hungarian Language II.</td>
<td>practical course grade</td>
</tr>
</tbody>
</table>
### 4th semester

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical Chemistry (quantitative) II. Practice GYASKAKKG2A</td>
<td>–</td>
<td>5</td>
<td>3</td>
<td>GYSZKSZKE1A GYASKAKKG1A</td>
<td>Organic Chemistry I. Analytical Chemistry (quantitative) I. practical course grade</td>
</tr>
<tr>
<td>Analytical Chemistry (quantitative) II. GYASKAKKE2A</td>
<td>2</td>
<td>–</td>
<td>6</td>
<td>GYSZKSZKE1A GYASKAKKG1A</td>
<td>Organic Chemistry I. Analytical Chemistry (quantitative) I. final #</td>
</tr>
<tr>
<td>Biochemistry I. Practice GYOBIBIKMG1A</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>GYGENBIOE2A GYSZKSZKE1A GYFIZBIFE2A GYHUMANANAE1A</td>
<td>Biology II. Organic Chemistry I. Biophysics II. Anatomy practice mark</td>
</tr>
<tr>
<td>Biochemistry I. GYOBIBIKME1A</td>
<td>3</td>
<td>–</td>
<td>3</td>
<td>GYGENBIOE2A GYSZKSZKE1A GYFIZBIFE2A GYHUMANANAE1A</td>
<td>Biology II. Organic Chemistry I. Biophysics II. Anatomy semi-final</td>
</tr>
<tr>
<td>Physical Chemistry II. GYFKTFIKE2A</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>GYFKTFIKE1A</td>
<td>Physical Chemistry I practical course grade</td>
</tr>
<tr>
<td>Colloid Chemistry I. GYKOLKOLE1A</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>GYFKTFIKE1A</td>
<td>Physical Chemistry I. semi-final</td>
</tr>
<tr>
<td>Organic Chemistry II. Practice GYSZKSZKG2A</td>
<td>–</td>
<td>5,5</td>
<td>4</td>
<td>GYSZKSZKE1A</td>
<td>Organic Chemistry I practical course grade</td>
</tr>
<tr>
<td>Organic Chemistry II. GYSZKSZKE2A</td>
<td>4</td>
<td>–</td>
<td>5</td>
<td>GYSZKSZKE1A</td>
<td>Organic Chemistry I final #</td>
</tr>
<tr>
<td>Hungarian Language IV. * GYLEKMSZG4A</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>GYLEKMSZG1A</td>
<td>Hungarian Language III. practical course grade</td>
</tr>
<tr>
<td>Physical Education IV. GYTSITSNG4A</td>
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<td>1</td>
<td>0</td>
<td>GYTSITSNG3A</td>
<td>Physical Education III. signature</td>
</tr>
<tr>
<td>Summer Practice I. ** GYSZGYAKG1A</td>
<td>–</td>
<td>35</td>
<td>4</td>
<td>GYTSITSNG3A</td>
<td>signature</td>
</tr>
</tbody>
</table>

**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


Recommended textbooks:

QUANTITATIVE ANALYTICAL CHEMISTRY
Tutor: Dr. Krisztina Kurin-Csörgői

First Semester

**Lectures** (2 hours per week)

- Acid-base reactions, repetition of different calculations. Titration curves in acid-base titration.
- End point detection
- Acid-base indicators.
- Standard solutions in acid-base acid titrations and the survey of the most important methods.
- Effects of common ion, pH, complex formation and redox processes on precipitation.
- Formation and morphology of precipitates.
- Development and treatment of precipitates.
- Important methods in precipitation gravimetry.
- Precipitation titrimetry.
- Complex formation, chelate effect. Stability constant. Complexometric and chelatometric titrations.
- Effect of pH and foreign ligands on the apparent stability constant.
- Chelatometric titrations. Titration curves. Methods of end point detection.
- Types and applicability of EDTA titrations.
- Redox reactions and their mechanism.
- The redox potential and its calculation.
- The effect of pH, the complex and precipitate formations on redox potential. Redox equilibria.

**Practicals** (5 hours per week)

<table>
<thead>
<tr>
<th>Topic</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Laboratory introduction; Safety and order in the laboratory; The schedule of the semester; Practical and theoretical requirements in the semester</td>
</tr>
<tr>
<td>Calibration</td>
<td>Calibration of burette (3-6-9-12 ml); Calibration of pipettes (10, 20 ml)</td>
</tr>
<tr>
<td>Acid-alkalimetry</td>
<td>Practicing the use of the laboratory tools; Determination of sulfuric acid</td>
</tr>
<tr>
<td>Acid-alkalimetry</td>
<td>Standardization of ≈ 0.1N hydrochloric acid</td>
</tr>
<tr>
<td>Acid-alkalimetry</td>
<td>Test I. Determinations of hydroxide and carbonate ions in the presence of each other</td>
</tr>
<tr>
<td>Acid-alkalimetry</td>
<td>Potentiometric titration of acetic acid; Conductometric determination of Betaine hydrochloride</td>
</tr>
<tr>
<td>Acid-alkalimetry</td>
<td>Indirect determination of sodium thiosulfate Determination of “Lidocain” in nonaqueous solution</td>
</tr>
<tr>
<td>Acid-alkalimetry</td>
<td>Test II. Determination of calcium and magnesium ions in mineral water</td>
</tr>
<tr>
<td>Acid-alkalimetry</td>
<td>Test III. Determination of copper and zinc in the presence of each other; Determination of aluminium in “Aluminium tartaricum solutum”</td>
</tr>
<tr>
<td>Gravimetry</td>
<td>Gravimetric determination of sulfate ions in the form of BaSO4; (precipitation, preparation of filter)</td>
</tr>
<tr>
<td>Argentometry</td>
<td>Precipitate; Determination of chloride ions by Mohr’s method</td>
</tr>
<tr>
<td>Argentometry</td>
<td>Test III. Determination of bromide ions by Volhard’s and Fajans’ methods</td>
</tr>
<tr>
<td>Komplexometry</td>
<td>Determination of cyanides by Liebig-Denigees’ Method;</td>
</tr>
<tr>
<td>Supplements</td>
<td>Supplements</td>
</tr>
<tr>
<td>Supplements</td>
<td>Supplements</td>
</tr>
<tr>
<td>Closing</td>
<td>Closing</td>
</tr>
</tbody>
</table>
# QUANTITATIVE ANALYTICAL CHEMISTRY

## Second Semester

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th><strong>Practicals</strong> (5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic</strong></td>
<td><strong>Task</strong></td>
</tr>
<tr>
<td>Titration curves in oxidimetry. Titrations with permanganate solution.</td>
<td>Introduction Safety and order in the laboratory Practical and theoretical requirements in the semester The schedule during the semester Redox titrations (permanganometry)</td>
</tr>
<tr>
<td>Permanganochemistry</td>
<td>Standardization of ( \text{K}_2\text{MnO}_4 ) solution for permanganometric titrations</td>
</tr>
<tr>
<td>Titrations with chromate and cerium (IV). Bromatometry I.</td>
<td>Determination of the total iron content by Zimmermann-Reinhardt method Permanganometric determination of bromide ions (Winkler's method)</td>
</tr>
<tr>
<td>Bromatometry II. Reactions with periodate and their analytical use.</td>
<td>Chromatometry Determination of Mohr salt with chromatometric titration Bromatometry Bromatometric determination of arsenic (III) (from As(II) or antimony (III) compounds (in form of “tartar emetic”: antimony tartarate) Determination of azophene</td>
</tr>
<tr>
<td>Iodometric titrations and other reductometric methods.</td>
<td>Bromatometry Bromatometric determination of ascorbic acid (Vitamin C) in tablets (e.g., Vit C, Rutascorbin, Béres C) Cerimetry Determination of amidazophene</td>
</tr>
<tr>
<td>Sampling and preparatory processes in analytical chemistry.</td>
<td>Iodometry Standardization of ( \text{Na}_2\text{S}_2\text{O}_3 ) solution Determination of phenol in water / acetyl salicylic acid content in tablets (e.g., Aspirin, Kalmopyrin, Istopyrin,…) by Koppeschaar's method</td>
</tr>
<tr>
<td>Interactions between electromagnetic radiations and materials. Emission spectroscopy. Flame emission photometry, atomic absorption spectrophotometry. ICP-ES and ICP-MS possibilities. Molecular absorption spectroscopy in UV-VIS region as well as in IR. Possibilities of spectrophotometric method(s) in complex systems. Separation methods in analytical chemistry. Distillation, extraction and their possibilities.</td>
<td>Iodometry Iodometric determination of copper (II)-ions Determination of mannitol by Malaprade’s reaction with periodate Iodometry Determination of iodide by Winkler’s method</td>
</tr>
<tr>
<td>Optional measurements*</td>
<td>Instrumental analysis</td>
</tr>
<tr>
<td>Optional measurements*</td>
<td>Spectrophotometry</td>
</tr>
<tr>
<td>TEST I.</td>
<td></td>
</tr>
<tr>
<td>TEST II.</td>
<td>One selection from “Other determinations” Computer aided learning of modern instrumental analytical methods (HPLC; GC; UV-Vis Spectrophotometry) From “Potentiometric determinations” From “Other determinations” Spectrophotometric determination of iron content in multivitamin tablets</td>
</tr>
</tbody>
</table>
**Lectures** (2 hours per week)

**Practicals** (5 hours per week)

<table>
<thead>
<tr>
<th>Topic</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectrophotometric determination of phosphate content in egg shell</td>
<td>Semi-quantitative analysis using “Merkoquant” testpapers (Public) Holiday</td>
</tr>
<tr>
<td>Semi-quantitative analysis</td>
<td>Optional measurements* From “Potentiometric determinations”</td>
</tr>
<tr>
<td>Different planar chromatographic methods and their use in pharmaceutical analyses. Gas chromatographic methods.</td>
<td>From “Other determinations”</td>
</tr>
<tr>
<td>High performance liquid chromatography. Supercritical fluid extraction and chromatography. HPCE and its future application. Survey on analytical chemistry.</td>
<td>Final test TEST III. (Qualitative and quantitative analysis of complex samples)</td>
</tr>
<tr>
<td>Summary.</td>
<td>+ Determination Quantitative determination of the sample</td>
</tr>
<tr>
<td>Supplements</td>
<td>Supplements</td>
</tr>
<tr>
<td>Closing</td>
<td>Closing</td>
</tr>
</tbody>
</table>

**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. Potentiometric titration using computer controlled burette: Determination of phosphoric acid content in “Coca Cola”

**Other determinations:**
1. Complexometric determination of metals in coins: (e.g., 1,- Ft; 2,- Ft; 5,- Ft; US cent; Groschen) (Cu$_2^+$ - Ni$_2^+$; Cu$_2^+$ - Ni$_2^+$ - Zn$_2^+$; Cu$_2^+$; Al$_3^+$)
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 Cr$_3^+$ 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

**Lecturer:** Prof. Dr. Péter Mátyus  
**Tutor:** Dr. Péter Tétényi

### First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (4+1*** hours per week)</th>
<th>No. of practices</th>
<th>Practicals (seminars: 2 hours biweekly, practices: 8 hours biweekly)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Qualitative molecular orbital theory of organic compounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-3</td>
<td>Saturated acyclic and cyclic hydrocarbons. Constitution, conformation</td>
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<td></td>
</tr>
<tr>
<td>5</td>
<td>Isomerism. Steric and electronic effects in organic compounds and reactions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>delocalized systems. Aromaticity and Linear and cyclic antiaromaticity. Interpretation of concerted reactions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Aromatic hydrocarbons. Electrophilic aromatic substitution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Spectroscopy of organic compounds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11-12</td>
<td>Organic halogen compounds. Nucleophilic substitution in aliphatic and aromatic compounds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Organic compounds containing C-O single bonds (alcohols, phenols and their derivatives). Acidity of organic compounds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Amines and other nitrogen containing compounds. Basicity of organic compounds. Organic sulfur compounds.</td>
<td></td>
<td></td>
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</table>

*** number of hour (1) for introductory lecture
<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (4+1*** hours per week)</th>
<th>No. of practices</th>
<th>Practicals (seminars: 2 hours biweekly, practices: 8 hours biweekly)</th>
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<tbody>
<tr>
<td></td>
<td>3-4</td>
<td></td>
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<tr>
<td>5</td>
<td>Carboxylic acids and their derivatives.</td>
<td>1-6</td>
<td>Nomenclature of organic compounds with C=O bond, of heterocyclic and of bioactive compounds</td>
</tr>
<tr>
<td>6</td>
<td>Carboxylic acids and their derivatives. Polyfunctional organic compounds.</td>
<td>1-6</td>
<td>Spectroscopic analysis of organic compounds</td>
</tr>
<tr>
<td>7</td>
<td>Carbohydrates. Stereochemistry of organic compounds having more than one center of chirality.</td>
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<tr>
<td>8-9</td>
<td>Amino acids, peptide, proteins.</td>
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<td></td>
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<tr>
<td>10-11</td>
<td>electron excessive heteroaromatic compounds.?</td>
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<td></td>
</tr>
<tr>
<td>12</td>
<td>electron deficient heteroaromatic compounds.?</td>
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<td></td>
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<tr>
<td>13</td>
<td>Terpenoids, carotenoids, steroids.</td>
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</tr>
<tr>
<td>14</td>
<td>Nucleic acids. Alkaloids.</td>
<td>6</td>
<td>Electronic literature searching</td>
</tr>
</tbody>
</table>

*** number of hour (1) for introductory lecture

Compounds of the main classes are discussed according to the following aspects: structure, nomenclature, physical properties, preparation/synthesis, chemical properties, some important individual compounds (particularly in respect to the medicinal chemistry).
First Semester

Week  Lectures (4 hours per week)

   Photoelectron spectroscopy: UPS, XPS, ESCA
3  Nuclear magnetic resonance: The technique, the chemical shift.
4  The permanent electric dipole moment. Polarizability. Polarizabilities at high frequencies. The refractive index. Additive properties.
   Heat, work and the conservation of energy.
   Heat capacity enthalpy. State functions.
5  Changes in internal energy. The temperature dependence of the internal energy and enthalpy. The relation between Cv and Cp.
   The reaction enthalpy. Hess’s law and reaction enthalpies.
   The temperature dependence of reaction enthalpies. (Kirchoff’s law).
6  The definition of entropy. The entropy change in the system.
   Carnot efficiency. The Helmholtz and Gibbs functions. Maximum work.
   The third law of thermodynamics.
   Standard molar Gibbs function.
7  The temperature and pressure dependence of the Gibbs function.
   The chemical potential of a perfect gas. The solid-liquid boundary.
   The liquid – vapour boundary. The solid-vapour boundary.
   The solid – liquid – vapour equilibrium.
8  Partial molar volume. Partial molar Gibbs function.
   The thermodynamics of mixing. The elevation of boiling point.
   The depression of freezing point. Solubility. Osmosis.
   The solvent and solute activities. The phase rule.
10 The Gibbs function minimum. Exergonic and endergonic reactions.
    Perfect gas equilibria. A recipe for equilibrium constants.
    The response of equilibrium to the conditions (temperature and pressure).
    Reaction rate. Rate laws and rate constants. The determination of the rate law.
    First-, second- and higher order reactions, half lives.
11 The temperature dependence of reaction rates. Reactions approaching equilibrium.
    Consecutive reactions and parallel processes. The steady-state approximation.
    Chain reactions. Photochemical reactions, radiolysis.
Week | Lectures (4 hours per week)
---|---
14 | Kinds of cell. E.m.f. and electrode potentials, the sign convention. The concentration dependence of the e.m.f. Standard electrode potentials. Thermodynamic data from cell e.m.f.-s and applications of e.m.f. measurement. The rate of charge transfer. The current density. Overpotential. Polarography.

