

C A L E N D A R

SEMMELWEIS UNIVERSITY

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B u d a p e s t

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LEGAL SUPERVISING
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IN THE FIELD OF HEALTH SERVICE,
SPECIALTY TRAINING AND
POSTGRADUATION

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SEMMELWEIS UNIVERSITY



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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 (1 st – 5 th years)	September 12, 2011
Faculty of Dentistry	September 12, 2011
Faculty of Pharmacy (1 st – 4 th years)	September 12, 2011
Last day of the semester	
Faculty of Medicine (1 st – 5 th years)	December 16, 2011
Faculty of Dentistry	December 16, 2011
Faculty of Pharmacy (1 st – 4 th years)	December 16, 2011
5th year Pharmacy: Practical training	July 25, 2011 – September 23, 2011
The semester lasts for 5 th year Pharmacy (12 weeks)	September 26 – December 16, 2011

Examination period

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

Extension (retake exam) period

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

Date of registration (1 st – 5 th 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 1 st – 4 th years Dentistry	May 18, 2012
Last day of the semester for 5 th year Dentistry	May 4, 2012
Faculty of Pharmacy	
First day of the semester (1 st – 4 th years)	February 6, 2012
Last day of the semester (1 st – 4 th years)	May 18, 2012
First day of the semester (practice) for 5 th year	January 30, 2012
Last day of the semester (practice) for 5 th year	May 30, 2012

Examination period for Faculty of Medicine, Faculty of Dentistry

1 st – 5 th year Medicine	May 21 – June 29, 2012
1 st – 4 th year Dentistry	May 21 – June 29, 2012
5 th year Dentistry	May 7 – June 15, 2012

Faculty of Pharmacy

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

Autumn examination period for

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

Extension (retake exam) period

1 st – 4 th year Medicine and Dentistry	September 3 – 7, 2012
1 st – 3 rd year Pharmacy	September 3 – 7, 2012
4 th 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 (eg. 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 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 Faculty.
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.**

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:

$$XD = \frac{Xn + D + I + Sz + Gy}{n + 4}$$

Where:

XD = the number to be taken into consideration for the diploma grade

Xn = 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.

SEMMELOWEIS UNIVERSITY'S RULES OF ORGANISATION AND OPERATION

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 curricula. In this case, you should choose the option “Subject list of the chosen curriculum” at this question. By ticking “Show only those subjects that will be launched” you can make sure that only those subjects appear in the displayed subject list which will be launched in the semester selected. You can display the subject list filtered according to the conditions set by clicking on the “List subjects” button.
2. **Display, search and ordering options in the subject list:** On the top of the list you can set the number of subjects to be displayed on one page. If the list is longer than one page, you can use the two-way arrows on the top of the list or the drop-down menu to turn pages. By clicking on the printer icon, you can print the page displayed. When you find the subject required, click on any detail and all details of the selected subject will be displayed in a pop-up window.
3. **Subject details / Current courses tab:** Here you can see the courses launched in the given semester for the selected subject. You can now choose the subject and its course or courses. You can choose the courses by marking the checkbox on the right of the course list, then confirm your choice by clicking on “Save” at the bottom of the page. You have to choose more than one course for the same subject if more than one course type (e.g. theoretical and practical) are announced. In this case, you need to choose one course for each course type. This is not true for exam courses which must be chosen independently in all cases, which means that you cannot choose an exam course and another course type for the same subject at the same time. Course registration will only be successful if:
 - you have fulfilled the requirements for subject and course registration,
 - none of the courses selected is booked out (in the students/limit column the number of students is under the limit),
 - you have selected one course for each course type (e.g. theoretical, practical),
 - it is preliminary or final subject and course registration period,
 - you have not completed the subject so far.
 For more information on a given course, click on any detail of the given course in the list to display the course information in a new pop-up window.
4. **Deregistering subjects:** If for any reason you would like to drop a chosen subject, you can do so under “Registered subjects” in the “Subjects” menu. On this page you can see the subjects you have chosen in the current registration period; you can change courses or deregister subjects here. If in any subject line you click on “Deregister subject”, the system will first ask whether you really want to drop the given subject and if you answer yes, the subject will be dropped and deleted from the list of registered subjects. Naturally, this means that your registration for the courses of the deregistered subjects is also deleted and you will be

informed of this. (Subject deregistration is possible during the preliminary or final subject or course registration period.)

- 5. Changing courses:** If you want to change the course(s) you have chosen in a given subject, you can do this by clicking on any detail of the given subject to display the pop-up window "Subject details". Here on the "Current courses" tab in the last column of the list you have to select the course(s) required and unmark the course(s) to be dropped, then confirm the change by clicking on the „Save" button. The system will report on the change or the reasons for potential errors.

Exam registration

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

- 1. List exams:** On entering the page for the first time all future exam dates announced in the current semester will appear, but you can filter the list. If you only want to see the exam dates of a given subject, select the subject from the "Subjects" roll-down menu, then click on the button "List exams".
- 2. Exam registration:** To register for an exam, click on "Register" in the line of the given date. The programme will report on the success or failure of exam registration.
- 3. Canceling exam registration:** If you register for an exam by mistake or you simply change your mind and want to cancel your registration, click on „Cancel" next to the given exam. (Normally this can be done prior to the exam within the cancellation deadline. This deadline varies according to institution: at AOK /Medicine/, FOK /Dentistry/ and ETK, it is 48 hours while at GYTK /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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Assistant professor:	Dr. László Noszek (tutor), Dr. Zoltán Fent
Assistant lecturer:	Dr. Beáta Bencsik, Dr. Magdolna Szonyi, Dr. Balázs Szabó, Dr. Helga Kraxner, Dr. Anita Gáborján, Dr. Gábor Polony, Dr. Szabolcs Horvai, Dr. Attila Óvári

I. Department of Pediatrics

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Professor emeritus:	Prof. Dr. Miklós Miltényi
Associate professor:	Dr. Éva Kis, Dr. András Szabó, Dr. Anna Köner, Dr. Attila József Szabó
Assistant professor:	Dr. Lídia Balogh, Dr. János Bókay, Dr. Péter Sallay, Dr. Zsóka Horváth (tutor)
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Assistant professor:	Dr. Mária Ablonczy, Dr. Zita Halász Dr. Margit Pataki, Dr. Veronika Kovács
Assistant lecturer:	Dr. Noémi Csozásnszki, Dr. Gabriella Filiczki, Dr. Péter Hauser (tutor), Dr. Zoltán Jenővári, Dr. László Jókúti, Dr. Zoltán Karádi, Dr. Andrea Luczay, Dr. Judit Müller, Dr. Gergely Sárközi, Dr. Edit Varga, Dr. Andrea Tölgyesi, Dr. Tamás Bense (tutor), Dr. András Kelecsényi (tutor), Dr. Boglárka Bánsági (tutor)