PHYSICAL CHEMISTRY

Second Semester

Week | Lectures (1 hour per week)  
Practicals (4 hours per week)
---|---
1 | Determination of freezing point depression.
2 | Calibration of a thermometer. Determination the temperature of a phase transition.
3 | Studying IR Spectra.
4 | Spectrophotometric investigations in the ultraviolet region.
5 | Determination of ionization constant of indicators by spectrophotometric method.
6 | Solubility product determination by potentiometric method.
7 | Measurement of pH by hydrogen-electrode, measurement of redox potential.
8 | Deadstop titration, determination of ionization constant of a weak acid.
9 | Computer assisted conductimetric titration.
10 | Polarography.
11 | Studying the kinetics of the hydrolysis.
12 | Investigation of stressed decomposition of a medicine.
13 | Studying of the surface tension.
14 | Supplementary lab.
<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What are colloids? Definitions, nomenclature, historical perspective.</td>
</tr>
</tbody>
</table>
| 2    | Basic principles of colloid stability  
Intermolecular forces, interparticle forces, effect of the intervening medium.  
Electrostatic forces and the electrical double layer. |
| 3    | Steric repulsion, the effect of adsorbed or anchored layers.  
The total interaction potential curve. |
| 4    | Preparation of colloidal dispersions  
Dispersion methods, condensation methods: nucleation and particle growth.  
Emulsion and dispersion polymerization. Preparation of monodisperse colloids. |
| 5    | Interfaces  
Surface tension, surface energy, wetting phenomena. |
| 6    | Adsorption: the Gibbs adsorption equation, the influence of adsorption on interparticle forces.  
The effect of the curvature of surfaces on equilibrium. |
| 7    | Some important properties of colloids.  
Kinetic properties: Brownian motion, diffusion, osmosis, Donnan equilibrium, dialysis, electrokinetic phenomena, sedimentation and creaming.  
Scattering of radiation: light scattering, neutron scattering. |
| 8    | Rheology: viscosity, Newtonian and non-Newtonian systems, rheology of suspensions of colloidal particles. |
| 9    | Aggregation processes in colloidal dispersions  
Flocculation and coagulation of electrostatically stabilized dispersions,  
the Derjaguin–Landau–Verwey–Overbeek (DLVO) theory. Reversible flocculation,  
brIDing flocculation, depletion flocculation, sterically stabilized systems.  
Kinetics of coagulation, heterocoagulation. |
| 10   | Structure of flocs and sediments.  
Coalescence and particle growth. |
| 11   | Association colloids and self-assembly systems  
Micellisation, solubilization. |
| 12   | Thin films, foams and emulsions  
Film stability, film tension.  
Foams, foaming and antifoaming agents, froth flotation.  
Emulsions and microemulsions. |
| 13   | Macromolecular colloids and gels  
The formation and structure of macromolecules.  
General properties of polymer solutions.  
Determination of the molecular mass of macromolecules.  
Forces leading to gel formation.  
Swelling properties of gels. |
| 14   | The industrial importance of colloids. |
# PHARMACEUTICAL BOTANY

**Department of Plant Anatomy**  
**Tutor:** Dr. Béla Dános

## First Semester

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Lectures (1 hour per week)</th>
<th>Practicals (3 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Embryo development. The root apex, primary structure of roots. Root modifications</td>
<td>Germination, seedlings. Plants representing fam.: Fabaceae, Brassicaceae</td>
</tr>
<tr>
<td>2</td>
<td>The shoot apex. The primary structure of stems. Stemroot connection.</td>
<td>Roots. Plants representing fam.: Apiaceae, Euphorbiaceae</td>
</tr>
<tr>
<td>3</td>
<td>Secondary growth of roots and stems.</td>
<td>Stems I. Plants representing fam.: Solanaceae, Lamiaceae</td>
</tr>
<tr>
<td>4</td>
<td>Development and anatomy of leaves. Adaptations to the environment. Shoot modifications.</td>
<td>Stems II. Plants representing fam.: Asteraceae</td>
</tr>
<tr>
<td>5</td>
<td>The movement of water in plants. Mineral nutrition. Transport of assimilates.</td>
<td></td>
</tr>
</tbody>
</table>
| 6     | Initiation and anatomy of flowers. Sporogenesis and gametogenesis in angiosperms. Fruits and seed. | 1. Test Work: Plants representing fam.: Cannabaceae  
Wody stems (Gymnosperms, Angiosperms.)  
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.  
Preparing a cleared specimen  
Leaf and flower anatomy |
| 9     | Angiospermatophyta: Magnoliidae | Morphology and anatomy of the seed  
2. Test Work on the knowledge of medicinal plants. |
| 10    | Angiospermatophyta: Hamamelididae, Caryophyllidae |  
3. Test Work: woody stems, leaf, flower, seed, fruit.  
Consultation, questioning, finishing the practicals. |
| 11    | Angiospermatophyta: Rosidae |  |
| 12    | Angiospermatophyta: Dilleniidae |  |
| 13    | Angiospermatophyta: Asteridae |  |
| 14    | Angiospermatophyta: Monocotyledoneae |  |

**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
Department of Medical Biochemistry
Lecturer: Dr. György Szabados
Tutor: Dr. Erzsébet Maróthy-Tóth

Second Semester

Lectures (3 hours per week)

Ordered conformations of polypeptide chains. Four levels of protein structure. Determination of secondary and tertiary structure. Oxygen transporting proteins.
Myoglobin and hemoglobin. Structure of myoglobin and hemoglobin.
Fetal hemoglobin. Molecular pathology of hemoglobin. Purification and characterization of proteins.
Separation procedures based on molecular size, solubility differences, electric charge and selective adsorption.
Enzymes. Identification of functional groups essential for catalysis. Kinetics of enzyme-catalyzed reactions:
The Michaelis-Menten equation. Transformation of the Michaelis-Menten equation.
Fine mechanism of enzyme action. Three-dimensional structure of chymotrypsin, a serine protease.
Mechanism of acetylcholinesterase catalysis.
Oxidative decarboxylation of pyruvate
Citric acid cycle.
Metabolic transport through the mitochondrial membranes.
Respiratory chain.
Oxidative phosphorylation. Mitochondrial import and export of reductive equivalents.
Energetics of glucose oxidation. Pasteur effect. Heat production by the brown adipose tissue.
Galactosemia and galactosuria. Fructosuria and fructose intolerance.
The phosphogluconate oxidative pathway. Significance and regulation of the pentose phosphate pathway.
Biosynthesis of hexosamines. Biological role and synthesis of glycoproteins and glycolipids.
Lectures (3 hours per week)

Betaoxidation of fatty acids.
Metabolism of ketone bodies.
Digestion of lipids. Synthesis of triglycerides and phospholipids.
Synthesis of fatty acids.
Biosynthesis of cholesterol and bile acids.

SUMMER PRACTICAL TRAINING PROGRAM

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.)
6 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 demount.
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

## Third Year

### 5th semester

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
</tr>
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<tbody>
<tr>
<td>Biochemistry II, Practice GYOBIKMG2A</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>GYSZKSZKE2A GYOBIKME1A</td>
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<td>–</td>
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<td>–</td>
<td>4</td>
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<td>Biochemistry I, Medical Terminology semi-final</td>
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<td>Pharmaceutical Chemistry I. GYGYKGYK1G1A</td>
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<td>5</td>
<td>8</td>
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<tr>
<td>Pharmaceutical Technology I. GYGYIGYTG1A</td>
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<td>3</td>
<td>5</td>
<td>GYSZKSZKE2A GYKOLKOKE1A GYKFTFKG2A GYNYELATG1A</td>
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<td>Basic Immunology GYGENIMME1A</td>
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<td>–</td>
<td>2</td>
<td>GYGENBIOE2A GNYELATG1A GYHUMANAE1A</td>
<td>Biology II, Medical Terminology Anatomy semi-final</td>
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<tr>
<td>Colloid Chemistry I. GYKOLKOLOLG2A</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>GYKOLKOKE1A GYKFTFKG2A GYSZKSZKE2A</td>
<td>Colloid Chemistry I, Analytical Chemistry (quantitative) II, Organic Chemistry II. practical course grade</td>
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<tr>
<td>Hungarian Language V, GyLEKMSZG5A</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>GYLEKMSZG1A</td>
<td>Hungarian Language IV. final</td>
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<tr>
<td>Subjects</td>
<td>Lectures</td>
<td>Practices</td>
<td>Credit Points</td>
<td>Prerequisites</td>
<td>Examination</td>
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<td>Pharmaceutical Microbiology GYMIKGMIE1A</td>
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<td>final #</td>
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<tr>
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<tr>
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<td>practical course grade</td>
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</table>

|                                              |          |          | 34 + 4        |                                                   |                                    |

# The grade influences the qualification of the diploma
* Obligatory courses
** 4 weeks (140 hours) summer practice in elective place (accredited public / community pharmacy, Calenical laboratory, research institute, university department) after the second and third year.
LIST OF TEXTBOOKS

3. Szász, Takács, Végh: Pharmaceutical Chemistry Lecture Notes I-II. (Bp.) SOTE
4. Szász, Budvári: The Quality Control of Medicinal Compounds. (Bp.) SOTE
5. Szász, Budvári: The Quality Control of Pharmaceutical Preparations. (Bp.) SOTE
6. Rácz: Drug Formulation (Bp.)
7. Rácz: Pharmaceutical Technology – Part One (Bp.)
8. Rácz: Pharmaceutical Technology – Part Two (Bp.)
9. Rácz: Pharmaceutical Technology – Part Three (Bp.)

Recommended textbooks:

# First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (4 hours per week)</th>
<th>Practicals (5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction, Pharmaceutical Chemistry, Pharmacopoeias</td>
<td>Equipping, repetitional analytical tasks.</td>
</tr>
<tr>
<td>2</td>
<td>Preliminary testing of organic compounds, classification</td>
<td>Preliminary testing and systematization of inorganic and organic compounds official in Ph. Eur.</td>
</tr>
<tr>
<td></td>
<td>Identification of organic functional groups</td>
<td>Preliminary testing and systematization of inorganic and organic compounds official in Ph. Eur.</td>
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<tr>
<td>3</td>
<td>General purity tests in Pharmacopoeias</td>
<td>General reaction of organic functional groups Analysis of IR spectra</td>
</tr>
<tr>
<td>4</td>
<td>Structural and physical chemistry of drug action I.-II</td>
<td>General purity tests of inorganic ions I.</td>
</tr>
<tr>
<td>5</td>
<td>Structural and physical chemistry of drug action III-IV. Narcotics</td>
<td>General purity tests of inorganic ions II.</td>
</tr>
<tr>
<td>6</td>
<td>Sedato-hypnotics and anxiolytics</td>
<td>General purity tests of inorganic ions III.</td>
</tr>
<tr>
<td>7</td>
<td>Major analgetics</td>
<td>Complete pharmacopoeial qualification of an inorganic compound official in Ph. Eur.</td>
</tr>
<tr>
<td>8</td>
<td>Minor analgetics</td>
<td>Narcotics, sedato-hypnotics</td>
</tr>
<tr>
<td>9</td>
<td>Psychopharmacons UV-VIS spectroscopy in the analysis of drug mixtures</td>
<td>Major analgetics I.</td>
</tr>
<tr>
<td>10</td>
<td>ORD and CD spectroscopy in the analysis of drug mixtures Separation techniques I.-V.</td>
<td>Major analgetics II.</td>
</tr>
<tr>
<td>11</td>
<td>Application of chromatographic methods for the drug analysis. TLC</td>
<td>Minor analgetics I.</td>
</tr>
<tr>
<td>12</td>
<td>GC, HPLC, CE</td>
<td>Minor analgetics II.</td>
</tr>
<tr>
<td>13</td>
<td>Cholinergic and adrenergic agents</td>
<td>Psychopharmacons</td>
</tr>
<tr>
<td>14</td>
<td>Cholinergic and adrenergic agents</td>
<td></td>
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</table>
# PHARMACEUTICAL CHEMISTRY

## Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (4 hours per week)</th>
<th>Practicals (5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Proton speciation of drugs</td>
<td>Equipping, identification</td>
</tr>
<tr>
<td>2</td>
<td>Determination of protonation constants</td>
<td>Drugs acting on the vegetative nervous system I.</td>
</tr>
<tr>
<td>3</td>
<td>Optimization of pH-dependent processes</td>
<td>Drugs acting on the vegetative nervous system II.</td>
</tr>
<tr>
<td>4</td>
<td>Cardiac glycosides, sugars</td>
<td>Local anaesthetics</td>
</tr>
<tr>
<td>5</td>
<td>Analysis of cardiac glycosides, sugars</td>
<td>Digitalis glycosides, sugars</td>
</tr>
<tr>
<td>6</td>
<td>Cardiovascular drugs: antiarrhythmic agents</td>
<td>Determination of protonation macroconstants</td>
</tr>
<tr>
<td>7</td>
<td>Cardiovascular drugs: antianginal agents</td>
<td>Determination of protonation microconstants</td>
</tr>
<tr>
<td>8</td>
<td>Cardiovascular drugs: antilipaemic agents</td>
<td>Determination of logP</td>
</tr>
<tr>
<td>9</td>
<td>Cardiovascular drugs: antihypertensive agents</td>
<td>Diuretics</td>
</tr>
<tr>
<td>10</td>
<td>Vitamines</td>
<td>Steroidal hormones</td>
</tr>
<tr>
<td>11</td>
<td>Quality assurance, GLP, validation</td>
<td>Complete pharmacopoeial qualification of an organic compound official in Ph. Eur.</td>
</tr>
<tr>
<td>12</td>
<td>Corticosteroids</td>
<td>Non-steroidal antiinflammatory agents</td>
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<tr>
<td>13</td>
<td>Sexual hormones</td>
<td>Quality assurance, GLP, validation I.</td>
</tr>
<tr>
<td>14</td>
<td>NMR: ??phenomena</td>
<td>Quality assurance, GLP, validation II.</td>
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</tbody>
</table>
PHARMACEUTICAL TECHNOLOGY
Department of Pharmaceutics
Director: Prof. Dr. Imre Klebovich
Tutor: Dr. István Antal, Dr. Mária Hajdú

First Semester

Lectures
History of pharmaceutical compounding and technology
Dosage forms as drug carrier systems. Classification of dosage forms and routes of administration.
Technological aspects of quality, safety, and efficacy.
The tasks, construction, and equipments of a pharmacy. Storage of pharmaceuticals.
Technological considerations of the pharmacopoeia (Eur. Ph.)
Physical chemical principles in the pharmaceutical technology.
Basic operations for pharmaceutical compounding.
Liquid dosage forms. Theory and classification.
Excipients for liquid dosage forms.
Preparation of solution, aromatic water, syrup, mucilago, mixture, gargle, enema.
Drops for internal and external use.
Preparations made by extraction.
Disperse systems and their physical chemical characteristics.
Emulsions.
Suspensions.

Practice
Introduction, general information, labour safety.
The prescription. Nomenclature.
Weighing and balances. Control and measuring.
Dose calculations. Reading prescriptions.
Computer in the pharmacy practice.
Preparation of simple solutions.
Preparation of composite solutions.
Preparation of drops.
Preparation of ophthalmic solutions
Preparation of decoctions and infusions.
Preparation of suspensions without excipients.
Preparation of suspensions with excipients.
Preparation of emulsions
Dispensing a test preparation independently.
PHARMACEUTICAL TECHNOLOGY

Second Semester

Lectures
Dosage forms with coherent structure
Ointments, gels, pastes. Eye ointments.
Tests of semisolid preparations. Rheology and other characteristics.
Cosmetics.
Rectal and vaginal preparations.
Tests of suppositories.
Dosage forms prepared by aggregation. Pills, boluses, sticks, foams, medicated chewing gums.
Compounding powder preparations.
Compounding veterinary preparations.
Incompatibility problems I. Solutions.
Incompatibility problems II. Solid dosage forms
Incompatibility problems II. Other dosage forms and role of excipients.
Good Pharmacy Practice.
Laws governing the pharmacy practice.

Practice
Formulae Normales: the guide for pharmaceutical compounding in Hungary.
Preparation of ointments of solution and emulsion type.
Preparation of ointments of emulsion and suspension.
Preparation of ointments of composite type.
Directions of eye ointments and gels. Preparations of eye ointments.
Preparation of pastes.
Preparation of cosmetics.
Preparation of suppositories by cold compression and by by moulding.
Preparation of vaginal preparations.
Preparation of pills.
Preparation of multidose powders. Topical powders.
Preparations of veterinary preparations.
Guidelines for the preparation of incompatible drugs.
Incompatibility problems of solutions
Incompatibility problems of powder mixtures.
Incompatibility problems of emulsions.
Incompatibility problems ointments.
Health accessories in pharmacy.
Dispensing a test preparation independently.
PHARMACOGNOSY

Director: Dr. Anna Blázovics
Lecturer: Prof. Ágnes Kéry
Tutor: Dr. Andrea Balázs

Second Semester

**Lectures** (2 hours per week)

- Pharmacognosy, History of pharmacognosy.
- Medicinal plant - vegetable drug.
- Nomenclature. Classification of vegetable drugs.
- From plant to phytopharmaceutical (phytotherapy).

Sources of drugs, factors involved in the production of drugs. Quality control.

Compounds of primary metabolism.

- Lipids. Generalities, vegetable oils, alkyne derivatives.
- Amino acids (which are not constituents of proteins).

Cyanogenic glycosides, glicosinolates. Betalains.

Protein sweeteners. Lectins. Enzymes.

Compounds of special (secondary) metabolism.

- Plant phenolics in general. Phenols, phenolic acids, derivatives and crude drugs.
- Coumarins and coumarin containing drugs.
- Medicinal application and toxicity.
- Lignans, lignan containing drugs. Biological interest of lignans. Silybum marianum and its significance.
- Flavonoids, chemical structure and classification, biological properties, use of flavonoid-containing drugs, therapeutical significans.
- Chief flavonoid containing vegetable drugs. (Crataegus species, Ginkgo biloba, etc.)
- Isoflavonoids, rotenoids, biological significance.
- Anthocyanins, chief anthocyanin-containing drugs.
- Phenoloids in Zingiberaceae family (diarylheptanoids and aryalkanones)
- Polyketides-quinones. Naphthoquinone-containing drugs.
- Pharmacological properties.
- Main hydroxanthraquinone glycoside-containing drugs.
- Naphthodianthrene and diterpene quinone containing drugs. Hypericum perforatum.

**Practicals** (4 hours per week)

- Introduction, safety rules.
- General methods in quality control of vegetable drugs.
- Vegetable drugs containing carbohydrates. (Starches, mucilages, etc.)
- Plant acids and their drugs.
- Vegetable oils. Flavonoids and chief flavonoid drugs. Anthocyanins.
- Methods used in flavonoid and phenoloid chemistry.
- HPLC of flavonoids.
- Tannins and chief tannin drugs.
- Methods used in tannin chemistry.
- Laxative hydroxy-anthraquinone drugs.
- Naphthodianthrones.
- Methods used in hydroxyanthraquinone chemistry
- Phlorogluccinols.
- Cannabis sativa.
- Personal task.
- Consultation.
BIOCHEMISTRY
Dept. of Medical Biochemistry
Lecturer:  Dr. György Szabados
Tutor:  Dr. Erzsébet Maróthy-Tóth

First Semester

Lectures (2 hours per week)


Practicals

Seminar: Lipoprotein lipase and carnitine deficiency
Seminar: Pyruvate dehydrogenase and pyruvate carboxylase deficiency
Seminar: Liver failure
Midterm: lipids and amino acids
Seminar: Vitam B12 and folate deficiency
Midterm: nucleotides and macromolecules
Lectures (2 hours per week)

Conjugation reactions in detoxification.
Mechanism of the regulation of biomechanical pathways by hormones. Biochemistry of the hormonal action.
Receptors, classification of receptors. The ion channels. 
Calcium homeostasis.
The signal transduction: the G-proteins, role of the adenylate cyclase and phosphoinositol system in signal transduction. The proteine kinases and phosphorylation of specific proteins.
Interaction of receptors and hormones. Mechanism of neurotransmission. The cholinergic and adrenergic transmission. The insulin and steriod receptors.

Practicals

Seminar: gene therapy

Consultation.

COLLOID CHEMISTRY
Tutor: Dr. Ferenc Csempesz

First Semester

Practice (2 hours per week)

Surface and interfacial tensions
Measurement of the surface, the tension of aqueous surfactant solutions.
Determination of oil/water and oil/solution interfacial tensions.
Adsorption at interfaces
Determination of vapour adsorption isotherm by gravimetric method.
Adsorption from solution; determination of adsorption isotherm for methylene blue on cellulose.
Wetting of solid surfaces
Determination of contact angles. Flootation of kaolin suspensions by cationic surfactants, characterization of the wetting properties of kaolin particles.
Stability of colloidal dispersions
Determination of critical coagulation concentration of electrostatically stabilized sols.
Flocculation and stabilization of sols by uncharged polymers and polyelectrolytes.
Electrokinetic phenomena
Measurement of electrophoretic mobility by moving boundary method, determination of zeta potential.
Separation to components of a dye mixture by zone electrophoresis.
Suspensions and emulsions
Determination of particle size distribution by Andreasen pipette.
Practice (2 hours per week)

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.
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
Institute of Human Physiology and Clinical Experimental Research
Tutor: Dr. Tamás Ivanics

First Semester

Week Lecture (5 hours per week)

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.
8 Cardiovascular control mechanisms: Systemic control mechanisms. Local control mechanisms. Control of cardiac output.
Week Lecture (5 hours per week)


12 Regulation of respiration: Neural and chemical control of respiration. Adaptation of cardiorespiratory system and skeletal muscle to physical exercise.

13 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.


Practice and consultation (2 hours biweekly)

Recording of compound action potential of the frog sciatic nerve, Sim Nerve
Experiments on the rat nerve-muscle preparation, Sim Muscle
Experiments on isolated rat heart, Sim Heart
Smooth muscle activity of isolated, superfused muscle strips, Sim Vessel

PHYSIOLOGY

Second Semester

Week Lecture (5 hours per week)

1 Formation and excretion of urine. Physiological functions, their significance in the maintenance of the internal milieu and in healthy functioning of the organism. Renal circulation. Glomerular filtration.


3 Regulation of acid-base balance.


**Week**

**Lecture** (5 hours per week)


**Practice and consultation** (2 hours biweekly)

Indirect measurement of arterial pressure and recording heart sounds
Kidney function
Determination of parameters of acid/base equilibrium
Endocrinology lab
Electroencephalogram (EEG) experiment
PHARMACEUTICAL MICROBIOLOGY

Program director: **Prof. Dr. Éva Ádám**
Tutor: **Dr. Zsuzsanna Csukás**

Second Semester

<table>
<thead>
<tr>
<th>Lectures (3 hours per week)</th>
<th>Practices (2 hours per week)</th>
</tr>
</thead>
</table>

**Note:** The maximum number of the absences in the semester is 3. More than 3 absences invalidate the semester. During the semester two midterms should be passed. Practical course grade. Final examination.
BASIC IMMUNOLOGY
Tutor: Dr. András K. Fülöp

First Semester

Lecture (1.5 hours per week)
- Principles of immune functions
- Cells, organs and ontogeny of immune system
- The major histocompatibility complex
- Antigen processing and presentation
- Antigen recognizing molecules
- Differentiation and function of T-lymphocytes
- Differentiation and function of B-lymphocytes
- The complement system
- Inflammation and acute phase response
- Immune response in infections
- Tumor immunology
- Hypersensitivity reactions
- Immuno-pharmacology
- Immunotolerance
- Natural and pathological autoimmunity

Notes: The semester is completed with a written exam. Deadline of claims for exemptions: 30th September. Updated information is available on our web site: www.dgcj.sote.hu

COMPULSORY SUMMER PRACTICE

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.

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

Fourth Year

The prerequisite to start 4th year is to take a Basic Hungarian Language Exam (oral).

<table>
<thead>
<tr>
<th>7th semester</th>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
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<tbody>
<tr>
<td>Pharmacognosy II. Practice</td>
<td>GYFMGGNDG2A</td>
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<td>practical course grade</td>
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<td>Pharmacology and Toxicology I. Practice</td>
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<td>Subjects</td>
<td>Lectures</td>
<td>Practices</td>
<td>Credit Points</td>
<td>Prerequisites</td>
<td>Examination</td>
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# The grade influences the qualification of the diploma
* 4th year Pharmacy students of 2010/11 have to complete First Aid in the 4th year (second semester) of their studies. Students of the 1st year study the program in the first year second semester of the 2010/11 academic year. The 2nd and 3rd year students should have already done it in 2008/09 and 2009/10.
** Obligatory elective subject
LIST OF TEXTBOOKS

5. Z.Vincze: Pharmacy Administration. Lecture notes.

Recommended textbooks:

PHARMACEUTICAL CHEMISTRY

Director:  Prof. Dr. Béla Noszál
Tutor:  Dr. Péter Horváth

First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (2 hours per week)</th>
<th>Practical (4 hours per week)</th>
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<tbody>
<tr>
<td>1</td>
<td>Antibiotics I.</td>
<td>Equipping, identification</td>
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<td>2</td>
<td>Antibiotics II.</td>
<td>Desinfectants, chemotherapeutics</td>
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<td>3</td>
<td>Antibiotics III.</td>
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<td>Analysis of drug mixtures I.</td>
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<td>Analysis of drug mixtures II.</td>
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<td>Quantitative determination of drug mixtures</td>
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<tr>
<td>7</td>
<td>Anticancer agents</td>
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<td>8</td>
<td>Antiviral agents</td>
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<td>9</td>
<td>Lipophilicity in drug research</td>
<td>Quantitative determination of drug mixtures</td>
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<td>Rational methods of drug design I.</td>
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<tr>
<td>11</td>
<td>Rational methods of drug design II.</td>
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<td>Lead compound discovery strategies I.</td>
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<td>Antihistamines</td>
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</table>

PHARMACEUTICAL TECHNOLOGY

Department of Pharmaceutics
Director:  Prof. Dr. Imre Klebovich
Tutor:  Dr. István Antal

First Semester

Lectures
Scope of industrial pharmaceutical technology. History and development.
Aspects of the pharmaceutical development. Preformulation studies.
Applying principles of chemical engineering for the manufacturing of pharmaceutical preparations.
Critical manufacturing parameters and principles of scaling up.
Requirements and conditions for manufacturing (Good Manufacturing Practice)
Quality assurance and manufacturing. Safety regulations.
Validation. Concepts of the statistical process control.
Basic procedures: comminution, powdering, sieving.
Basic procedures: separation, filtering, settling, extraction.
Basic procedures: homogenization, dispersing, distillation, evaporation.
Basic procedures: fluidization.
Basic procedures: drying.
Basic procedures: freeze-drying.
Basic procedures: crystallization.
Sterilization.
Formulation of parenteral preparations.
Manufacturing of large and small volume parenterals.
Progenicity. Endotoxins.
Preparations for inhalation. Aerosols.

Practice

Pilot plant laboratory
Controlling the drying process.
Study of the filtration process.
Mixing of solids.
In-process control of the homogenization process.
Study on parameters of fluidization.
Investigations of factors affecting the size reduction in ball-mill.
Control of raw materials.
Preparation and stability test of emulsions.
In-process control of manufacturing solid dosage forms.
Manufacturing suppositories. Determination of the replacing factor.

Laboratory for parenteral preparations
Aseptic processing.
Autoclaving.
Determination of inside 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.

Chemical laboratory
Control of the formation of calcium acetilsalicylate with oscillometry.
Acid neutralizing tests of antacids (USP tests and “pH-stat” method).
Determination of the lipase activity.
Investigation on the catalytic oxidation of ascorbic acid.
Stability test of hydrocortisone-hemisuccinate solutions.
Stability test on the decrease of acetic acid content of Spiritus antirheumaticus.
Stability test of solutions containing penicillin.
Real-time stability test of tablets containing aspirin.
Accelerated stability test of solutions containing phenobarbital sodium.
Computer Aided Practice (accelerated stability testing).
Physical laboratory
Test of ion-exchange resins.
Determination of the dissociation constant of drugs.
Increasing of solubility of salycilic acid by changing permittivity.
Concentration determination of sugar syrups by viscometry.
Viscometric evaluation of macromolecular colloids used as stabilizers.
Investigation of phase-inversion of emulsions by viscometry.
Determination of the average molecular mass of polyethylene glycols by viscometry.
Determination of the critical micelle concentration by stalagmometry.
Investigation of surfactants using the Donnan’s pipette.
Investigation of solubilization of volatile oils by aqueous titration method.
Particle size analysis of suspensions by the Andreasen’s cylinder.
Particle size analysis of suspensions by the the Wiegner’s tube.

Second Semester

Lectures
Physical chemistry for solid dosage forms.
Characterization of particle systems. Powder rheology.
Granules and granulation.
Pellets and pelletization.
Capsules and microcapsules.
The tablet compression process.
Tablets and their characteristics. Testing tablets.
Manufacturing methods and excipients for tablets.
Coated dosage forms and the coating procedure. Coating materials.
Traditional sugar coating and film-coating. Solvent-free coating.
Dosage form design: modified drug release and prolonged action.
Dosage form design: improving bioavailability and enhancement of absorption.
Modern dosage forms: concepts of the therapeutic systems.
Oral preparations with modified release.
Locally applied therapeutic systems.
Transdermal drug delivery systems.
Alternative routes of drug administration.
Colloidal drug delivery systems.
Micro- and nanofabrication.
Molecular pharmaceutics.
Technological aspects of genomics and biopharmaceuticals.
Technological aspects of veterinary drug delivery.
Innovation and the pharmaceutical technology. Generics and supergenerics.

Practice
Pilot plant laboratory
Preformulation studies and product development.
Ointment preparation.
Preparation of liquid dosage forms (solutions, elixirs, syrups, mixtures).
In-process control tests for solutions.
Tablet compression and in-process control of tablet manufacturing.
Pellet preparation in a high-shear mixer
Preparation of coating dispersions.
Coating of pellets in fluid bed.
Coating of tablets.

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.
Nonaqueous 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

Chemical laboratory
Testing of containers (hydrolytic resistance; physical resistance; blister closing testing; light transmission test, adsorption test)
Investigation of the interaction between acetylsalicylic acid and caffeine.
Investigation of the interaction between papaverine hydrochloride and phenobarbital sodium with potentiometric method.
Investigation of the interaction between methyl-p-oxy-benzoate and macromolecules by dynamic dialysis.
Formulation of KCl prolonged release capsules and their dissolution test.
Dissolution test of aspirin containing tablets with rotating basket method.
Study on impurities by HPLC, GC/MS and LC/MS analytical methods.
Preparation of oxytetracycline containing microcapsules.
Testing dissolution profile of coated pellets.

Physical laboratory
Slipping-and drop point determination of ointment and suppository bases.
Study on drug release of suppositories.
Investigation of compression strength of suppositories.
Study of disintegration of suppositories.
Congealing-and softening point determination of ointment and suppository bases
Penetrometric test of ointments.
Study on the rheological behaviour of ointments with rotational viscometer.
Examination of drug distribution in suspension type suppositories.
Determination of the adsorptive surface of medicinal charcoal.
Study of polymorphism.
Determination of particle size and particle size distribution by sieve analysis.
Investigation of flow properties and real density of granules.
Investigation of disintegration of tablets and capsules.
PHARMACOGNOSY
Director:  Dr. Anna Blázovics
Lecturer:  Prof. Ágnes Kéry
Tutor:  Dr. Andrea Balázs

First Semester

Lectures (2 hours per week)

Terpenoids: biogenetic generalities.
Classification. Regular and irregular monoterpenes, sesquiterpenes. Essential oils.
Asteraceae containing essential oils. Iridoids. Chief iridoid containing drugs.
Sesquiterpene lactones. Chief drugs containing sesquiterpene lactones.
Diterpenes. Diterpene-containing drugs of potential interest. Triterpenes und steroids.
Biosynthesis, classification.
Saponins. Biological and pharmacological interest. Chief saponin containing drugs.
Adaptogenes. Ginseng, Siberian Ginseng.
Cardiac glycosides. Structures, chief vegetable drugs.
Starting materials for steroid hormone semisynthesis.
Other significant steroids and triterpenes.
Carotenoids. Chief carotenoid-containing drugs.
Alkaloids in general. Protoalkaloids and their chief drugs.

Alkaloids derived from ornithine and lysine.
Tropane-, pyrrolizidine-, quinolizidine-, indolizidine-, piperidine alkaloids and their drugs.
Alkaloids derived from nicotinic acid.
Alkaloids derived from phenylalanine and tyrosine: phenethylamines-, isoquinolines-, benzyltetraisoquinoline-, phenethylisoquinoline alkaloids and their drugs.
Alkaloids derived from phenylalanine and tyrosine: Morphinan alkaloids.
Alkaloids derived from tryptophan: ergotine alkaloids, monoterpenoid indole alkaloids and chief drugs.
Purine bases.
Alkaloids with miscellaneous structure.
Vitamins and vitamin containing drugs.
Plants in complementary and traditional systems of medicine.
Plants in prevention, Funcional foods

Practicals (4 hours per week)

Essential oil containing drugs (Lamiaceae, Asteraceae, Apiaceae)
Bitter substances of plants. Classification, reactions, bitter value.
Saponins and chief saponin drugs.
Methods used in the identification and quality control of saponins.
Cardioactive glycosides and chief drugs.
Methods used in the analyses of cardioactive glycosides.
Tropane, pirdine and piperidine alkaloid containing drugs.
Quantitative assays in alkaloid chemistry (titration)
Quinoline, isoquinoline and morphine group alkaloids, their chief drugs.
Methods in alkaloid chemistry: TLC, TLC-densitometry, spectrophotometry.
Indol, purine alkaloids. Alkaloids with miscellaneous structure. Chief drugs.
Methods in alkaloid chemistry: Column chromatography.
Practical examination.
PHARMACOLOGY AND TOXICOLOGY
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
Chemical neurotransmission in the CNS
General anaesthetic agents
Narcotic analgesics: opioids
Drug abuse and drug dependence
Anxiolytic and hypnotic drugs
Drugs used in affective disorders
Antipsychotic drugs
CNS stimulants and appetite control
Antiepileptics and excitatory amino acid neurotransmitters
Neurodegenerative disorders
Local anaesthetics
Drugs acting on striated and smooth muscle
Drug interactions. Adverse effects
Toxicology

Second Semester

Histamine and antihistamines, Glucocorticoids
Immunopharmacology
Non-steroidal anti-inflammatory drugs
Antirheumatoid drugs
Basic principles of antibiotic chemotherapy
Sulphonamides, Fluoroquinolones, Beta-lactam antibiotics
Tetracyclines, Chloramphenicol, Macrolides
Aminoglycosides, Minor antibiotics
Antiprotozoal and antihelminthic drugs
Antifungal drugs
Antimycobacterial and antiviral drugs
Cancer chemotherapy I.
Cancer chemotherapy II.
Pharmacotherapy of heart failure
Diuretic drugs
Antidysrhythmic drugs
Antihypertensive drugs
Calcium-channel blockers
Antianginal drugs
Lipid-lowering drugs
Haemostasis and thrombosis
The haemopoietic system
The respiratory system
Pharmacology of the gastrointestinal system
Pharmacology of the reproductive system
Diabetes and anti diabetic drugs
Pharmacology of bone metabolism
Vitamins
Pharmacology of the thyroid, retinoids

PHARMACY ADMINISTRATION

Faculty of Pharmacy
University Pharmacy Department of Pharmacy Administration
Director: Prof. Dr. Romána Zelkó
Tutor: Dr. Ágnes Meszáros

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
Institute of Pharmacodynamics
Course Director and Tutor: Prof. Dr. Kornélia Tekes

First Semester

Fundamental pathological processes
Psychiatry: diagnostic systems
Delirium, dementia, amnestic disturbances
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.
Ophthalmologic disorders I.
Ophthalmologic 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)

The development and role of public health in medicine. Basic principles of epidemiology and demography.
Global situation of communicable diseases in the world and in Hungary. Life expectancy, morbidity, mortality in Hungary.
The occurrences of communicable diseases. Surveillance. New immunizations, chemoprophylaxis.
Infections of Gastrointestinal and Respiratory Tract.
Haematogen infections and infections of the skin.
STD. AIDS/HIV. Viral hepatitis.
New, emerging diseases. Health care in case of disasters.
Acute food-borne diseases.
Water hygiene.
Air-and soil hygiene.
Occupational risk factors, prevention of occupational diseases, ionising and non-ionising radiation.
The health care system, quality assurance.
Maternal, infant child and youth health care.
Health promotion and health education.