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I. Department of Obstetrics and Gynecology

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Dr. András Szánthó (Deputy Director), Dr. Zsolt Csapó,
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Assistant professor: Dr. Sándor Konrád, Dr. János Hidvégi, Dr. Márta Lipták, Dr. Péter Somos, Dr. István Varga, Dr. László Csabay, Dr. Mihály Silhavy, Dr. György Szendei, Dr. Márta Gávai, Dr. Ágnes Harmath, Dr. Péterné Sembery, Dr. Nóra Dévényi, Dr. Katalin Szirmai, Dr. Zoltán Magyar, Dr. Artúr Beke, Dr. László Fedák, Dr. Attila Demeter, Dr. Zsolt Ádám, Dr. Ervin Hruby, dr. Judit Jeager

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Department of Urology

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Dr. András Kóbor, Dr. Melinda Madléna,
Dr. Tibor Károly Fábián

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Assistant professor:

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Department of Conservative Dentistry

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Institute of Pharmaceutical Chemistry

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Department of Pharmacodynamics

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Assistant lecturer:	Olivér Éliás

Institute of Development and Higher Education in the field of Medical Informatics

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Budapest, X. Vajda Péter u. 38.

☎: 262-9570

Fencing Hall

Budapest, V. Semmelweis u. 2.

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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

FACULTY OF MEDICINE

(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



Faculty of Medicine

BASIC MODULE

STUDY PROGRAMME

First year

1 st semester					
Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
Medical Chemistry	3,00	3,50	6	semi-final	–
Anatomy, Cell, Histology and Embryology I.	3,00	6,00	9	semi-final	–
Basics of Biostatistics	1,50	2,00	3	semi-final	–
Medical Sociology (or in the 2nd sem.)	0,66	1,33	2	semi-final	–
First Aid	1,00	–	0	signature	–
Physical Education I.	–	1,00	0	signature	–
Hungarian Medical Terminology I.	–	4,00	4	pract. mark	–
Medical Terminology (Latin)	–	2,00	2	pract. mark	–
Total Number of Credit Points from Obligatory Subjects			26		
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	–	2		
Basics of Medical Chemistry	2	–	2	pract. mark	–
Jewish Medical Ethics I.	2	–	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					
Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
Biochemistry, Molecular and Cell Biology I.	3,00	4,00	7	semi-final	Medical Chemistry
Anatomy, Cell, Histology and Embryology II.	3,00	6,00	9	semi-final	Anatomy, Cell, Histology and Embryology I.
Medical Biophysics	2,5	3,00	6	semi-final	Basics of Biostatistics
Introduction to Clinical Medicine	0,00	2,00	2	semi-final	Medical Communication
Medical Communication	1,00	1,00	2	semi-final	Introduction to Clinical Medicine
Nursing Practice (in summer)	–	–	–	signature	–
Physical Education II.	–	1,00	–	signature	–
Hungarian Medical Terminology II.		4,00	2	pract. mark	Hungarian Medical Terminology I.
Total Number of Credit Points from Obligatory Subjects			28		

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					

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.

STUDY PROGRAMME

Second Year

3 rd semester					
Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
Anatomy, Cell, Histology and Embryology III.	3,00	4,00	7	semi-final	Anatomy, Cell, Histology and Embryology II. Biochemistry, Molecular and Cell Biology I.
Medical Physiology I.	6,00	5,00	11	semi-final	Anatomy, Cell, Histology and Embryology II. Medical Biophysics Biochemistry, Molecular and Cell Biology I. Medical Biophysics
Biochemistry, Molecular and Cell Biology II.	3,00	3,00	6	semi-final	Biochemistry, Molecular and Cell Biology I.
Physical Education III.	–	1,00	–	signature	–
Hungarian Medical Terminology III.	–	4	2	pract. mark	Hungarian Medical Terminology II.
Total Number of Credit Points from Compulsory Subjects			26		
Obligatory elective subject					
Introduction to Clinical Medicine	–	2	2	pract. mark	Medical Profession
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 3 rd year curriculum					
Total Number of Credit Points from Obligatory elective / Elective Subjects			4		

STUDY PROGRAMME

Second Year

4 th semester					
Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
Anatomy, Cell, Histology and Embryology IV.	1,00	2,00	3	final	Anatomy, Cell, Histology and Embryology III. Physiology I.
Medical Physiology II.	6,00	5,00	11	final	Anatomy, Cell, Histology and Embryology III. Physiology I.
Biochemistry, Molecular and Cell Biology III.	3,00	3,00	6	final	Biochemistry, Molecular and Cell Biology II.
Internal Medicine - Propedeutics I.	1,00	2,00	3	semi-final	Anatomy, Cell, Histology and Embryology III. Physiology I. Medical Communication
Physical Education IV.	–	1,00	–	signature	–
Hungarian Medical Terminology IV.	–	4	2	pract. mark	Hungarian Medical Terminology III.
Total Number of Credit Points from Compulsory Subjects			25		
Introduction to Clinical Anatomy	2	–	2	pract. mark	Anatomy, Histology, Embryology III.
Anatomy of Diagnostic Imaging	2	–	2	pract. mark	Anatomy, Histology, Embryology III.
Obligatory elective subject					
<p>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</p>					
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

1 st semester					
Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
History of Medicine	2	–	2	pract. mark	–
Developmental Biology I.	2	–	2	pract. mark	exclusively from the 2nd year
Information Retrieval Science in Library	2	–	3	pract. mark	–

2 nd semester					
Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
History of Medicine	2	–	2	pract. mark	–
Introduction to Clinical Anatomy	2	–	2	pract. mark	Anatomy, Histology, Embryology III.
Developmental Biology II.	2	–	2	pract. mark	Developmental Biology I.
Anatomy of Diagnostic Imaging	2	–	2	pract. mark	Anatomy, Histology, Embryology III.
Information Retrieval Science in Library	2	–	3	pract. mark	–

ELECTIVE SUBJECTS

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

2 nd semester					
Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
Clinical Physiology of Respiration and Respiratory Diseases	2	–	2	pract. mark	Medical Physiology II.
Traditional Chinese Medicine	2	–	2	pract. mark	For 3rd, 4th & 5th year students only
Basic Genetics	2	–	2	pract. mark	–
Jewish Medical Ethics II.	2	–	2	pract. mark	–
Work within the union of research students (TDK munka)	1	–	1	pract. mark	at least a grade of 4 (good) in the relevant, completed subject
Clinical Cardiovascular Physiology	2	–	2	pract. mark	Medical Physiology II.

PRECLINICAL MODULE

STUDY PROGRAMME

Third Year

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

6 th semester					
Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
Pathophysiology and Clinical Lab. Diagnostics II.	1,50	3,00	4	final	Pathology I. Pathophysiology and Clinical Lab. Diagnostics Basic Immunology
Microbiology II.	2,00	2,00	4	final	Pathology I. Pathophysiology and Clinical Lab. Diagnostics Microbiology I.
Pathology II.	3,00	4,00	7	final	Pathology I. Pathophysiology and Clinical Lab. Diagnostics Microbiology I.
Internal Medicine I. (Metabolism, endocrinology, toxicology)	1,50	3,00	5	semi-final	Internal medicine - propedeutics II. Pathophysiology and Clinical Lab. Diagnostics II. Pathology II.
Genetics and genomics	2,00	2,00	4	semi-final	Biochemistry, Molecular and Cell Biology III.
Medical Psychology	1,00	2,50	3	semi-final	Medical Sociology Medical Communication
Internal Medicine practice (summer, 4 weeks)				pract.mark	Internal medicine - propedeutics II.
Disaster Protection & Civil Defence II.				signature	
Total Number of Credit Points from Compulsory Subjects:			27		
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 3 rd year curriculum					
Total Number of Credit Points from Obligatory elective / Elective subjects:			4		

STUDY PROGRAMME

Fourth Year

7 th semester					
Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
Pharmacology and Pharmacotherapy I.	2,50	2,50	5	semi-final	Physiology II. Biochemistry, Molecular and Cell Biology II. Pathophysiology and Clinical Lab. Diagnostics II.
Public Health (I.)	1,00	2,50	4	semi-final	Pathology II. Pathophysiology and Clinical Lab. Diagnostics II. Microbiology II.
Internal Medicine II. (nephrology, immunology, rheumatology)	1,50	3,00	4	semi-final	Internal Medicine I. Pathology II. Pathophysiology and Clinical Lab. Diagnostics II.
Medical Imaging	1,00	1,00	2	semi-final	Medical Biophysics Anatomy, Cell, Histology and Embryology IV.
Surgery I.	2,00	1,50	3	semi-final	Pathology II. Operative Surgery Pathophysiology and Clinical Lab. Diagnostics II.
Otorhinolaryngology	1,00	2,00	3	semi-final	Anatomy, Cell, Histology and Embryology IV. Operative Surgery Surgery I.
Dermatology	1,50	2,50	4	semi-final	Pathophysiology and Clinical Lab. Diagnostics II. Internal Medicine I. Pharmacology and Pharmacotherapy I.
Oral Surgery and Dentistry	1,00	1,00	2	semi-final	Anatomy, Cell, Histology and Embryology IV. Operative Surgery Surgery I.
Bioethics - Medical Ethics	1,00	1,00	2	semi-final	Medical Sociology Medical Communication
Behavioural Science				final#	
Disaster Protection & Civil Defence III.				signature	
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					
Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
Pharmacology and Pharmacotherapy II.	2,50	2,50	5	final	Pharmacology and Pharmacotherapy I. Microbiology II. Internal medicine - propedeutics II.
Public Health II.	1,00	2,50	3	final	Public Health (I.)
Pulmonology	1,00	2,00	3	semi-final	Pathology II. Internal medicine - propedeutics II.
Internal Medicine III. (cardiology)	1,00	2,00	3	semi-final	Internal Medicine II. Microbiology II. Pharmacology and Pharmacotherapy II.
Surgery II.	2,00	2,00	4	pract.mark	Surgery I. Pharmacology and Pharmacotherapy I.
Orthopaedics	1,00	2,00	3	semi-final	Anatomy, Cell, Histology and Embryology IV. Pathology II. Surgery I.
Radiology	2,00	2,00	4	semi-final	Medical Biophysics Anatomy, Cell, Histology and Embryology IV. Pathology II.
Psychotherapy in medical practice	1,00	1,00	2	semi-final	Medical Psychology Medical Communication Internal medicine - propedeutics II.
Surgery practice (in summer)				signature	Surgery II.
Disaster Protection & Civil Defence IV.				signature	
Total Number of Credit Points from Compulsory Subjects			27		
Obligatory elective / Elective subjects					
At least 4 credit points from the obligatory elctives/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		

CLINICAL MODULE

STUDY PROGRAMME

Fifth Year

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

10th semester					
Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
Internal Medicine IV. (haematology, infectology)	2,00	3,00	5	semi-final	Internal Medicine IV. Neurology II. Forensic Medicine
Traumatology	1,00	2,00	3	semi-final	Anatomy, Cell, Histology and Embryology IV. Radiology Surgery II.
Obstetrics and Gynecology II.	2,00		2	semi-final	Obstetrics I.
Paediatrics II.	2,00	3,00	5	pract. mark	Paediatrics I.
Neurology II.	2,00	1,50	4	semi-final	Neurology I.
Psychiatry II.	1,50	2,00	4	pract. mark	Psychiatry I.
Forensic Medicine	1,00	2,00	3	semi-final	Anatomy, Cell, Histology and Embryology IV. Genetics and genomics Pathology II.
Ophthalmology	2,00	2,00	4	semi-final	Anatomy, Cell, Histology and Embryology IV. Internal Medicine III. Surgery II.
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

Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
Antibiotic Therapy and Infectology	2	–	2	pract. mark	Pre-clinical module
Anesthesia and Intensive Care	2	–	2	pract. mark	Exclusively for the 5th year