**Practices** (2 hours per week)

Classification of communicable diseases.
Disinfection and sterilisation. Laboratory investigations
Activity of doctors in case of communicable diseases. Immunisations: vaccines and sera.
Nosocomial infections.
Epidemiology I. (Most important rates and indices).
Epidemiology II. (Methods of epidemiology, calculations: standardisation, risk).
The role of the pharmacist in primary prevention of smoking, alcohol and drugs.
The role of the pharmacist in healthy nutrition and required physical activity.
Nutrition I. (Healthy nutrition. Assessment of nutritional status. Diet planning.)
Nutrition II. (Prevention of food – borne diseases)
Practical aspects of water hygiene.
Practical aspects of air hygiene.
Occupational diseases, accidents. Vibration, noise.
Toxicology. Radiation hygiene.
Practical aspects of maternal, infant, child and young people hygiene.
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: Prof. Dr. Imre Klebovich
Tutor: 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:

INDUSTRIAL PHARMACEUTICAL TECHNOLOGY II:
Operations and procedures
Department of Pharmaceutics
Director: Prof. Dr. Imre Klebovich
Tutor: 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:
COMPULSORY SUMMER PRACTICE

Program

Four weeks: 35 hours/week; max. 8, min. 6 hours/day. The aim of the summer practical training: to profoundly theoretical and practical knowledge of Pharmaceutical Technology learnt in the 4th year; adaptation of basic knowledges (chemistry, physics, colloidics, physiology etc.) to the practical work in pharmacies.

Duties and respects:

1. Appreciation of prescriptions, reading of prescriptions (Formula Magistralis, Formulae Normales, Formula Originalis). The forms of dispensation, 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. Guideline for the preparation of incompatible drugs. Preparation of these medicaments.

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

Fifth Year

9th semester (12 weeks)

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Examination</th>
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<tr>
<td>Compulsory Practical Training I. (2 months) *</td>
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<td>** The new name of Clinical Pharmacy is Pharmaceutical Care</td>
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10th semester (16 weeks)

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**COMPULSORY PRACTICAL TRAINING AND PROGRAM OF THE 5TH YEAR PHARMACY STUDENTS**

Examination period for 4th year pharmacy students is from May 16, 2011 to July 8, 2011. Passing all examinations is the prerequisite for starting the compulsory practical training. Pharmacy students are obliged to do 6 months practical training continually or in two parts (2+4 months).

**Program in the 9th semester:**
1. The first part of the practical training (2 months/320 hours) has to be done in a public/community pharmacy from July 25, 2011 to September 23, 2011. Student should ask for permission if he/she would like to do the summer practice outside of Hungary, which has to be done in a public/community pharmacy and bring an acceptance letter.
2. Study Program (12 weeks) from September 26, 2011 to December 16, 2011.

**Program in the 10th semester:**
4. Second part of the practical training (4 months/640 hours) has to be done in a public pharmacy and in a hospital pharmacy (4 weeks at the same place) from January 30, 2012 to May 30, 2012 in Budapest.
5. The deadline of the defence of the diploma work is March 25, 2012.

**IMPORTANT:**
Pharmacy graduates are entitled to bear the title of doctor. The name of the degree is Doctor of Pharmacy (dr. pharm.)

**LIST OF TEXTBOOKS**

2. Z. Vincze: Pharmacy Administration. Lecture Administration.

**Recommended textbooks:**

PHARMACEUTICAL CARE
Faculty of Pharmacy
University Pharmacy Department o Pharmacy Administration
Director: Prof. Dr. Romána Zelkó
Tutor: Dr. Ágnes Mészáros

5th year term 1

Lectures
1. About clinical pharmacy
2. Pharmaceutical care
3. Individual therapy with magistral preparation
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: Prof. Dr. Imre Klebovich
Tutor: Prof. Dr. Sylvia Marton

First Semester

Lectures
Introduction into biopharmacy and pharmacokinetics. Terms and definitions.
Modeling the fate of drugs in the body (LADME and other models).
Transport processes and absorption mechanisms. Factors influencing the absorption.
Basic concepts and importance of the Biopharmaceutical Classification System.
Biopharmaceutical considerations of drug distribution and metabolism.
Bioanalytical methods.
Excretion and clearance of drug, The biological half-life.
Bioavailability and influencing factors.
Studies and regulations on bioequivalence.
Importance of food-drug interactions.
Compartmental and non-compartmental modeling.
Physiologically based pharmacokinetic models.
Pharmacokinetics of multiple dosing.
In vitro – in vivo correlation and relationship.
Pharmacokinetic and metabolism investigations during preclinical and clinical development.

**Practice**
Study on the distribution of salicylic acid in a three-phase system.
In vitro test for drug liberation from a patch system.
In vitro drug release from ointments with local effect.
In vitro dissolution profile of conventional and modified release nitrofurantoin containing preparations.
Determination of diclofenac sodium in synovial fluid samples.
Urinary excretion kinetics of aspirin.
Determination of theophylline plasma levels in beagle dogs after iv. administration.
Determination of theophylline plasma levels in beagle dogs after po. administration.
Calculation of bioavailability.
Computer modeling and analysis in pharmacokinetics.
Analyzing data to establish in vitro-in vivo correlation.

**PHARMACEUTICAL ETHICS**

Credit: 2

Lecturer: 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 physician’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? 
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 haemodialysis.
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:
Jozsef Kovacs, MD, PhD, (Head of the Department of Bioethics), 210-2930/6350; e-mail:
kovjocz@net.sote.hu
Agnes Dosa, 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 Building, 19th, 20th floor
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 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.
11. Objection to Transplantation of Organs and Counterarguments.
12. Ethical problems of live organ donation.
15. Stages of Dying.
17. 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
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:
2 Handouts for the lectures will be accessible on the homepage of the Institute of Behavioral Sciences: www.magtud.sote.hu.
PHARMACY ADMINISTRATION
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

BASIC DRUG THERAPY
Course Director: Prof. Dr. Éva Szökő
Tutor: Dr. Melinda Pállfi
Department of Pharmacodynamics

Lecture: 2
Practice: 2
Credit: 4
Exam: semi-final (oral)
First semester

Program:

Lectures:
Strategies of drug therapy. Evidence based medicine
Pharmacotherapy of heart failure
Pharmacotherapy of hypertension
Pain management
Cancer chemotheraphy: colorectal and breast cancer
Allergic disorders, therapy of dermatitis
Drug therapy of rheumatoid arthritis, back pain and sport injuries
Treatment of inflammatory bowel diseases
Drug abuse
Contraception, drug therapy during pregnancy
Pharmacotherapy of osteoporosis
Treatment of urology disorders (incontinence, erectile dysfunction, benign prostate hyperplasia)

Seminars:
Chemotherapy of common respiratory and urinary tract infections
Therapy of ischemic heart disease and myocardial infarction
Drug therapy of venous disorders
Treatment of peptic ulcer disease and gastroesophageal reflux disease
Therapy of diarrhea, constipation and irritable bowel syndrome
Therapy of common skin disorders (acne, fungal skin infections)
Therapy of allergic rhinitis
Treatment of bronchial asthma and chronic obstructive pulmonary disease
Drug therapy of anxiety and sleeping disorders
Therapy of alcohol abuse
Treatment of nausea and vomiting
Therapy of neurological disorders (Parkinson’s disease and schizophrenia)

FACULTATIVE SUBJECTS

PHYTOCHEMISTRY
Institute of Pharmacognosy

The aim of this subject is to introduce the pharmacy students interested in crude drug researches and knowledges deeper into phytochemistry. It is a laboratory practice completed with some theoretical lectures. Learning this theses, the students obtain an expertness in the qualification and standardization of crude drugs and herbal remedies, as well as in discovery of biologically active substances from them, using different isolation methods and chromatographic (TLC, GC, HPLC) techniques, photometry or other equipment. They acquire the identification and characterization of the most important substances and attain the mode of the scientific research work in this field.
INSTRUMENTAL PHARMACEUTICAL ANALYSIS

Institute of Pharmaceutical Chemistry

Chromatography
Thin-layer chromatography (theory and practice) 4 hours
Gas chromatography (theory and practice) 3 hours
High pressure liquid chromatography (theory and practice) 5 hours

Spectroscopy
UV and visible spectrophotometry 9 hours
Fluorimetry 3 hours
NMR spectroscopy 6 hours
Mass spectrometry 3 hours
Infrared spectroscopy 3 hours

The course is given by teachers of the Institute of Pharmaceutical Chemistry and wellknown researchers of academical institutes and the pharmaceutical industry.
The subject is offered to students who are interested in the pharmaceutical analysis. It is essential in the fields of the drug control, laboratory diagnostics, phytochemistry and pharmacokinetics. The chromatographical as well as the spectrosopical lectures built on attained basis are also dealing with the up-to-date problems and statements of the research work.
The course is started only if candidates number at least four or five.
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<tr>
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<td>Cure of cold with medicinal plant remedies. Phytopreparations. Plant compounds for the badly healing wounds.</td>
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<td>Medical plant remedies in the family doctor’s activity. Importance of medicinal plants in pediatrics.</td>
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HEALTH INFORMATICS
Institute of Development and Higher Education in the field of Medical Informatics
Director: Dr. Elek Dinya
Tutor: Dr. Mariann Szabó Dinya

2 hours/week

THEMES
Statistics in drug development

1. Elements of SPSS program: interactive means, data matrix, windows
2. Command of Edit menu in the SPSS program: file menu, edit menu, view menu, data menu, transform menu, graphs menu, utilities menu, help menu
4. Deviation analysis: ANOVA methods (Student’s test, Fisher’s dissociation, one way and multiple-way ANOVA designs)
5. Regression analysis: correlation coefficient, one and multiple variable regression models, GLM models, logistic model
6. Taxonomy: clusters, factorial analysis
7. Final test: solution of data processing problem

BIOORGANIC CHEMISTRY
Institute of Organic Chemistry

Organic compounds are produced by nature in inexhaustible richness. One of the basic sources of therapeutically useful compounds is the molecular storage of the pharmacy of nature. Natural products are generally environment friendly. Their chemistry is in rapid development in our days, too. What are the most important steps of molecular evolution in the cosmos and on our Earth? What is the origin of the chirality of life? How can natural products be isolated from the sources? How can their structure be elucidated? How can the ingenious synthetic methods of nature be imitated in laboratory? How can the chirality of natural products be transferred to synthetic drug molecules? How can the complete base sequence of the human genom be determined? These are some questions of the many others, which are tried to be answered in the special collegium.

Programme
1. Isolation of natural products (e.g. iridioids, peptides).
3. Application of NMR spectroscopy for the stereostructure of organic micromolecules (e.g. alkaloids, iridoids).
4. Sequence determination of natural polymers (polypeptides, polynucleotides, e.g. the human genom).
5. The role of the isoprene unit in the construction of terpenes carotenoids and steroids.
6. Biomimetic transformation in the chemistry of iridoid compounds.
7. Chemistry of alkaloids derived from the coupling of biogenic amines (phenylethylamine and tryptamine) with secologanin.
8. Total synthesis of natural products (e.g. vitamin B12, gingkolide).
10. Total synthesis of saccharides, sassharides in total synthesis.
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 stereochemistry, 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 CO2, N2 and O2. 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 disease, Menkes’ disease) are touched upon. Much time will be devoted to metal complexes of antitumor activity and to those that are used in the treatment of rheumatoid arthritis. 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
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
5. Expression of foreign DNA in bacteria
6. Cloning in higher organisms
7. Application of molecular biology in medicine
   Diagnosis of genetic disorders. DNA fingerprinting. Case applications.
8. Genetic engineering and the pharmaceutical industry
9. Fermentation technology
10. Enzyme technology
11. Biosensors
    Principle and structure of biosensors. Application in clinical chemistry and medicine. Application in fermentation industries.
PHYSICAL ORGANIC CHEMISTRY
Institute of Organic Chemistry

The number of registered organic compounds is well over 15 million. Innumerable basic reactions contact them. How can we find an order in this jungle of compounds and cavalcade of reactions? How can the reactions be oriented? How can they be used for synthesis of drugs and many other practically important compounds (polymers, dyestuffs, etc.)? How do energy changes direct organic reactions? How can we control the factors influencing them? Organic reactions take place in the interaction of atomic and molecular orbitals. These changes are the molecular base of life, too. Is it possible to get an insight into them by simple mathematical methods? All these questions concern physical organic chemistry, i.e. the study of organic reaction mechanism.

Programme
1. Systematics of organic reaction mechanism according to the notation system of IUPAC.
2. The basic concepts and applications of perturbational molecular orbital (PMO) method for interpretation of reaction mechanism.
3. Energetics or organic reactions.
4. Experimental methods for investigation of reaction mechanism.
5. Factors which influence the reaction (reagents, concentration, solvent, catalyst, temperature, etc.).
6. Analysis of the basic organic reaction types on selected examples.
7. Symmetry principles in organic reactions.
8. Orbital interactions as the molecular base of life processes.

COMPUTATIONAL CHEMISTRY AND QSAR METHODS
Institute of Organic Chemistry

1. Computational chemistry and molecular modeling: topics, scope and limits.
2. Quantum chemistry: basic principles and methods.
3. Molecular mechanics and dynamics.
5. Secondary interactions: molecular basis of receptor-ligand interactions.
6. QSAR methods: prediction of biological activity.
7. Applications and practice.
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
I 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.
II 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
I 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
Department Of Pharmaceutics
Head: Prof. Dr. Imre Klebovich
Tutor: Dr. István Antal

Second semester
1 hour/week

The subject is recommended for the students interested in fields of traditional pharmaceutical compounding such as preparation of several dosage forms (solutions, eyedrops, ointments, suppositories, powders).

Topics:
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.
Practical problems of incompatibilities in combined preparations.