ELECTIVE SUBJECTS

1 st semester					
Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
Problem based medical physiology	2,5	–	4	pract. mark	Medical Physiology II.
Sleep Medicine	2	–	2	pract. mark	Pathophysiology and Clin. Lab. Diagnostics final
Clinical Physiology of Respiration and Respiratory Diseases	2	–	2	pract. mark	Medical Physiology II.
Organ Transplantation			2		Pre-clinical module
Clinical Oncology	2	–	2	pract. mark	Pre-clinical module
Clinical Genetics	2	–	2	pract. mark	Pre-clinical module
Clinical Immunology	2	–	2	pract. mark	Pre-clinical module
Health Informatics	2	–	2	pract. mark	Pre-clinical module
Traditional Chinese Medicine	2	–	2	pract. mark	Pre-clinical module
Ultrasonography	2	–	2	pract. mark	Pre-clinical module
Jewish Medical Ethics I.	2	–	2	pract. mark	–
History of Medical Professionalism	2	–	2	pract. mark	–

2nd semester					
Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
Medicinal, Epidemiological, and Social Aspects of Drug Abuse	2	–	2	pract. mark	Pre-clinical module
Clinical Cardiovascular Physiology	2	–	2	pract. mark	Medical Physiology II.
Clinical Endocrinology	2	–	2	pract. mark	Pre-clinical module
Clinical Hematology	2	–	2	pract. mark	Pre-clinical module
Organ Transplantation			2		Pre-clinical module
Family Surgery	2	–	2	pract. mark	Surgery I.
Neonatology	2	–	2	pract. mark	Pre-clinical module
Emergency in Surgery	2	–	2	pract. mark	Surgery I.
Tropical Medicine	2	–	2	pract. mark	Pre-clinical module
Ultrasonography	2	–	2	pract. mark	Pre-clinical module
Jewish Medical Ethics II.	2	–	2	pract. mark	–

FACULTY OF MEDICINE

BASIC MODULE



Faculty of Medicine
1st year

STUDY PROGRAMME – New!

1st semester						
Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOKFIZ005_1A	Bases of Biostatistics and Informatics	1,5	2	3	semi-final	-
AOKOB1001_1A	Medical Chemistry	3	3,5	6	semi-final#	-
AOKANT003_1A AOKHUM004_1A	Anatomy, Histology, Embryology I.	3	6	9	semi-final	-
AOKLEK228_1A	Hungarian Medical Terminology I.	-	4	4	pract. mark	-
AOVLEK229_1A	Medical Terminology (Latin)	-	2	2	pract. mark	-
AOKTS1009_1A	Physical Education I.	-	1	0	signature	-
Obligatory elective subjects						
AOVGEN083_1A	Basic Cell Biology	2	0	3	pract. mark	(Detailed curriculum in the 3rd year
AOVNEI263_1A	History of Medicine	2	-	2	pract. mark	-
AOVKPK088_1A	Information Retrieval Science in Library	2	-	3	pract. mark	-
Elective Subjects						
AOSNEI246_1A	History of Medical Professionalism	2,5	-	2	pract. mark	Only for first year
AOVFIZ090_1A	Bases of Medical Physics	1	1	3	pract. mark	-
AOVQVM093_1A	Basics of Medical Chemistry	2	-	3	pract. mark	-
	See the rest of the elective courses after the third year's curriculum					

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

STUDY PROGRAMME

First year

2nd semester						
Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOKFZO12_1A	Medical Biophysics	2,5	3	6	semi-final	Bases of Biostatistics and Informatics
AOKOBI010_1A	Medical Biochemistry, Molecular and Cell Biology I.	3	4	7	semi-final	Medical Chemistry I.
AOKANT003_2A AOKHUM004_2A	Anatomy, Histology, Embryology II.	3	6	9	semi-final	Anatomy, Histology, Embryology I.
AOKOMS218_1A	First Aid	–	1	0	signature	–
AOKLEK228_2A	Hungarian Medical Terminology II.	–	4	2	pract. mark	Hungarian Medical Terminology I.
AOKTSI009_2A	Physical Education II.	–	1	0	signature	–
AOKNSG014_1A	Summer Nursing Practice	–	–	–	signature	–
AOKMAG006_1A	Medical Sociology	0,66	1,33	2	semi-final	(detailed curriculum in the 2nd year)
AOKMAG007_1A	Medical Communication	1	1	2	semi-final	–
Obligatory elective subjects						
AOVINF244_1A	Introduction to Medical Informatics ***	–	1	1	pract. mark	–
AOVCSA248_1A	Medical Profession ***	0,67	1,33	2	pract. mark	–
Elective Subjects						
AOSNEI246_1A	History of Medical Professionalism	2,5	–	2	pract. mark	–
See the rest of the elective courses after the third year's curriculum						
AOVTDK158E1A	Work within the union of ** research students					

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

1st semester

Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOFIZFIZ_1A	Medical Physics and Statistics I.	2,5	2,5	5	semi-final	–
AOGENBIO_1A	Medical Biology I.	2	2	3	semi-final	–

First year

2nd semester

Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOFIZFIZ_2A	Medical Physics and Statistics II.	2,5	2,5	5	final #	Medical Physics and Statistics I.
AOBIKEM_2A	Medical Chemistry II.	4	4	5	final #	Medical Chemistry I.
AOGENBIO_2A	Medical Biology II.	1,5	2	3	semi-final #	Medical Biology I.

The grade influences the qualification of the Diploma.