PHARMACOINFORMATICS
Director: Dr. Elek Dinya

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.
<table>
<thead>
<tr>
<th>Lectures</th>
<th>References</th>
<th>Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. MEDICAL INFORMATICS AS A DISCIPLINE</td>
<td>HEALTH INFORMATICS IN THE 21st CENTURY by John Mantas, Document 506</td>
<td>2</td>
</tr>
<tr>
<td>2. DATA TYPES, CLINICAL DATA BASES, DATA BASE MODELS, AND MEDICAL IMAGES</td>
<td>TERMING, CODING AND GROUPING SYSTEMS IN HEALTH by Rudiger KLAR, Document 416</td>
<td>2</td>
</tr>
<tr>
<td>3. THE THERAPEUTIC PROCESS AND THE MEDICAL RECORD</td>
<td>HEALTHCARE RECORD by Jos AARTS, Document 407</td>
<td>2</td>
</tr>
<tr>
<td>4. HEALTH CARE INFORMATION SYSTEMS</td>
<td>OPERATIONAL USES OF HOSPITAL INFORMATION SYSTEMS by Marie-Christine JAULENT, Document 405</td>
<td>2</td>
</tr>
<tr>
<td>5. COMPUTER-BASED SUPPORT FOR PHARMACISTS (AN OVERVIEW)</td>
<td>EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990</td>
<td>2</td>
</tr>
<tr>
<td>6. REPRESENTING DRUG-RELATED KNOWLEDGE (classification of drugs, describing drug properties, drug information systems, examples)</td>
<td>EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990</td>
<td>2</td>
</tr>
<tr>
<td>7. HOSPITAL PHARMACY AND DRUG-USE MONITORING SYSTEMS (informatics of public and hospital pharmacies, patient education)</td>
<td>EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990</td>
<td>2</td>
</tr>
<tr>
<td>8. INFORMATION RESOURCES AND THE INTERNET, KNOWLEDGE COUPLERS EVIDENCE-BASED DRUG THERAPY (pharmacoeconomics and outcome research planning therapeutic protocols)</td>
<td>REFERENCE SOURCES IN HEALTH by Jean ROBERTS, UK Document 412</td>
<td>2</td>
</tr>
<tr>
<td>9. INFORMATICS OF DRUG PRESCRIPTION</td>
<td>EXPERT SYSTEMS AND ARTIFICIAL INTELLIGENCE IN HEALTH by Jana ZVAROVA, Jan TALMON Document 424</td>
<td>2</td>
</tr>
<tr>
<td>10. COMPUTER SUPPORT FOR PLANNING DRUG THERAPY (Watchdog, focusing, critiquing and advisory systems, patient-centred pharmaco-therapy), PLANNING DRUG DOSAGE</td>
<td>EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990</td>
<td>2</td>
</tr>
</tbody>
</table>

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
EVALUATION OF PROGRESS

Grading system

a) Five-scale

5 (jeles) Excellent
4 (jó) Good
3 (közepes) Fair
2 (elégséges) Passing
1 (elégtelen) Failure

b) Three-scale

igen szorgalmas Excellent
szorgalmas Satisfactory
nem felelt meg Unsatisfactory

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:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Average Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outstanding</td>
<td>kitűnő</td>
<td>if the average is 5.00</td>
</tr>
<tr>
<td>Excellent</td>
<td>jeles</td>
<td>if the average is 4.51–4.99</td>
</tr>
<tr>
<td>Good</td>
<td>jó</td>
<td>if the average is 3.51–4.50</td>
</tr>
<tr>
<td>Fair</td>
<td>közepes</td>
<td>if the average is 2.51–3.50</td>
</tr>
<tr>
<td>Passing</td>
<td>élégséges</td>
<td>if the average is 2.00–2.50</td>
</tr>
</tbody>
</table>
EXEMPTION

Exemption from examinations can be granted on the basis of the student’s previous documented studies and the additional examinations prescribed by the Departments of Semmelweis University. The student has to hand in all the documents (study programs, examination grades) at the Department concerned.

The exemption is granted by the director of the Foreign Language Programs on the basis of the Department’s opinion.

*Application deadline:* October 1st – first semester
March 1st – second semester

No reduction of tuition fee is granted in case of exemptions.
DIPLOMA WORK (Thesis)

1. In all kinds of programs the student is required to prepare a diploma work for the diploma. The aim of the diploma work is to enable the student by the individual research of the scientific field to improve his or her skills in seeing the significant items, the method of researching literature and express opinions compactly and accurately.

2. The preparation of the diploma work is guided by a supervisor and sometimes a consultant. A supervisor may be an instructor or researcher of the faculty or, if the dean allows, an external expert. A consultant is a university researcher instructor or an external expert who helps the student's work. If an external supervisor is applied, an internal consultant is required. When elaborating the topic, basic and up-to-date works related to the topic need to be used.

3. The schedule of announcing and approving diploma work topics:
The head of the organizational unit prepares a list of topics and indicates the names of the consultants. The list of topics is made public at least four semesters earlier than the last year of the program by the end of the first exam period of each school year on the notice board of the faculty and on the Internet.

4. Rules of registering for topics:
The student may select any announced topic. The topic selection may be different from these if the head of the education organizational unit agrees. The student must submit the topic at least a year before concluding the studies at the head of the education organizational unit. If approved, the head will record the topic and provide a consultant. The selected topic discusses a current issue of the given scientific field.

5. The formal requirements of the diploma work:
The length of the diploma work must be no less than 50,000 characters and no longer than 100,000 (excluding spaces). Font type: Times New Roman, font size: twelve. Tables and references are included in the length, but figures, footnotes and the literature list are not. The diploma work must be submitted in a stitched or bound format in 2 copies. The front must indicate the title, the name, class and group of the student, the time of submitting the diploma work and the name/workplace of the consultant. The student may write the diploma work in a foreign language if the head of department approves.

6. The deadline for submitting:
The student must consult with the consultant at least three times:
- first: by no later than 1 October in the final year – The consultant informs the student on the requirements and topic choices,
- second: by no later than 15 November in the final year - The student reports on the work completed up until that point,
- third: by no later than 1 January in the final year – the consultant evaluates the results of the student and gives advice on the finalization.

The diploma work prepared has to be submitted at the department by 15 January in 2 copies.
At the Faculty of Pharmacy the deadline of submission is March 1 in the year of graduation.
7. The diploma work must be handed over to a referee. The referee must be either an external expert holding a university (or college) degree or a university instructor invited by the head of the organizational unit. The referee and the supervisor will recommend a grade.

8. The diploma work (as part of the compulsory subjects) is evaluated on a five-scale grade. The extent of individual research will be taken into consideration. The defense of the diploma work takes place before a three-member committee of the given unit, the member are the head of the unit (or the deputy), the consultant and an instructor of the unit. The unit may invite an external instructor of the university as a third member.
   In case of a fail, the head of the unit notifies the student and informs him or her about the possibilities of correction.
   A failed diploma work may only be corrected once.

9. The head of the unit hands over a copy of the diploma work to the student after the defense and the other copy along with minutes of the defense will be kept by the unit. The diploma work will be kept at the library of the unit for a period of five years. The minutes will be sent to the Dean’s Office by 1 April at the latest.

10. The obligation of preparing a diploma work may be waived by the dean or the director upon the recommendation of the unit for the following students:
    – who prepare a rector paper as one of a maximum of two authors and receive a first or second prize,
    – who publish a first author paper in a scientific periodical.
   The request must be submitted at the at the Dean’s Office by the end of the year before the final year. If the waiver is granted, the student still has to defend the paper.

11. The unit will return a copy of the successfully defended diploma work to the student. The other copy will be kept by the unit in accordance with effective archiving rules.
   One of the two copies of filled-out minutes will be sent to Dean’s Office at least 60 days prior to the final exam period, while the other will be kept by the unit.

LEAVING CERTIFICATE

After completion of the obligatory practices (internships at the Faculty of Medicine), all the final and semi-final examinations and the successful defense of the diploma work, the students receive a “Leaving Certificate” (Absolutorium) in their lecture book validated by the Dean’s signature.

The Leaving Certificate is essential for the permission to take the General Board Examination.
1. The final examination includes (as defined by the qualification requirements):
   a) a written part
   b) an oral part
   c) a practical exam.
   The defense of the thesis is part of the final exam, but is evaluated and conducted separately.
2. The dean is obliged to specify at least two final exam periods annually. The final exam may only be taken in such periods.
3. The Final Examination Committee includes at least two members in addition to the head. The head and the two members are recognized external experts of the special field and university professors or associate professors. At least one member must an external professor. The head of the Committee and the members are appointed by the dean for one to three years with the approval of the Faculty Council.
4. The student must report for the final exam in the Dean’s Office no later than 60 days before the first day of the final exam period.
5. The Faculty Dean is responsible for organizing the final exam. The number of committees will be decided based on the number of students registering for the exam in a way that a committee should have a maximum of 6 students a day.
6. The students must be divided among committees randomly. The division may only be announced at the Faculty on the day of the exam in the common announcement method used at the Faculty.
7. The Final Examination Committee grades the exam subjects in a private discussion. The head of the committee announces the results after the completion of the final exam.
8. The final grade of the final exam will be based on the arithmetic average of the partial grades.
9. The result of the final exam is established by the committee and records the result in the lecture book of the student.
10. The final examination is passed if all subjects are passed.
11. In case any subject is failed, or a partial exam is given a fail, the student must retake the relevant failed part or subject only.
12. The final exam may only be retaken twice. A final exam may only be retaken in later final exam periods.
13. No credit is granted for passing the final exam.
14. If the final exam is passed over seven years past the obtaining of the final certificate, the prerequisite of the final exam is the successful completion of the final year of studies.
THE DIPLOMA (dr. med.; dr. med. dent.; dr. pharm.)

1. The credit value of subjects accepted by the university through a credit transfer process or the credit value of a diploma issued by another institute of higher education may not exceed 50% of the credit value required by the qualification requirements.

2. A condition of issuing the diploma as a Hungarian basic level state language exam type C (or an equivalent exam).

3. The rector of the university may transfer the right of signing the degree on the relevant Dean of the Faculty.

5. The diploma must indicate the grade of the diploma.

7. The Appendix of the diploma is the obligation of the relevant Dean’s Office.

8. The basis of the grade is the general cumulated and weighted average of grades rounded to the hundredth.

In case of a five-scale evaluation:
- 4.51–5.00: excellent
- 3.51–4.50: good
- 2.51–3.50: fair
- 2.00–2.50: pass

In case of a three-scale evaluation:
- 4.51–5.00: summa cum laude
- 3.51–4.50: cum laude
- 2.00–3.50: rite

The relevant Faculty’s curriculum defines the list of subjects not ending with a comprehensive exam to be taken into consideration when grading the diploma.

9. The method of calculation:

\[ XD = \frac{X_n + D + I + Sz + Gy}{n + 4} \]

Where:
- XD = the number to be taken into consideration for the diploma grade
- Xn = the sum of required comprehensive exam grades
- n = the number of required comprehensive exams
- D = the five-scale grade of the thesis
  (part of the complex final exam)
- I = the result of the written part
  (part of the complex final exam)
- Sz = the result of the oral part
  (part of the complex final exam)
- Gy = the result of the practical part
  (part of the complex final exam)

10. By request of the student (and in case the related costs are paid) the university issues a more elegant honorary diploma signed by the rector, the dean and the head of the final examination committee.
COST OF THE PROGRAM FOR TWO SEMESTERS

Tuition fee for the 2011/2012 academic year

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Fee 2011/2012/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>USD 8,200</td>
</tr>
<tr>
<td>Dentistry</td>
<td>USD 8,200</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>USD 6,000</td>
</tr>
</tbody>
</table>

The first year tuition fee (+ the registration fee – USD 200 payable in the 1st semester) should be paid in two installments (unless the Hungarian Visa regulations have different conditions):

Within two weeks after receipt of the Letter of Acceptance

<table>
<thead>
<tr>
<th>Discipline</th>
<th>USD 8,400 (USD 8,200 tuition fee + USD 200 registration fee payable once during the studies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td></td>
</tr>
<tr>
<td>Dentistry</td>
<td></td>
</tr>
<tr>
<td>Pharmacy</td>
<td></td>
</tr>
</tbody>
</table>

Before February 1

<table>
<thead>
<tr>
<th>Discipline</th>
<th>USD 8,200 (USD 6,000 tuition fee + USD 200 registration fee payable once during the studies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td></td>
</tr>
<tr>
<td>Dentistry</td>
<td></td>
</tr>
<tr>
<td>Pharmacy</td>
<td></td>
</tr>
</tbody>
</table>

In consecutive years the annual tuition fee should be paid:

Before September 1 (for the 1st semester)
Before February 1 (for the 2nd semester)

(6th year students may pay their tuition fee in two installments in case they ask for permission in writing. The two parts are determined by the English Secretariat! The first part is payable until July 31, the second until December 31, 2011)

Dentistry students pay additional material fee:

years 3, 4 & 5: USD 3,200
(first semester: USD 1,600
second semester: USD 1,600)

Please note that this fee is subject to change!

Transfer students pay the highest tuition fee in force in the actual academic year and pay the same sum during their studies.

Application fee for transfer students: USD 200

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.

Payments can be made by bank transfer in USD to the bank account of the university program or by cash payment personally in any MKB Bank (www.mkb.hu) branch office:
Account name: IS International Studies
Account (IBAN) number: HU12-10300002-10476764-40120020
Bank name: MKB Bank
Bank address: H-1056 Váci u. 38., Budapest, Hungary
Swift/BIC code: MKKBHUHB
Note: The transfer sheet should include the name of the student as it is written in the passport and the remark “SE Uni”.
Personal checks and money orders are not accepted.
Please note that the above mentioned net amounts have to arrive to the account – the commission charges have to be paid by the student.

All faculties:
Compulsory summer practice when at Semmelweis University: USD 330/month. (The fee has to be transferred to the bank account number of the relevant department.)
At the Faculty of Dentistry: HUF 31,000/week

Refund Policy of the First Academic Year
1. Prior to registration at the university
   Refundable: 100% of payment except for the deposit
2. After registration at the university
   a. Students are not entitled to a refund of the tuition fee if they are compelled to withdraw for academic/disciplinary/personal reasons or have been accepted/transferred by another institute of higher education.
      Failure to meet the academic/disciplinary requirements includes suspension, dismissal or absences from lectures or practices for more than 25% of a subject’s number of hours per semester.
   b. Students are entitled to a refund only on a pro rata basis if studies are interrupted due to a sound reason (eg. the death of parents/guardians or due to a requirement to fulfill a military service obligation). The refund is applicable from the first day of the month following report of the above mentioned conditions with accompanying official certificates.

No other claims are acceptable.

STUDENT SERVICES CENTER
College International
Mail: H-1406 Budapest 76,
P.O. Box 51, Hungary
Address: H-1071 Budapest, VII.
Bethlen Gábor tér 2., Hungary
Phone: (36-1) 413-3015
Fax: (36-1) 413-3030
E-mail: info@studyhungary.hu
Home Page: http://www.studyhungary.hu
RESIDENCE VISA, RESIDENCE PERMIT, ENTRY FOR A LONG STAY

For citizens of the European Economic Area countries (EU+ Norway, Iceland, Lichtenstein)

Citizens of the above states are not required to obtain a residence visa in order to enter Hungary for the purpose of studies. They will, however, be required to apply for a residence permit at least fifteen days prior to the expiry of the first 90-day period. Students coming from the above states are not obliged to report the address of their place of residence on arrival. It will have to be done when they apply for the registration certificate.

List of the necessary documents that are needed.

- school certificate in Hungarian
- form for issuing Registration Certificate and Reporting Accommodation
- lease contract of the apartment - bérleti szerzodés (original, written in Hungarian and signed by two witnesses)
- bank account statement about approx. 700-800 EUR or receipts about changing equivalent Hungarian Forints
- official bill stamps for 1000 Forints (‘okmánybélyeg’ from the Post Office)
- 1 passport size photo
- certificate about a comprehensive health insurance (Semmelweis University will give it to you)

Citizens of the EEA Countries are entitled to emergency medical treatment in case of illness or accident with the same conditions as Hungarian citizens. The insurance company at which the student is insured at home will be billed after the treatment. When you apply for the registration certificate you must present proof that you have a valid medical insurance coverage in your home country or the European Health Insurance Card (EHIC). You can buy medical insurance at registration as well.

After arrival to receive the registration certificate, you have to turn to the: IMMIGRATION OFFICE (Client’s office II):

Address: 11th district Budafoki út 60. (entrance from Sztregova street)
From Móricz Zsigmond tér, bus No.33 or No.33/A 5th bus stop-Hengermalom utca.

OPENING HOURS OF THE IMMIGRATION OFFICE (residence permit application)

MONDAY: 8:30-13:00
TUESDAY: 13:00-18:00
WEDNESDAY: 8:30-12:00
THURSDAY: 8:30-13:00
FRIDAY: 8:30-12:00

Entry for Long Stay (exceeding 90 days)

Foreign nationals wishing to pursue studies in Hungary are required to apply for entry for a long stay (exceeding 90 days) for the purpose of studies in their home countries and enter the country on the entry permit issued by the Hungarian Embassy or Consulate (you can find the list of Hungarian embassies and consulates at the following web-site: http://www.mfa.gov.hu ).
The entry permit is valid for a single entry and up to 30 days of stay in Hungary. Within ONE MONTH upon arrival, you will have to register your address and 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 for the purpose of studies (you can obtain an application form from the Hungarian embassy in your country or download it from the Internet at http://www.mfa.gov.hu)
- 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
- 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 EUR 60
- the Hungarian Embassy may ask for your flight reservation and air ticket the address of your residence in Hungary (you should write the address of Star City Hotel, Budapest 1078, István u. 14.) at which you can stay for the first couple of days, on arrival in response to this question on the application form unless you have already made arrangements for a permanent place of residence in Budapest.

To receive the registration certificate, you have to turn to the:

IMMIGRATION OFFICE (Client’s office II):
Address: 11th district Budafoki út 60. (entrance from Sztregova street)
From Móric Zsigmond tér, bus No.33 or No.33/A 5th bus stop-Hengermalom utca.

OPENING HOURS OF THE IMMIGRATION OFFICE
(residence permit application)

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>MONDAY</td>
<td>8:30-13:00</td>
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</tr>
<tr>
<td>FRIDAY</td>
<td>8:30-12:00</td>
</tr>
</tbody>
</table>
REDUCTION OF TUITION FEE

1. Students may apply for a reduction after completing the first academic year if, from the end of the second semester, all their semester average (the average of the grades) results were continuously above 4.51. 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.

No reduction is given in case of exemption from one or more subjects.
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:
   October 15th – first semester
   March 1st – second semester

2. Students taking just one normal, exempted “FM” or one exam course “CV” in a semester pay 50% of their semester tuition fee. (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:
   a. In case the student completes more than the compulsory 6 weeks of clinical rotations at Semmelweis University, he/she has to pay 100% of the tuition fee valid in that academic year.
   b. In case the student completes the 2 weeks compulsory Pediatrics rotation at Semmelweis University and completes the remaining of the rotations abroad, he/she has to pay 80% of the tuition fee valid in that academic year. The relevant acceptance letters should be handed in latest until December 15, 2011. 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!

   No requests in any of the above matters will be accepted after graduation!
THE WORDS OF THE SOLEMN VOW AT REGISTRATION

"I, .................................. promise solemnly that I will respect the Constitution and laws of the Hungarian Republic. 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."

THE WORDS OF OATH AT GRADUATION

Faculty 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 SEMMELWEIS University."


THE WORDS OF OATH AT GRADUATION

Faculty of Pharmacy

"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."
HOW TO GET A CERTIFICATE WHICH PROVES THAT THE DIPLOMA ISSUED BY SEMMELWEIS UNIVERSITY IS IN CONFORMITY WITH THE EU REQUIREMENTS, AND A CERTIFICATE OF GOOD STANDING

Applicants have to write a letter of request to one of the following email addresses:
  ekh.titk@eekh.hu (secretariat)
  or: recognition@eekh.hu
  or: kutasi.annamaria@eekh.hu (Dr. Kutasi Annamária)
  or: rikker.nandor@eekh.hu (Dr. Rikker Nándor)
  or: kovacs.nora@eekh.hu (Dr. Nóra Kovács)

Mail address:
  Egészségügyi Engedélyezési és Közigazgatási Hivatal
  Dr. András Zsigmond
  Zrínyi u. 3
  second floor, room no. 205
  H-1051 Budapest, Hungary

Telephone:
  36-1-235-7922 (Dr. Kutasi Annamária)
  36-1-235-7927 (Dr. Rikker Nándor)
  36-1-235-7929 (Dr. Kovács Nóra)
  Fax: 36-1-269-3794

In person:
  Egészségügyi Engedélyezési és Közigazgatási Hivatal
  Budapest, district 5, Zrínyi u. 3
  second floor, room no. 205
  Office hours: Tuesday, Thursday 9-11 a.m. and 1-3 p.m.

The following documents are required:
1. a letter of request addressed to Dr. András Zsigmond, signed by the applicant; this letter should contain the personal data (name, date and place of birth, mother’s name) and the permanent address where the applicant would like the certificate to be sent
2. to the letter the applicant has to attach a copy of the diploma
3. and a copy of the passport

The price is 19.500,- HUF per each certificate. (This fee is subject to change.)

Transfer of the payment from Hungary to the bank account number of the office:
10032000-00285788

Transfer of the payment from abroad:
Egészségügyi Engedélyezési és Közigazgatási Hivatal
Swift code: MANEHUHB
IBAN number: HU28 1003 2000 0028 5788 0000 0000
Bank: Magyar Nemzeti Bank

Important note: Applicants who have graduated at the Faculties of Medicine, Dentistry and Pharmacy since September 1, 1986 may apply for the certificate!
EXTRA CURRICULAR FEES

1. First retake of a semi-final or final examination free
   second and third retakes 2,000 HUF
2. Retake of an examination to improve the mark at the
   student’s request 1,500 HUF
3. Retake of the General Board Examination (each part of the GBE) 8,000 HUF
   Retake of the defense of the diploma work 6,400 HUF
   Second and third retakes double price
4. Default charges: a) delay of registration (when the tuition fee is paid) 5,000 HUF
   – read more details about the registration
   requirements under the next title “Important”
   b) failing to apply for a diploma work thesis until the deadline 800 HUF
   c) failing to report the compulsory elective subject 800 HUF
5. Failing to fulfill the obligations listed
   under point 4.b and 4.c after the first notice 2,000 HUF
6. Failing to sign up for subjects/courses in the
   Neptun System until the beginning of the semester 2,000 HUF/subject
7. Failing to report any change in data registered in the Neptun
   System 5,000 HUF
8. Copy of the diploma (per number of copies and languages) 4,000 HUF/each
9. Copy of the lecture book (index) 10,000 HUF
10. Official transcript 2,000 HUF/each
    (the old type: 500 HUF/page)
11. Failing to keep any deadlines: 5,000 HUF
Important

Registration requirements

Please note that the date of registration for the first semester is between 5-9 September, 2011 and for the second semester is between 30 January – 3 February, 2012. In order to fulfill the registration requirements, you must bring your index complete with all the signatures and grades, the summer practice certificate and also your payment certificate in case you pay with cash (from College International) to the English Secretariat.

Late payment

Please keep it in mind that failing to pay your tuition fee until the given deadline, you will have to pay a default charge, which is the counter value of USD 100 in HUF within 1 week after the deadline. No payment after 16 September, 2011 and 11 February, 2012 will be accepted, the student’s legal relationship will be intermitted, the student will not be allowed to continue his/her studies in the given semester. He/She can register again only in the next academic year.

Late registration

If due to some reason, you cannot register until 9 September, 2011 and 3 February, 2012, but you have already paid your tuition fee, you will have to pay HUF 5,000 for late registration.

All costs listed are subject to change
**EXTRA CURRICULAR FEES AFTER GRADUATION**

1. Diploma duplicates (copies) 4,000 HUF/each

2. Diploma supplement
   - first copy free
   - second or more (in form of transcripts) for students graduating from Medicine 3,500 HUF
   - second or more (in form of transcripts) for students graduating from Dentistry and Pharmacy 3,000 HUF

3. List of final examination grades
   - first copy 1,500 HUF
   - second or more 1,000 HUF/each

4. Other certificate(s), letter of recommendation
   - first copy 2,500 HUF
   - second or more 1,000 HUF/each

5. Postal charges
   - postal order available at the secretariat

All costs listed are subject to change

**UNICard**

**green colour card**

Semmelweis Egészségügyi Kft. (SEK) continues to provide personal health counselling and call-centre services to foreign students of the University free in the 2011-2012 term.

- Free call-centre services are available every day between 07.00 and 19.00. After the caller has proven their right for the services, our English speaking operator will help in answering health related questions

- Pay 24-hour English speaking GP’s service available

- Pay clinical examinations are available and arranged for students on individual demand and if justified. SEK associate personally escorts the patient to the clinic and helps with the necessary administrative procedures.

*The green colour plastic UNICard which enables students to use the services has to be validated every year!*
Existing cards are validated at the SEK office (1094 Budapest, Tompa u. 26/b. Please, double check the address before visiting the office by phone: +36 1 327-0452) after registration at the Foreign Students’ Secretariat.

PLEASE, BRING YOUR OLD CARD WITH YOU FOR VALIDATION!

UNICard

blue colour card

Insurance
First-year students attending the courses in English are entitled to enlist the UNIMed health insurance. Furthermore, all our students have the opportunity to request UNIMed Health Insurance. Students with this insurance are given a blue card with their names and validity date indicated in it. The maximum insurance amount is 2 million HUF per year. For further details please, consult our webpage: www.unicardinfo.hu. UNIMed services also include 24-hour English language assistance 7 days a week and escorting services to medical examinations.

The insurance is available at SEK (1094 Budapest, Tompa u. 26/b.) Please, double check the address before visiting the office by phone: +36 1 327-0452.
Summary of the most important information and frequently asked questions (FAQ-s)

Registration requirements: completed index, summer practice certificate, payment certificate (when paying in cash at College International)

Tuition fee: Students who drop a semester keep their original tuition fee. Transfer students pay the highest tuition fee in force in the actual academic year. Students taking only one course or exam in a semester pay 50% of their semester tuition fee.

Reduction of tuition fee:
– Note: the average of grades is calculated (cumulated average does not count)
– average continuously above 4.51 from the end of the second semester of the first year
– students may apply for it after completing the first academic year
– students who complete all the obligatory subjects and have no exemptions from them (except Physical Education) may apply for the reduction.

Application deadlines: October 15th (1st semester), March 1st (2nd semester)

Transfer is only allowed to the 3rd or 4th year of Semmelweis University from the same faculty of another university following the accomplishment of the theoretical (basic) or the pre-clinical module respectively. The request must be submitted by 15 July in each year to the Dean’s Office of the Faculty (English Secretariat).

Exemption from a subject may be granted on the basis of the student’s previous documented studies. The student shall submit all required documents at the department concerned. Please note that the student has to pass the exam made up from the concerned subject material before getting the exemption. The exemption is granted by the director of the Foreign Language Program on the basis of the department’s opinion.

Application deadlines: October 1st (1st semester), March 1st (2nd semester)

Obligation to register: prior to the start of the semester the student is obliged to register for continuing his/her studies through the Neptun System. The student is entitled to cancel his/her registration (made under Article 40 Section 3 of the Act on Higher Education) during the month, following the beginning of the term. In case the student doesn’t request the suspension of his/her studies by this deadline, his/her semester is considered active, even if he/she fails to participate in any class or fulfill any requirements.

Please be careful because not having min. the 50% of the credits possible after the 4th active semester causes dismissal from the University. (Article 9/1)
Frequently Asked Questions (FAQ-s)

The student must be fully aware of the Examination and Studies Regulations of Semmelweis University.

Article 1, point 3: Knowledge of the content of the Regulations and compliance with them is obligatory for all educators, researchers, students and administrators participating in education directly or indirectly.

Article 7, point 3: By registering the student declares that he or she is aware of the relevant rules of the University and Faculty and will comply with these.

• How do I calculate my average?
The semester’s cumulated average is calculated from the grades and the credit points belonging to each subject. The number of credits (to which the grade belongs) is multiplied by the grade, in every subject, then, the amount derived so is divided by the sum of the credits and the grades of the given subject. The cumulated average of the grades and credits give the result of the academic year. When applying for a tuition reduction, the average is calculated only from the grades, without taking into account the credits. The normal average of grades shows whether there is a possibility to request a tuition reduction. The students’ average must be above 4,51 to get 10% tuition reduction, and excellent (5) to get 15% tuition reduction.

• What is the process of submitting the medical certificate?
Medical certificates: must be submitted to the competent department no later than by the end of the 3rd working day, following the date of the missed exam. The medical certificate must be filled out in English or Hungarian, bear the doctor’s signature and an official stamp. No medical certificate will be accepted, if written in other languages and/or without an official stamp. The department shall decide whether the medical certificate is acceptable. If the department rejects the medical certificate, or the student doesn’t appear personally to justify his/her absence, the note: „didn’t attend“ = „nem jelent meg“ will be entered into the student’s lecture book and the Neptun system as well. This also applies in case the student fails to submit the medical certificate during the 3 working days following the missed exam. Registering for, but failing to attend an exam shall result in forfeiting 1 exam opportunity, just like the student would have failed the exam (in this case without the opportunity to retake the exam).
The only difference is that in case the student does not attend the exam, he/she is not allowed to try to take his/her first exam in the extension period, since this period is exclusively upheld for retaking failed exams.

• Should I go to the department when applying for an exemption?
Yes, except in case of Physical Education. Physical Education medical certificates must be submitted to the English Secretariat by October 1, (1st semester), March 1 (2nd semester) in each year, along with a letter in which you describe 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 English Secretariat.
In other subjects, first, you have to see the English Secretariat, where you’ll get a blank exemption form, which must be filled out and stamped by the competent department. Then, you must see the competent department with the form and the certificate of your previous
studies, which will be reconsidered when granting an exemption from the subject. At the department you need to get your exemption form signed and stamped. Important: the teacher must indicate the offered grade on the form. After having the form filled and stamped, you have to return it to the English Secretariat, where it will be processed. In case it is ok, the registrar will enter the given grade into the Neptun and will indicate it in your lecture book too. Having completed the above, you have no further obligations relevant to the particular subject.

**Transfer students** admitted from another Hungarian Medical University must note that the credits for a subject they have completed at the other university, and Semmelweis University grants exemption with a grade for that, the credits can be acknowledged just **once**: either the credits from the other university or the credits granted by SU.

**Should I go to the teacher to get my index book signed, if I got exemption in the subject?**
No, but you must submit the filled out exemption form to the English Secretariat. (In some subjects the departments send to the Secretariat the list of students who got exemption in the subject, but it is your responsibility to make sure whether you are supposed to submit the document or the list is sent to the Secretariat by the department.)

**How shall I register for the next semester?**
Please see Article 7, Point 5

**What shall I do if I failed my first retake attempt?**
First, please read the part titled “Extra curricular fees” in the Calendar, where you’ll find the different extracurricular fees. Log on your Neptun, 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”. After this, please see the English Secretariat to pick up your check. The check must be paid at the Post Office, and the retained part of the check is to be shown prior to the exam on site.

**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 (fulfilled the semester requirements), and shows that he/she wouldn’t be able to sit again for the subject, because the subjects in not announced in the following semester, there are only retake exams of the subject announced. CV can be taken only in case you have exam opportunity remained. FM stands for the Hungarian term „Felmentett”, meaning „Exempt”. This term also indicates fulfilling requirements of the subject, and that the student is not obliged to take the course again. However, the subject is announced again, so the student can choose to attend the class, if he/she decides 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.))

**How many retake opportunities do I have in a semester and in an academic year?**
There are 3 exam opportunities in each subject, per academic year (1 exam, and 2 retakes). There is a special 4th trial (the 3rd retake), which may be used exclusively in 1 chosen subject, once a year. After using this 4th exam opportunity, the student shall not have a 4th trial in other subjects and cannot be granted a “special permission” for a 5th opportunity.
Please count carefully your remaining exam opportunities! For example if you use 2 exam opportunities in Chemistry in the 1st semester (1 exam and 1 retake), you will only have 1 remaining opportunity for a retake in the following semester (plus the one extra 4th chance, in case you hadn’t used it up in the same year in another subject.

- **How do I order a check for my 3rd or 4th exam in the given semester?**
  First please read page 416. in the Calendar, where you’ll find the different extracurricular fees. Log on your Neptun, 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”. Please visit the English Secretariat to pick up your check. The check must be paid at the Post Office, the retained part of the check is to be shown prior to the exam on site.

- **Where can I get blank forms for my summer practice?**
  Please visit www.sote.hu/ Semmelweis English Language Program/ Downloads

- **What should I do when applying for summer practice at a Semmelweis department?**
  Students wishing to complete their summer practice at a Semmelweis institution or clinic should make preparations for the practice during the 2nd semester at the chosen Semmelweis department.
  A signed, stamped acceptance letter must be procured from the department, which ensures the place of the student for the 4 weeks of the practice. The current cost of the practice - if spent at Semmelweis University - is USD 330, the HUF equivalent of which has to be transferred to the bank account of the relevant department (in case the department does not have a separate bank account, the sum must be wired to the main account of Semmelweis University.) The institution or clinic may request that the student submit a certificate of school attendance, which the student must obtain from the English Secretariat.

- **How can I log on to www.sote.hu and www.isas.hu ?**
  In both cases you have to use your Neptun code, as login name and as your password!

- **What sum should I transfer (wire) in order to avoid tuition deficiency?**
  During the past academic years we faced difficulties, because some students have compiled deficiencies in the amount of tuition transferred.
  Please note that the tuition transfer must be made in the name of the student! (The College International cannot identify someone’s grandmother’s name, if the sum has been transferred by her. In such cases our records will indicate that the student has tuition deficiency, which can cause various problems upon starting the semester)
  Please also take into consideration that a transfer fee is usually applied if sending money by bank transfer. When transferring the exact amount of the tuition fee, the transfer fee might be deducted from that amount, rendering your tuition fee deficient. Accordingly, please contact your home bank prior to transferring the tuition fee to find out whether the bank deducts a transfer fee from the transferred amount. If yes, please pay the transfer fee apart from the tuition fee, because it is the student’s liability.

  **Note:** In case you transfer your tuition fee mistakenly to the old bank account number, you are obliged to ask the bank (MKB) in writing to transfer it to the right actual one.
ERASMUS Program
The aim of Erasmus student exchange program is to encourage and support academic mobility of higher education students within the European Union.