LIST OF TEXTBOOKS

- 1 C.Rosse-P.Gaddum-Rosse: Hollinshead's Textbook of Anatomy. Lippincott-Raven. 4th ed. 1997. ISBN 0-397-51256-2
- 2 RMH McMinn: Last's Anatomy, Regional and Applied. Churchill Livingstone, Edinburgh 1990. ISBN 0-443-03484-4
- 3 ML Barr-JA Kiernan: The Human Nervous System. Lippincott Co. Philadelphia, 5th ed. 1993.
- 4 RHM McMinn-RT Hutchings: A Color Atlas of Human Anatomy. Wolfe Medical Publ.Ltd. Paperback ed.
- 5 MH Ross-GI Kaye-W. Pawlina: Histology: A Text and Atlas. Lippincott William and Wilkins, 4th ed. 1995.
- 6 PR Wheater-HG Burkitt-VG Daniels: Functional Histology. Churchill Livingstone, Edinburgh, 2nd ed. 1987.
- 7 Ebbing,D.D-Grammon,S.D: General Chemistry. 9th ed. 2009. Houghton Mifflin Co. Boston. ISBN 10:0-618-85478-6 / 13:978-0-618-85478-7
- 8 Devlin,T.M: Textbook of Biochemistry with Clinical Correlations. 6th ed. J.Wiley and Sons. 2006. ISBN 0-470-03853-5(paper and online version)
- 9 Tóth: Concise Inorganic Chemistry for Medical Students. Bp. Semmelweis Kiadó
- 10 Laboratory Manual; Medical Chemistry and Biochemistry. Bp. Semmelweis Kiadó
- 11 Bauer-Csermely-Hrabák: Principles of Organic Chemistry (ed. A. Hrabák) Bp. Semmelweis Kiadó
- 12 Hrabák: Selected Collection of Chemical Calculations and Biochemical Exercises. Bp. Semmelweis Kiadó
- 13 Garzó-Müllner-Sasvári: Bioorganic compounds. Bp. Semmelweis Kiadó
- 14 Damjanovich – Fidy – Szöllösi (eds) Medical Biophysics, Medicine, Budapest, 2009. ISBN 978 963 226 127 0
- 15 Laboratory Manual of Medical Physics and Statistics, Semmelweis University Institute of Biophysics and Radiation Biology Budapest, 2005. ISBN 963 9129 60 7
- 16 BM Carlson: Human Embryology and Developmental Biology, Mosby 3rd ad. 2004.

Recommended textbooks:

- 1 GJ.Romanes: Cunningham's Textbook of Anatomy. Oxford.Univ.Press, 1991. 12th ed.
- 2 S.Standing: Gray's Anatomy. Elsevier, Churchill Livingstone, 39th ed. 2005.
- 3 Bloom and Fawcett: A Textbook of Histology. 11th ed. W.B.Saunders Co. 1986.
- 4 KL Moore–AF Dalley:Clinically Oriented Anatomy. 4th ed. Lippincott William and Wilkins, 1999.
- 5 W.Kahle-H.Leonhardt-W.Platzer: Color Atlas and Textbook of Human Anatomy (in 3 volumes) 3rd revised ed. Thieme Inc. New York, 1986.
- 6 AMR Agur: Grant's Atlas of Anatomy. 9th ed. Williams and Wilkins, Baltimore, 1991.
- 7 LC.Junqueira-J.Carneiro-RO.Kelley: Basic Histology. Prentice-Hall International Inc. 6th ed. 1989.
- 8 KL.Moore-TVN Persaud: The Developing Human – Clinically Oriented Embryology. 7th ed. Saunders, 2003.
- 9 A.Nemeskéri: Sectional Anatomy – Workbook, István Apáthy's Foundation, 2001.
- 10 A.Nemeskéri-K.Kocsis: Histology Manual 1-3. István Apáthy's Foundation, 2001.
- 11 A.Csillag: Anatomy of the Living Human. Kónemann, 1999.
- 12 Stryer: Biochemistry. 4th ed. 1995. ISBN 0-7167-2009-4
- 13 Zumdahl: Chemical Principles. 3rd ed. 1998. Houghton-Mifflin Co. Boston. ISBN 0-395-83995-5
- 14 First Aid Manual: The Authorised Manual of St. John Ambulance, St. Andrew's Ambulance Association and the British Red Cross by the British Red Cross Society published on 21/03/2011 by Dorling Kindersley Publishers Ltd ISBN 9781405362146
- 15 Cooper-Hausman: The Cell: A Molecular Approach, 5th Edition, Sinauer Associates, 2006, ISBN 0-87893-300-X
- 16 Alberts-Bray-Hopkin-Johnson-Lewis-Raff-Roberts-Walter: Essential Cell Biology, 3rd Edition Garland Science, 2009. ISBN: 978-0-8153-4129-1

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.

Histology: Bases of the cell biology. Morphology of the cell organells. Cell biology of the important membrane processes (exocytosis, endocytosis).

Basic tissues, histology of blood vessels, blood cells, cells of the bone marrow. Histology of the skin and the mammary gland. cell biological base of the construction of the tissues.

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

LECTURE Topic	LAB	
	Anatomy	Histology
Week 1		
1. Introduction. Organization levels: cells, tissues and organs.	Anatomical nomenclature, body axes, terms of orientation.	Microscope. Light and electron microscopic technic.
2. The cell in general. Methods in cell biology research.	Bones of the upper limb.	
3. The cell membrane.		
Week 2		
4. The nucleus.	Bones of the upper limb. Demonstration and dissection of the joints of the upper limb.	Simple epithelia.
5. Cellular organelles on the exocytotic pathway (ribosomes, ER, Golgi), secretion.		
6. Cytoskeleton: Microtubules and cellular organelles related to the microtubules, their cell biological significance.		
Week 3		
7. Cytoskeleton: microfilaments, intermedier filaments.	Joints of the upper limb. Muscles of the ventral surface of the upper limb. Branches of the brachial plexus innervating the upper limbs	Stratified epithelia. Glandular epithelia I.
8. Association of cells (cell adhesion), cell connecting structures, Structure of the epithelial cell.		
9. Cell biology of cell division (mitosis) and cell cycle, chromosomes.		

LECTURE	LAB	
	Topic	Anatomy
Week 4		
10. Characterization and classification of the epithelial tissue. Surface covering and glandular epithelial tissue.	Muscles of the ventral and dorsal surface of the upper limb. Joints, blood vessels and nerves of the upper limb.	Glandular epithelia II.
11. Connective tissue cells. Cell biology of the extracellular matrix. Structure of the ground substance.		
12. Connective tissue fibers and their formation.		
Week 5		
13. Cell organelles in the endocytotic pathway (phagosome, endosome, lysosome), endocytosis, intracellular digestion.	Muscles, vessels and nerves on the ventral and dorsal surface of the upper limb. Ending of the preparation of the joints.	Connective tissue I.
14. Cell-homeostasis, apoptosis, meiosis, differentiation, stemcells.		
15. Germ cells: spermium, oocyte, gametogenesis.		
Week 6		
16. Mitochondrium, peroxisome.	Review of the upper limb	Connective tissue II.
17. Cartilage. Bone tissue.		
18. Ossification, bone growth, nuclei of ossification.		
MID-TERM TEST.		
Week 7		
19. Joints and muscles of the upper limb. Clinical aspects of them.	Bones and joints of the trunk and lower limb. Atlantooccipital and atlantoaxial joints.	Cartilage, bone tissue.
20. Fertilization. Morula, blastula.		
21. Molecular bases of gastrulation. Germinal layers. Neurulation.		
Week 8		
22. Muscle tissue.	Joints of the trunk and lower limb. Demonstration and preparation of the muscles, vessels and nerves on the dorsal surface of the lower limb.	Ossification.
23. Vertebral column, clinical anatomy of the chest cavity.		
24. Axes of the body, right-left asymmetry. Differentiation of mesoderm.		
Week 9		
25. Nervous tissue. Neurons and glial cells.	Muscles, vessels and nerves on the dorsal surface of the lower limb. Branches of the sacral plexus innervating the gluteal region and the lower limb.	Muscle tissue.
26. Structure of the neural fibers, degeneration-regeneration.		
27. Formation of the placenta. Fetal membranes.		
Week 10		
28. Blood, stem cells biology	Muscles, vessels and nerves on the ventral surface of the lower limb. Branches of the lumbar plexus.	Nervous tissue, neuron, and neural fibers.
29. Bone marrow, hemopoiesis.		
30. Formation of primary tissues. Homeobox genes		

LECTURE	LAB	
Topic	Anatomy	Histology
Week 11		
31. Formation of leucocytes. Extravasatio. Cells of the inflammatory processes.	Closing the preparation of the lower limb. Demonstration of the skull.	Blood, red bone marrow. CELL and HISTOLOGICAL DEMONSTRATION
32. Pelvis, diameters of the pelvis. Statics of the pelvis.		
33. Development of the limbs		
Week 12		
34. Clinical anatomy of the joints and muscles of the lower limb (hip, knee) I	Internal and external base of the skull.	Blood vessels
35. Histology of the skin. Mammary gland.		
36. Development of the vertebral column and the trunk.		
Week 13		
37. Subinguinal hiatus, femoral canal, adductor canal, hernial canals.	Facial skeleton, mandible, orbit, nasal cavity, pterygopalatine fossa.	Skin, mammary gland.
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.)		
39. Malformations..		
Week 14		
40. Clinical anatomy of the organs of motion.	Temporomandibular joint Review.	Review of the cell biology and of the histology.
41. Clinical anatomy of the organs of motion.		
42. Development of the skull		

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

LECTURE	LAB	
	Topic	Anatomy
Week 1		
1. Histology of the lymphatic organs, thymus, tonsils, mucosal lymphatic tissues	Muscles and vessels of the face. Muscles and fasciae of the neck. Demonstration.	Lymphatic tissue I.: tonsils and thymus.
2. Histology and blood circulation of the spleen		
3. Development of the face.		
Week 2		
4. Chest cavity, clinical anatomy of the respiratory movements.	Oral cavity, teeth, tongue, isthmus faucium, soft palate. Topography of the salivary glands. Dissection of the supra- and infrahyoid muscles; pectoral and abdominal muscles	Lymphatic tissue II.: lymph node, spleen.
5. Tongue, teeth. Development of the tooth.		
6. Oral cavity, pharynx, oesophagus. Development of the foregut, malformations of the foregut.		
Week 3		
7. Larynx, anatomical base of the conicotomy and laryngoscopy.	Demonstration of the nasal cavity. Dissection of the pharynx, larynx. Pectoral and abdominal muscles.	Lip, salivary glands.
8. Trachea, lung, pleura, tracheotomy.		
9. Branchial apparatus, branchial pouches and derivatives, development of the lung.		

LECTURE	LAB	
Topic	Anatomy	Histology
Week 4		
10. Histology of the respiratory system. Respiration distress syndrome. 11. Anatomy of the heart. Cardiac wall, anulus fibrosus, cardiac valves. 12. Pericardium, topography and clinical anatomy of the heart.	Surface projection of thoracic viscera. Opening of the thoracic cavity. Mediastinum. Trachea, pleura, lung, dissection of the bronchi and segments.	Tooth. Tooth development. Tongue
Week 5		
13. Conducting system, innervation and blood supply of the heart. Anatomical base of the heart attack 14. Diaphragm. Structures passing through the diaphragm. Hernia. 15. Branchial arches and their derivatives.	Opening of the pericardium. Dissection of cardiac vessels and cardiac chambers.	Introduction to the histology of internal organs. Respiratory system I.
Week 6		
16. Abdominal wall. Hernia canals. Inguinal canal. 17. Gross anatomy of the stomach - parts, topography, peritoneal relations, blood supply. 18. Development of the veins, early development of the heart.	Mediastinum. Heart. Demonstration of the diaphragm. Dissection of the neck and chest cavity.	Respiratory system II. Conducting system of the heart.
Week 7		
19. Small intestine – gross anatomy and histology. 20. Large intestine and rectum - gross anatomy and histology. Topography of the internal hernias. 21. Development and congenital anomalies of the heart and great blood vessels.	Cervical and thoracic organs. Muscles of the chest and abdomen Review. MID-TERM TEST.	Esophagus. Stomach.
Week 8		
22. Gross anatomy of the liver, peritoneal relations, portal circulation. Porto-caval anastomosis and their clinical aspects. 23. Histology of the liver and gall bladder. 24. Fetal circulation, perinatal changes in circulation.	Surface projection and topography of abdominal viscera. Opening of the abdominal cavity. Peritoneum.	Small and large intestine. Appendix. Rectum (demonstration only).

LECTURE	LAB	
	Anatomy	Histology
Week 9		
25. Gross anatomy of the kidney (capsules, blood supply, renal hilum) and the ureter.	Hepatoduodenal ligament, coeliac trunk. Liver.	Liver, bladder
26. Histology of the kidney.		
27. Division of the embryonic body cavity. Septum transversum.		
28. Male reproductive organs -overview. Gross anatomy of the testis and its coverings. Testicular.	Superior and inferior mesenteric artery. Porto-caval anastomoses. Opening of the stomach and duodenum. Common bile duct.	Kidney, urether, urinary bladdgall er
29. Histology of the testis and the epididymis.		
30. Development of the digestive tract, development of the foregut, hindgut, the liver and the pancreas.		
Week 11		
31. Male urethra, penis, erection. Anatomical base of the endoscopy of the urethra.	Retroperitoneum, abdominal aorta and its branches. Kidney, adrenal gland, ureter, urinary bladder. Peritoneal relations of the posterior abdominal wall.	Testis, epidydimis, spermatic cord
32. Female reproductive tract - overview, histology of the ovary and the uterus. Uterine cycle.		
33. Development of the peritoneum. Clinical anatomy of the omental bursa.		
Week 12		
34. Uterus - parts, topography, blood supply.	Retroperitoneum.	Seminal vesicle, prostate. Review.
35. Pelvic diaphragm. Birth canal		
36. Pronephros, mesonephros, and metanephros.		
Week 13		
37. MID-TERM TEST.	Female reproductive organs. Pelvic organs. Blood vessels and nerves of the pelvis. Demonstration of the pelvic diaphragm.	Ovary, uterine tube. Uterus.
38. Lymphatic drainage of the head, neck, chest cavity, abdomen and pelvis		
39. Development of the urinary bladder, ureter, urethra. Congenital anomalies of the kidney and urinary bladder.		
Week 14		
40. Clinical anatomy. Image analysis I.	Male reproductive organs. Pelvic organs.	Umbilical cord. Placenta. Vagina, labium minus.
41. Clinical anatomy. Image analysis II.		
42. Migration of germ cells, sex determination, development of the gonads.		