Contact information at Semmelweis University:

Ms. Katalin F. Tóth
Erasmus Institutional Coordinator
1085 Budapest, VIII., Üllői út 26. (2nd floor, room no. 202)
Tel: 459-1491, 459-1500 (55827 university extension)
Fax: 459-1588; 55829
E-mail: ftoth@semmelweis-univ.hu

THE UNION OF RESEARCH STUDENTS
General Information

The student applying for membership in the Union of Research Students is supposed to inform the tutor/student advisor of the department. It is the department head’s duty to report on the new members to the Council of the Union of Research Students.

Those students can apply for a membership,

– who have special interest in the given field,
– who have good or excellent grade in the related subject and whose average result is at least good,
– whose conduct is good,
– who have taken a course in the given field.

Those who have not taken a course still may become members with the department head’s permission.

The membership of the student is to be suspended if the department head or the Union of Research Students propose so, based on the following:

– his/her average result became strikingly worse or fails the course,
– he/she is negligent in his/her work,
– his/her conduct does not fulfill the Union of Research Student’s requirements.

A student himself/herself can initiate the suspension of membership. The Council of the Union of Research Students needs to be informed about the suspension.
FACULTY OF HEALTH SCIENCES
Brief History of the Faculty of Health Sciences

The Faculty of Health Sciences was founded in 1975 with the aim of training highly qualified professionals for Hungarian health care. In the last couple of years both the structure and the curriculum have undergone changes in the spirit of modernization. So at present there are 13 departments, with about 200 highly-qualified lecturers and more than 3000 students. The Ministry of Education and Culture qualified the Physiotherapy, Nursing, Midwife and Dietetics programmes as ones that provide trainings at international level. (According to the report of the special committee of the Ministry of Education and Culture in 2003, all the programs of the Faculty meet the prescribed educational requirements.)

It was an important event in the life of the Faculty that in 2000 it became an integrated part of the famous and well-known Semmelweis University. Furthermore, it can also be regarded as a step of historical significance that the dismemberment of the Faculty came to an end six years ago. Until then, teaching had been done in three different places, but from the beginning of 2004 on, all educational and organizational units of the Faculty can be found in one place, in the building of the former Pajor Sanatorium at 17 Vas street.

Our latest development was the introduction of courses in English (Physiotherapy and Nursing).
Government, Dean’s Office, Staff

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Phone: +36-1 486-5910
Fax: +36-1 486-5913
E-mail: student@se-etk.hu
Home Page: http://www.se-etk.hu

Dean \[\text{Prof. Judit Mészáros, Ph.D., C.Sc}\]

Vice Deans \[\text{Prof. István Vingender Ph.D., - Educational Affairs}\]
\[\text{Prof. István Szabolcs, M.D., Ph.D., D.Sc., - Scientific Affairs}\]
\[\text{Prof. Gyula Domján, M.D., - Clinical Connections}\]

Director of the Programmes in English
\[\text{Prof. István Vingender Ph.D.}\]

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   kissj@se-etk.hu
SCHEDULE FOR THE ACADEMIC YEAR 2011/2012

Autumn semester

Registration for 1st year students August 29, 2011
Opening Ceremony September 4, 2011
First day of the term
Week 0 - For 1st year students August 29, 2011
Week 1 - For 2nd, 3rd and 4th year students September 5, 2011
Last day of the term December 9, 2011
Examination period December 12, 2011 – January 20, 2012
Extension period (only for re-examination) January 23 – January 27, 2012
Announcement of continuing studies for the next semester January 27, 2012
Final examination period
Practical and written parts October 10 – 14, 2011
Oral part October 17 – 28, 2011
School break
October 21, 2011
October 31, 2011
November 1, 2011
November 5, 2011
December 26, 2011

Spring semester

First day of the term February 6, 2012
Last day of the term May 18, 2012
Spring holiday April 2 – April 6, 2012
Examination period for graduating students March 26 – May 4, 2012
for all other students May 21 – June 29, 2012
Extension period (only for re-examination)  
for graduating students: May 7 – May 11, 2012  
for all other students: July 2-6, 2012  
Announcement of continuing studies for the next semester: July 6, 2012

Final examination period (June)  
Practical and written parts: May 14 – 25, 2012  
Oral part: May 29 – June 08, 2012  
School break:  
March 14, 2012  
March 15, 2012  
April 9, 2012 (Easter Monday)  
April 20, 2012  
May 1, 2012  
May 28, 2012 (Whit Monday)
Most important deadlines for students

<table>
<thead>
<tr>
<th>Event</th>
<th>Autumn semester:</th>
<th>Spring semester:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Giving back the index book at the Foreign Students Secretariat</td>
<td>Jan 27, 2012</td>
<td>Jul 6, 2012</td>
</tr>
<tr>
<td>Announcement of continuing studies</td>
<td>Jul 8, 2011</td>
<td>Jan 27, 2012</td>
</tr>
<tr>
<td>Announcement of continuing studies after deadline with paying a default charge</td>
<td>Sept 2, 2011</td>
<td>Feb 3, 2012</td>
</tr>
<tr>
<td>Withdrawal of announcement of continuing studies</td>
<td>Oct 5, 2011</td>
<td>March 6, 2012</td>
</tr>
<tr>
<td>Signing up for courses/subjects</td>
<td>Jul 8, 2011</td>
<td>Jan 27, 2012</td>
</tr>
<tr>
<td>Changing of courses/subjects</td>
<td>Sept 2, 2011</td>
<td>Feb 3, 2012</td>
</tr>
<tr>
<td>Taking the index book for the examination period from the Foreign Students Secretariat</td>
<td>earliest Dec 7, 2011</td>
<td>earliest May 16, 2012</td>
</tr>
<tr>
<td>Getting a signature in the index after term time</td>
<td>Dec 23, 2011</td>
<td>June 1, 2012</td>
</tr>
<tr>
<td>Retake of an end-term exam</td>
<td>earliest on the third calendar day after the failed exam</td>
<td></td>
</tr>
<tr>
<td>Retake of a comprehensive exam</td>
<td>earliest on the fifth calendar day after the failed exam</td>
<td></td>
</tr>
<tr>
<td>Changing the exam date in the Neptun</td>
<td>48 hours before the actual date of the exam</td>
<td></td>
</tr>
<tr>
<td>Handing in the thesis and signing up for the final examination</td>
<td>for final examination in October Aug 11, 2010</td>
<td>for final examination in June Mar 15, 2012</td>
</tr>
</tbody>
</table>
Handing in requests to the Credit Transfer Committee

- for subjects in the autumn semester of 2010/11: Jul 8, 2011
- for subjects in the spring semester of 2010/11: Jan 13, 2012

Handing in requests about paying the tuition fee

- for the autumn semester of 2010/11: Jul 8, 2011
- for the spring semester of 2010/11: Jan 20, 2012

Handing in requests about passive semester posteriorly to the Study Committee

- Autumn semester: Dec 9, 2011
- Spring semester: May 18, 2012

Handing in application for supporting cultural and sports activities at the Dean’s Office

One month before actual activity.

Students whose tuition fee arrives within one week after the payment deadline have to pay a default charge, which is the counter value of 100 EUR in HUF:

<table>
<thead>
<tr>
<th>2011/2012 autumn semester</th>
<th>2011/2012 spring semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition fee payment deadline</td>
<td>Tuition fee payment with a default charge</td>
</tr>
<tr>
<td>1st year</td>
<td>29/08/2011</td>
</tr>
<tr>
<td>2nd/3rd/4th year</td>
<td>01/09/2011</td>
</tr>
</tbody>
</table>

No payment which arrives after September 05, 2011 (first year students) / September 08, 2011 (second-fourth year students) / February 3, 2012 (every student) will be accepted. By failing to pay the tuition fee within these dates, the student’s legal relationship with the Faculty will be intermitted, and he/she will not be allowed to continue his/her studies in the given semester, but he/she can register again only in the next academic year.

Extra curricular fees

- Third or further retake of an examination: 3,000 HUF
- Signing up for a course for the third time: 5,000 HUF
- Default charge for late payment of the tuition fee: 10 EUR
- Failing to keep any deadlines set by the Calendar: 5,500 HUF
- Retake of the final exam: 10,000 HUF
- Replica of the lecture book: 10,000 HUF
- Lost student card: 500 HUF (first time), 1,500 HUF (every other occasion)
- Official transcript of the grades: 1,000 HUF/page
Information about the B.Sc. and M.Sc. programs

Training system

Hungary, as a member of the European Union, belongs to the unified European Higher Education Area, which in principal follows the British and American multi-cycle (bachelor, master and doctorate) training system.

The qualifications are comparable and recognised all around Europe. 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 each member state. These opportunities open up a wider field also for non-European citizens studying in Hungary, 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.

Training levels, obtainable degrees

People who wish to continue their studies can enter higher education immediately after completing their secondary school-leaving examinations. The qualifications provided by our higher professional trainings are recognised in the labour market. Students having received their higher professional training certificates can either find employment or study further in the bachelor training (BSc).

Programmes leading to a Bachelor’s Degree are based on a one-year core curriculum, followed by three years of study in specialist programmes (major), which grants students an additional year to select a specialist programme.

B.Sc. programmes require the completion of 180 to 240 ECTS credits and can only be launched if there is a subsequent Master’s programme. There is a possibility for students to proceed to graduate programmes in inter- or intra-institutional forms.

M.Sc. programmes require the completion of 90 to 120 ECTS credits.

Those completing the basic bachelor programme can start their working career with their degrees and specialised knowledge and skills or can continue their studies in the master training system (MSc), which gives a possibility of specialising in the area of science chosen. In its content the master training is equivalent of university education.

After they obtain the master's degree, there will be a possibility for them to participate in the doctorate training, which prepares them to get their academic degree.

Our further training specialist programmes, at the end of which students receive a post-graduate certificate (second-degree), make it possible for students to establish their professional career.
Our programmes are as follows:

Degree programs

B.Sc. Programmes

1. Specialty: Nursing and Patient Care
   Specialized programs: Nursing (in English), Dietetics (in English), Physiotherapy (in English), Midwife (in English), Paramedics

2. Specialty: Health Care and Disease Prevention
   Specialized programs: Health Visitor, Public Health Care Inspector

3. Specialty: Medical Laboratorial Diagnostic Imaging Analysis
   Specialized programs: Optometry (in English), Medical Diagnostic Analysis

Nursing and Patient Care Programme

What is the aim of training?
We aim to train nurses and patient-care professionals who will be able to participate - with full responsibility, at all levels of social care - in the work related to prevention, medication, nursing care and rehabilitation relying on their knowledge about protecting the health of the individual, the family, the community and society and about restoring health in general. They are also expected to possess the knowledge which enables them to continue studies in the second cycle of training (at master’s level).

Length of study
8 terms, 240 credits

Degree
BSc (Bachelor of Science)

NURSING

Graduates in the specialist Nursing Programme acquire theoretical and practical knowledge which enables them to
- discover the special needs of patients (persons taken care of),
- set up nursing diagnoses and fulfill tasks on the basis of priority,
- cooperate in planning, developing and arranging healthcare and social services,
- select and apply nursing models,
- find and use information and resources needed for completing the nursing process.
They use their knowledge and skills as required by the nursing protocol.
In their nursing and patient-care work they pay considerable attention to different cultural features of patients, their human dignity and rights and make decisions and act accordingly.

Length and features of field practice, credit value
Candidates take part in a total of 1373 hours of practice during their training (in the demonstration rooms of the university and extramurally in special fields of practice), the value of which is 62 credits.

Theoretical material in the various special subjects is complemented by several weeks’ guided clinical nursing practice in each semester.
Students use their acquired theoretical knowledge in clinics and hospitals with the guidance of physicians, specialists, graduates with BSc and MSc degrees in nursing, instructors, health educators and practice leaders. At the end of the practice their performance is evaluated.

**Qualification**

Nurse

**Job opportunities**

- primary care
- out-patient clinic network
- in-patient care
- visitor of surgeries, chemists and hospitals
- transplantation coordinator

**PHYSIOTHERAPY**

**Graduates in the specialist Physiotherapy Programme** acquire theoretical and practical knowledge which enables them to perform physiotherapy activities independently on the basis of medical diagnosis in the field of prevention, medical treatment and rehabilitation: register and document the musculoskeletal status; make plans for physiotherapy and rehabilitation, implement rehabilitation programmes in various clinical areas; apply therapeutical procedures in the treatment of musculoskeletal diseases (rheumatology, orthopedics, traumatology); apply curative and preventive procedures in the treatment of cardiorespiratory diseases; apply curative procedures in the treatment of neurological diseases; apply physiotherapy in other clinical areas such as pediatrics, oncology, psychiatry, obstetrics, gynaecology and general surgery.

**Length and features of field practice, credit value**

Candidates take part in 3030 hours of practice in the training rooms of the university, as well as 1140 hours of extramural demonstration and continuous field practice, the value of which is 139 credits altogether.

The theoretical material of the various special subjects (orthopaedy, rheumatology, traumatology, pediatrics, neurology, cardiorespiratory physiotherapy) is complemented by several weeks’ guided demonstration practice in each semester, and by continuous field practice in semester 8. Students practice their acquired theoretical knowledge in clinics and hospitals under the guidance of physicians, specialists and physiotherapists as practice leaders. At the end of the practice their performance is evaluated.

**Qualification**

Physiotherapist

**Job opportunities**

- hospitals, clinics (intensive care, acute and subacute units)
- out-patient clinics
- rehabilitation centres
- nursing and social institutions
- primary and home care
- special educational institutions
- hospice
- health care centres
- institutions concerned with health tourism
- sports centres
MIDWIFE

Graduates in the specialist Midwife Programme acquire theoretical and practical knowledge which enables them to
- conduct the delivery on their own, to look after the newborn child after the delivery,
- monitor and care for mother and newborn child in childbirth,
- perform tasks of prenatal care,
- care, nurse and inform female patients,
- consult them on contraception and family planning,
- perform health educational tasks in accordance with their area of expertise,
- organise work and to work independently and also in experts’ teams,
- create and maintain interpersonal relationships.

They use their knowledge and skills as required by the obstetric-gynaecological protocol. In their nursing and patient-care work they pay considerable attention to different cultural features of patients and human dignity and rights and make decisions and act accordingly.

Length and features of field practice, credit value
Candidates take part in a total of 2280 hours of practice during their training (in the demonstration rooms of the university and in extramurial field practice), the value of which is 76 credits.

Theoretical material in the different special subjects is complemented by several weeks’ guided practice in clinical nursing, obstetrics and gynaecology in each semester.

Students use their acquired theoretical knowledge in clinics and hospitals under the guidance of physicians, obstetricians and gynaecologists and midwives as practice leaders. At the end of the practice their performance is evaluated.

Qualification
Midwife

Job opportunities
- obstetric-gynaecological clinics
- obstetric-gynaecological wards in hospitals
- gynaecological specialist in out-patient clinics
- specialised out-patient clinics
- antenatal clinics
- private gynaecological clinics

DIETETICS

Graduates in the specialist Dietetics Programme acquire theoretical and practical knowledge which enables them to perform medical and preventive work as
- clinical dieticians in primary and special care in different healthcare and social institutions,
- catering managers in different areas of public catering/children’s catering, elderly people’s homes, healthcare institutions etc./ and also in the field of prevention.

Clinical dieticians are capable of defining and planning patients’ diets in order to restore their health, conducting patients’ education, and controlling and assessing therapeutic catering and dietetic provision.

Catering managers are capable of taking responsibility for providing food with adequate nutritional value and quality for healthy individuals or groups of patients.

Dieticians working in the field of prevention are capable of decreasing the risk of illnesses related to nourishment.
Length and features of field practice, credit value
Candidates take part in a total of 1171 hours of practice during their training (in the demonstration rooms of the university and extramural field practice), the value of which is 74 credits. Theoretical material in the different special subjects is complemented by practice in class, training kitchens, laboratories, and in extramural clinics and catering plants during the semesters. Students take part in guided field practice at the end of the semesters. In the course of their field practice dietician students practice their theoretical knowledge in catering plants, Central Agricultural Office, hospitals, clinics, elderly nursing homes under the guidance of catering managers with BSc. degree, public health and epidemiology professionals, physicians and dieticians. At the end of the practice their performance is evaluated.

Qualification
Dietetics

Medical Laboratorial Diagnostic Imaging Analysis Programme

Aim of the training
To train health care professionals who give high priority to their knowledge of natural sciences, technology and information technology to be able to practise their profession. Specialists trained in this programme are able to perform and organise diagnostic imaging analytical or optometrist activity, direct the analytical work of image-based, radiological diagnostic units or optometrist laboratories and shops. They are skilled in using up-to-date methods of data processing and are experienced in dealing with issues of economy. They have the necessary skills in the use of modern equipment and measurement technology, informatics and information technology in optometrist laboratories and in diagnostic imaging. Also they have the skills required to continue their studies in the master cycle.