ANATOMY, HISTOLOGY AND EMBRYOLOGY

Department of Anatomy, Histology & Embryology

Tutor: *Dr. Andrea Székely*

First Semester

Lectures: 3 hours per week

Laboratory: 6 hours per week, 4 hours Anatomy, 2 hours Histology

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, hematopoiesis
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
- Bones of the shoulder girdle and the upper extremity. Rules of the dissection (prevention of accidents). 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
- TEST. Upper extremity
- Vertebrae, ribs, sternum

Histology lab.

- Behaviour in the histology lab. Use of the microscope. Preparation of the histological specimens. Stains. Study of a solid and a hollow organs: surfaces, homogenous structure, layered structure.
- SIMPLE EPITHELIS:** 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 stainig of the fibers (skin); ground substance (umbilical cord)
- CONNECTIVE TISSUE, CELLS.** 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).

Lectures

19. Bones and ligaments of the pelvis
20. Abdominal muscles, rectus sheath
21. Diaphragm

22. Gametogenesis, fertilization
23. Implantation, germ layers, embryonic disc
24. Development and differentiation of

25. Hip joint and the muscles acting upon it
26. Knee joint and the muscles acting upon it
27. Foot
28. Neurulation. Folding of the embryo.
Fetal membranes

29. Early embryonic and placental circulation.
Structure of the placenta
The motor system
31. Muscle tissue I.
32. Muscle tissue II.
33. Herniae
34. Neuronal tissue: neurons and supporting cells derived from the neural tube
35. Neuronal tissue: neurons and supporting cells derived from the neural crest
36. Neuronal tissue: synapses, effectors, Receptors
37. Sphenoid and ethmoid bones
38. Temporal bone
39. Calvaria, base and interior of the skull

40. Facial skeleton, orbit
41. Nasal cavity, paranasal sinuses
42. Oral cavity, pterygopalatine and infratemporal fossae
43. Mandible, temporomandibular joint
44. Atlantooccipital and atlantoaxial joints.
Suboccipital muscles
45. Development of the skull. Fontanelles

Dissecting room

- Muscles of the trunk. Bones and ligaments of the pelvis.
-
- Bones of the lower extremity.
Hip joint. Dissection of the lower extremity: removal of the skin.
Fascia lata, fascia cruris, plantar aponeurosis
-
- Knee joint, joints of the foot.
Flexor muscles of the thigh and calf, muscles of the sole.
Extensor muscles of the thigh
-
- Completion of the dissection
-
- TEST. Trunk, lower extremity.
-
- Skull
-
- Skull
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- Skull
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- Skull
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- Skull
-
- TEST. Skull

Histology lab.

- BLOOD, BONE MARROW.
Blood smear, bone marrow smear.
SUPPORTING TISSUE.
Hyaline cartilage (rib); fibrous cartilage (meniscus); elastic cartilage (epiglottis).
BONE, BONE FORMATION.
Bone, cross and longitudinal sections. Enchondral ossification the mesoderm (digit); intramembranous ossification (skull).
REVIEW
-
- TEST. Epithelial, connective and calf. Peroneal muscles. and supporting tissues.
-
- PLACENTA.
UMBILICAL CORD
-
- MUSCLE TISSUE. Smooth muscles (gut); striated muscle (skeletal muscle); cardiac muscle (heart)
-
- NEURAL TISSUE. CELLS.
Multipolar neurons (spinal cord, autonomous ganglion, cerebral cortex, cerebellar cortex); pseudounipolar neurons (spinal ganglion)
NERVE FIBERS.
GLIAL CELLS.
Peripheral nerve, glial cells (spinal cord, cerebral cortex)
EFFECTORS, RECEPTORS.
Motor end plate, sensory nerve ending.
Review

ANATOMY, HISTOLOGY AND EMBRYOLOGY

Second Semester

Lectures

1. Introduction. Significance of the vascular and lymphatic organs in the medical curriculum and in the medical practice
2. Histology of the vessel wall
3. Lymphatic organs: lymph node, spleen
4. Lymphatic organs: thymus, tonsils
5. Surface structures of the heart, anulus fibrosus, myocard
6. Chambers of the heart, valves
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. Malformations.
10. Viscera, introduction. Histological structure of the solid and hollow viscera
11. Suprahyoid muscles. Muscles of facial expression. Oral cavity.
12. Muscles of mastication. Tongue
13. Salivary glands. Anatomy of the teeth
14. Development and histology of the teeth
15. Development of the face, malformations
16. Pharynx, structure of the wall, soft palate
17. Infrahyoid muscles, cervical fascia, para- and retropharyngeal space
18. Esophagus, stomach: anatomy and histology
19. Development of the foregut
20. Small intestine: anatomy and histology
21. Colon, rectum: anatomy and histology
22. Liver and biliary apparatus: anatomy
23. Liver and biliary apparatus: histology
24. Pancreas: anatomy and histology. Portal vein and tributaries
25. Development of the middle and hindgut
26. Peritoneum
27. Cartilages, joints and muscles of the larynx
28. Skeleton of the larynx, laryngeal inlet, rima glottidis
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
33. Urinary bladder: anatomy and histology. Female urethra
34. Development of the uropoetic system, malformations
35. Testis, spermiogenesis, epididymis

Dissecting room

- Heart: surface structure, vessels, myocard
- Chambers of the heart, valves
- Pericard. In situ heart dissection. Demonstration of unfixed heart.
- TEST. Heart, anatomy and embryology
- Muscles of the face (demonstration)
- Tongue, cervical organs on the visceral complex
- Esophagus, aorta
- Abdominal organs, peritoneum. Hepatoduodenal ligament, mesentery
- Unpaired branches of the abdominal aorta, tributaries of the portal vein
- Demonstration of the abdominal visceral topography in the cadaver of the second year and in unfixed cadaver. Larynx, trachea
- Pleura. Mediastinum.
- TEST. Anatomy and embryology of the digestive and respiratory systems.
- Capsules of the kidney, components of the renal hilum.
- Aorta, inferior vena cava, ureter; pelvic organs.
- Retroperitoneum

Histology lab.