Length of study
8 terms, 240 credits

Qualification
BSc (Bachelor of Science)

OPTOMETRY

Graduates in the specialist Optometry Programme are able to:
- provide patients with corrective eyewear in accordance with their individual needs and priorities to maintain and improve their health status.
- independently perform, organise and control optometrist activity.
- use modern equipment and measurement technology, informatics and information technology in the field of optometry.
- detect and diagnose disorders of the eye, vision related somatic and psychic problems, provide primary care, first aid, and in cases outside their area of competence refer patients to ophthalmologists.
- work as members of eye-and vision-care teams.
Length and features of field practice, credit value
Candidates take part in a total of 1200 hours of practice during their training (in the demonstrations rooms of the university and extramural field practice), the value of which is 40 credits.
After successfully completing their practice in the demonstrations rooms (vision testing, prescription of glasses, contactology) students work in inpatient and outpatient clinics, contactology laboratories, optician’s shops and sight-testing saloons. They perform their work guided, controlled and supervised by professional practice leaders in accordance with their academic progress.

Qualification
Clinical Laboratory and Diagnostic Imaging Analyst in the Optometry specialist programme

Job opportunities
Those who complete this course can find employment in business as practicing optometrists. They are capable of starting an enterprise or running it. They can also find employment as optometrists working independently or working as eye specialist assistants or may be employed in eye diagnostic laboratories. They can successfully work in these positions relying on their knowledge of health science and clinical practice. As project and product managers, they can be engaged in trade and research in their field of specialisation.

M.Sc. Programme
Nutrition and food sciences programme
Nursing programme

Preparatory course (in English or in Hungarian)

Duration: 1 year
The aim of the course is to enable the participants to start their studies at our faculty relying on their knowledge of English or Hungarian. This programme is basically geared towards raising the students’ level of language proficiency by providing intensive courses for them to reach the required level. In addition, the course includes professional preparatory programmes.

The programme of the preparatory course:
– intensive language course (English or Hungarian): 2 x 15 weeks, 20 lessons a week (600 lessons in all)
– professional preparation (anatomy, chemistry, medical terminology, learning methodology, library user training): 3 weeks, 20 lessons a week (60 lessons in all)
Students who successfully complete the course can continue their studies in the bachelor training (B.Sc.) in the language of their choice (English/Hungarian).
SCHOOL OF PH.D. STUDIES
History and basic information

A decade ago The Act of Higher Education, 1993, charged universities with preparing students for their academic degree as well as awarding them doctoral (Ph.D.) degrees. This decision galvanized the scientific communities and schools of doctoral studies were founded one after the other in all Hungarian universities.

At that time professor Péter Sótonyi laid down the basic foundations of the SOTE Doctoral School. His successor, Professor László Kopper carefully structuring the study programs, reorganized it, creating and amending detailed regulations and working out new rules of the institution. The next chairman, professor Ágoston Szél has continued these efforts to build a well-organized institution devoted for education and training of graduate students in several fields of medicine, biology and health sciences. The School Ph.D. Studies of Semmelweis University is currently one of our most successful divisions with around hundred students obtaining Ph.D. diplomas every year. The School of Ph.D. Studies is in fact a “virtual” organisation of the university, in importance comparable to that of a Faculty. The virtuality of this “Faculty” is due to the fact that teachers and tutors are all employees or co-workers of the five regular Faculties, they perform their scientific activities in different laboratories and institutes of this (and other) university. However, with their collaboration and organization they create new research centres that function like spiritual “melting pots”. The concentration and focus of this scientific potential has a great impact on the young candidates’ research work. The motivation of the students is multiplied by the presence and interaction of experienced tutors.

The basic unit of this complex teaching-learning team is one student - one tutor. Together they enjoy a high level of freedom and autonomy in running their research, that is within the limits set by the Rules and Regulations.

The first doctoral programs in 1993 were formed sporadically around the greatest personalities of the university. Each program was comprised of five to ten subprograms, the majority of which consisted of various topics or themes. It was the leader of the program who was responsible for the advance of each tutor and student. The number of the study programs was already around 25 when the Ministry of Education decided to restructure the doctoral training. A small number of branches of science were nominated and now all programs must be grouped under the umbrella of larger organizations called Doctoral Schools (the Hungarian abbreviation is TDI). The programs have retained their independence, however, the councils of the doctoral schools became the real administrative centres of the doctoral training.

Currently the School of Ph.D. Studies at Semmelweis University has eight Doctoral Schools. Basic Medicine, Clinical Medicine, Pharmaceutical Sciences, Mental Health Sciences, Sport Sciences, Neurosciences, Molecular Medicine and Pathological Sciences. Each School comprises of 2 to 14 study programs, the total number of which is above 40 (see detailed information on programs and Doctoral Schools).

By involving the greatest authorities from within, as well as from outside the university, the School of Ph.D. Studies has from the beginning been able to preserve the quality and prestige of the degree. By the end of December 2010, altogether 1211 Ph.D. theses had been defended at the School of Ph.D. Studies. The number of enrolled students at that time was 363 and 300 were about to defend their dissertation.

The largest faculty, the Faculty of Medicine is represented in almost all Doctoral Schools, the Faculty of Dentistry has its own study program, the Faculty of Pharmacy as well as the Faculty of Physical Education and Sport Sciences is represented by individual Doctoral Schools. The Faculty of Health Care as a Higher Education Institute of college level does not issue doctoral diplomas degrees, its teachers however are taking part in the study programs organized by the other faculties.
The activity of the School of Ph.D. is divided into two parts:
- Part I: educational phase - program courses and research activity
- Part II: qualification phase - examination, writing and defending dissertations

Although the educational and qualification phases can be continuous, each contains features that provide greater flexibility in obtaining a degree. Basically, anybody holding a university diploma degree (not necessarily a medical one) can join either Phase I or II.

The aim of Phase I is to train students to become scientists by providing them courses. Credit points can be accumulated upon completion of a course. The selected scientific topic will become the core of the thesis. A qualified tutor supervises each student.

Phase II provides an opportunity to evaluate the results of the experiments and to publish them in acknowledged scientific journals. Obviously, this is, or can be an on-going activity in Phase I as well. The student is required to pass a comprehensive examination and to write and defend a dissertation.

Phase II follows Phase I, but one may join Phase II without completing Phase I, providing the necessary prerequisites have been fulfilled. However, if one joins the School of Ph.D. Studies directly in Phase II it is necessary to be accepted by a tutor within a program.

The School of Ph.D. Studies offers three forms of education:
- Full-time for scholarship holders (scholarship obtained from state, agency, foundation etc.) entering Phase I as students
- Part-time students, entering Phase I as students
- Individual studies, entering Phase II as candidates

Both full-time and part-time students must meet the same requirements. The main difference between those with and without scholarship is that the latter have jobs and are combining studies and work. Individuals who join only Phase II will not be students with record-book and student identity card, but they will be candidates for the doctoral degree.

The total number of candidates at present is about 700.

Certain costs of education, scientific training and official procedures are covered for students and candidates. Most of the fees are equal to or close to what is ordinarily paid by undergraduate students.

The actual decision-making body of the School of Ph.D. Studies is the Doctoral Council. Its work is supported by the Education Committee and Quality Assurance Committee. The former is responsible for organizing the study courses and all matters related to the training. The latter evaluates topic accreditation applications, dissertations prior to submitting them to opponents. Recently another Committee has been established to run disciplinary procedures.

Dr. Károly Rácz
President of the Doctoral Council
President of the Doctoral Council

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Wednesday: 13.00 p.m. - 16.00 p.m.
Members of the Doctoral Council

Dr. Károly Rácz President
Dr. Ágoston Széi Former-President
Dr. József Timár Vice-President
Dr. Miklós Tóth Vice-Rector of Scientific and International Affairs
Dr. László Rosival Ph.D. School of Basic Medical Sciences
Dr. Zsolt Tulassay Ph.D. School for Clinical Science in Medicine
Dr. Éva Szőke Ph.D. School of Pharmaceutical and Pharmacological Sciences
Dr. István Bitter Ph.D. School Mental Health Sciences
Dr. József Tihanyi Ph.D. School of Sport Sciences
Dr. Bereczki Dánel János Szentágothai Neurosciences Ph.D. School
Dr. József Mandl Ph.D. School of Molecular Medical Sciences
Dr. László Kopper Ph.D. School of Pathology
Dr. György Losonczy Representative of Faculty of Medicine
Dr. Gábor Varga Representative of Faculty of Dentistry
Dr. Kálmán Magyar Representative of Faculty of Pharmacy
Dr. Szabolcs Radák Representative of Sport Sciences
Dr. Gábor Makara President of the Educational Board
Dr. János Rigó President of the Quality Control and Evaluation Board
Dr. György Nagy János Szentágothai Neurosciences Ph.D. School
Dr. Iván Forgács College of Health Care
Dr. Péter Sótóyi Szent István University, Faculty of Veterinary Science
Sándor Békási President of the Doctoral Students’ Union

Permanent Committees of the Doctoral Council

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Committee of International Affairs

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Sótonyi Péter Tamás

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University School of Ph. D. Studies

President: Prof. Károly Rácz MD, PhD, DSc

BRANCHES:
I. BASIC MEDICINE

Chairman: Prof. László Rosivall MD, PhD, DSc
E-mail: rosvall@sote.hu

<table>
<thead>
<tr>
<th>Programs</th>
<th>Co-ordinators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological Effects of Ionizing and Non-Ionizing Radiations</td>
<td>Dr. Miklós Kellermayer MD, PhD</td>
</tr>
<tr>
<td>Cardiovascular Disorders: Physiology and Clinic of Ischaemic Circulatory Diseases</td>
<td>Prof. Béla Merkely MD, PhD, DSc</td>
</tr>
<tr>
<td>Clinical and Experimental Cardiology/Atherosclerosis</td>
<td>Dr. Zoltán Prohászka MD, PhD</td>
</tr>
<tr>
<td>The Mechanisms of Normal and Pathologic</td>
<td>Prof. Emil Monos MD, PhD, DSc</td>
</tr>
<tr>
<td>Functions of the Circulatory System Physiology and Pathophysiology of the Regulation of Fluids and Electrolyte Homeostasis</td>
<td>Prof. László Rosivall MD, PhD, DSc</td>
</tr>
</tbody>
</table>
## II. CLINICAL MEDICINE

**Chairman:** Prof. Zsolt Tulassay MD, PhD, DSc  
E-mail: tulassay@bel2.sote.hu

<table>
<thead>
<tr>
<th>Programs</th>
<th>Co-ordinators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Haematology</td>
<td>Prof. Lídia Sréter MD, PhD, DSc</td>
</tr>
<tr>
<td>Dental Research</td>
<td>Prof. Gábor Varga MD, PhD, DSc</td>
</tr>
<tr>
<td>Fetal and Neonatal Medicine</td>
<td>Prof. Zoltán Papp MD, PhD, DSc</td>
</tr>
<tr>
<td>Gastroenterology</td>
<td>Prof. Zsolt Tulassay MD, PhD, DSc</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>Prof. Ildikó Süveges MD, PhD, DSc</td>
</tr>
<tr>
<td>Oxidative Stress and Immunological Reaction in Liver Diseases</td>
<td>Prof. János Fehér MD, PhD, DSc †</td>
</tr>
<tr>
<td>Physiology and Pathology of the Musculoskeletal System</td>
<td>Prof. Miklós Szendrői MD, PhD, DSc</td>
</tr>
<tr>
<td>Prevention of Chronic Diseases in Childhood</td>
<td>Prof. Tivadar Tulassay MD, PhD, DSc</td>
</tr>
<tr>
<td>Pulmonology</td>
<td>Prof. György Losonczy MD, PhD, DSc</td>
</tr>
<tr>
<td>Hormonal regulations</td>
<td>Prof. Károly Rácz MD, PhD, DSc</td>
</tr>
<tr>
<td>Urology</td>
<td>Prof. Imre Romics MD, PhD, DSc</td>
</tr>
<tr>
<td>Clinical and Experimental Research in Angiology</td>
<td>Prof. György Acsády MD, PhD, DSc</td>
</tr>
<tr>
<td>Dermatology and Venereology</td>
<td>Prof. Sarolta Kárpáti MD, PhD, DSc</td>
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<tr>
<td>Molecular Genetics, Pathomechanism and Clinical Aspects of Metabolic Disorders</td>
<td>Prof. Péter Lakatos MD, PhD, DSc</td>
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## III. PHARMACEUTICAL SCIENCES

**Chairwoman:** Prof. Éva Szőke MSc, PhD  
E-mail: szokee@drog.sote.hu

<table>
<thead>
<tr>
<th>Programs</th>
<th>Co-ordinators</th>
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<tbody>
<tr>
<td>Experimental and Clinical Pharmacology</td>
<td>Prof. Kálmán Magyar MD, PhD, DSc</td>
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<tr>
<td>Modern Trends in Pharmaceutical Scientific Research</td>
<td>Dr. István Antal MSc, PhD</td>
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## IV. MENTAL HEALTH SCIENCES

**Chairman:** Prof. István Bitter MD, PhD, DSc  
E-mail: bitter@psych.sote.hu

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<th>Programs</th>
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<tr>
<td>Clinical Psychology and Psychiatry</td>
<td>Prof. László Tringer MD, PhD, DSc</td>
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<td>Behavioral Sciences</td>
<td>Prof. Mária Kopp MD, PhD, DSc</td>
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V. SPORT SCIENCES

Chairman: Prof. Zsolt Radák MD, DSc, PhD
E-mail: tihanyi@mail.hupe.hu

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<tr>
<td>Training and Adaption</td>
<td>Prof. Gábor Pavlik MD, PhD, DSc</td>
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<td>Physical Training, Regulation, Metabolism</td>
<td>Prof. Zsolt Radák MD, PhD, DSc</td>
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<td>Sport and Social Sciences</td>
<td>Prof. Gyöngyi Szabó MD, PhD, DSc</td>
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VI. NEUROSCIENCES

Chairman: Prof. Dániel Bereczki MD, PhD, DSc
E-mail: bereczki@neur.sote.hu

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<tbody>
<tr>
<td>Neuromorphology and Cell Biology</td>
<td>Prof. Miklós Palkovits MD, PhD, DSc</td>
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<tr>
<td>Neuroendocrinology</td>
<td>Prof. Zsolt Liposits MD, PhD, DSc</td>
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<td>Functional Neurosciences</td>
<td>Prof. E. Szilveszter Vizi MD, PhD, DSc</td>
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<td>Clinical Neurosciences</td>
<td>Prof. Zoltán Nagy MD, PhD, DSc</td>
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<td>Clinical Neurological Research</td>
<td>Prof. Imre Szirmai MD, PhD, DSc</td>
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<tr>
<td>Biological Psychiatry</td>
<td>Prof. Gábor Faludi MD, PhD, DSc</td>
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VII. MOLECULAR MEDICINE

Chairman: **Prof. József Mandl** MD, PhD, DSc  
E-mail: mandl@puskin.sote.hu

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<th>Programs</th>
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<tr>
<td>Basis of Human Molecular Genetics and Gene Diagnostics</td>
<td>Prof. András Falus MD, PhD, DSc</td>
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<tr>
<td>Cellular and Molecular Physiology</td>
<td>Prof. Erzsébet Ligeti MD, PhD, DSc</td>
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<tr>
<td>Embryology, Theoretical, Experimental and Clinical Developmental Biology</td>
<td>Prof. Imre Oláh MD, PhD, DSc</td>
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<td>Immunology</td>
<td>Prof. Péter Gergely MD, PhD, DSc</td>
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<tr>
<td>Pathobiochemistry</td>
<td>Prof. József Mandl MD, PhD, DSc</td>
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VIII. PATHOLOGICAL SCIENCES

Chairman: **Prof. László Kopper** MD, PhD, DSc  
E-mail: kopper@korb1.sote.hu

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<tr>
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<tbody>
<tr>
<td>Alterations of Cells, Fibres and Extracellular and Diagnostic Pathomorphological Studies Matrix in the Course of Heart and Vascular Diseases and in Certain Tumours Experimental and Diagnostic Pathomorphological Studies</td>
<td>Prof. Zsuzsanna Schaff MD, PhD, DSc</td>
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<tr>
<td>Experimental Oncology</td>
<td>Prof. László Kopper MD, PhD, DSc</td>
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<tr>
<td>Public Health Science</td>
<td>Prof. Péter Sótonyi MD, PhD, DSc</td>
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<tr>
<td>Study of the Immunobiological Effects of Micro-organisms and of their Components at Molecular and Cellular Level and in the Microorganisms</td>
<td>Prof. Károly Nagy MSc, PhD</td>
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<tr>
<td>Clinical and experimental transplantation Health Sciences</td>
<td>Prof. Róbert Langer MD, PhD, Prof. István Szabolcs MD, PhD, DSc</td>
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