- VESSELS. Elastic artery (carotid artery); middle size artery and vein, arterioles, venules, capillaries (tongue)
- LYMPHATIC ORGANS. Lymph node, spleen
- LYMPHATIC ORGANS. Thymus, palatine tonsil, lingual tonsil.
- HEART. Wall structure, conducting system.
- DIGESTIVE SYSTEM. Lip, tongue, filiforme, fungiform and vallate papillae. Foliate papilla (demonstration)
- DIGESTIVE SYSTEM. Salivary glands (parotid, submandibular, sublingual); tooth (demonstration)
- DIGESTIVE SYSTEM. Tooth development, esophagus
- DIGESTIVE SYSTEM. Stomach, cardia, pylorus
- DIGESTIVE SYSTEM. Duodenum, jejunum, ileum, colon, appendix
- DIGESTIVE SYSTEM. Liver, gallbladder, pancreas
- TEST. Lymphatic organs, vessels, heart, digestive system
- RESPIRATORY SYSTEM. Larynx, trachea, lung. Demonstration: embryonal lung
- UROPOETIC SYSTEM. Kidney, urinary bladder. Demonstration: ureter

Lectures

36. Ductus deferens, spermatic cord, seminal vesicle, prostate, male urethra: anatomy and histology
37. Penis: anatomy and histology. Male perineum
38. Ovary and uterine tube: anatomy and histology. Oogenesis.
39. Anatomy of the uterus, broad ligament
40. Histology of the uterus, menstrual cycle
41. Vagina, outer female genital organs. Female perineum
41. Development of the genital organs
42. Malformation of the gender, bisexuality
43. Separation of the body cavities. Development of the diaphragm
44. Development of the major arteries and veins. Fetal circulation

Dissecting room

- Pelvic organs.
Peritoneum in the pelvis.
- Pelvic organs, topography.
- Perineum
- Review
- TEST. Urogenital system

Histology lab.

- MALE GENITAL SYSTEM.
Testis, epididymis, spermatic cord, seminal vesicle, prostate
- MALE GENITAL SYSTEM.
- Penis.
FEMALE GENITAL SYSTEM.
Ovary, uterine tube
FEMALE GENITAL 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

Week	Lecture Wednesday, 8 ⁰⁰ -9 ⁴⁰ , NET Green Lecture Hall	Practice
1.	The cell membrane: structure and function	The light microscope in use
2.	Structure and function of the nucleus I	General view of the cell. Light and electron microscopic microtechnique.
3.	Structure and function of the nucleus II	Cell nucleus. Cyto(histo)chemistry
4.	Endoplasmic reticulum and the ribosomes	Endoplasmic reticulum
5.	Golgi complex, secretion and protein transport	Golgi complex
6.	Lysosomes, endocytosis, vesicular transport	Midterm (written)
7.	Structure and function of mitochondria and peroxisomes	Secretion. Immunohistochemistry
8.	The cytoskeleton,	Endocytosis. Cellular digestion. Enzyme-histochemistry
9.	Cellular movement	Cell and tissue culture
10.	Cell adhesion, cell junctions	Store and supply of energy. Mitochondria. Peroxisome.
11.	Extracellular regulation of cells, signal transduction I	Cytoskeleton and cellular movement
12.	The cell cycle and its regulation I	Cell surface differentiation, ultrastructure of cellular junctions
13.	The cell cycle and its regulation II	Midterm (written)
14.	Cellular aging and programmed cell death (apoptosis)	Cell death (necrosis and apoptosis)

MEDICAL BIOLOGY II. Second Semester

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

BASES OF BIOSTATISTICS AND INFORMATICS

Tutor: *Dr. István Voszka*

Lecture (1.5 hours/week)

1. Introduction
2. Role of „change” in theory and in practice
3. Descriptive statistics
4. Elements of probability calculus
5. Probability calculus and statistics
6. Principles of hypothesis testing
7. Parametric and non-parametric tests for comparison of two groups
8. Comparison of more groups, analysis of variance
9. Examination of dependence relations of variables
10. Evaluation of diagnostic tests
11. Human body as signal source, signal processing
12. Concept of information, databases
13. Clinical databases
14. Evidence based medicine, role of mathematical logics in diagnostics

Practice (2 hours/week)

- Graphical representation of functions
The most important functions and their representation by computer
Use of excel tables
Mean, standard deviation, variance, standard error
Descriptive statistics
Hypothesis testing 1.: t-tests
Hypothesis testing 2.: non-parametric tests
- Hypothesis testing 3.: Mann-Whitney U-test
Analysis of variance
- Categorical variables, contingency table
Regression analysis
- Calculation of correlation
Bioinformatical databases
Publication databases, clinical databases

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

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

MEDICAL PHYSICS AND STATISTICS

Second Semester

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

Week	Lecture (2.5 hours per week)	Laboratory (2.5 hours per week)
9	Summary of medical imaging methods (CT, SPECT, PET, endoscopy, thermography)	Statistics II. (Statistical inferences)
10	Basic concepts of Thermodynamics, First law	Flow of fluids. Electric model of vascular circulation
11	General description of transport phenomena, Onsager`s equation, examples	Electrocardiography
12	Diffusion; transport across membrane, resting potential	Diffusion
13	Action potential, properties, interpretation	Sensory function
14	General characteristics of sensory function, hearing as example	Repetition

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 2. Acid-base theories. Acidic and basic ionization Constants (pK_a and pK_b), conductance of strong and weak electrolytes. pH of weak acids and bases. Acid-base indicators. Ionization of polyprotic acids.
- Week 3. Anion- and cationhydrolysis. Calculation of pH of salts. Conditions for precipitation of salt solutions. Solubility rules. Buffers. Calculation of the pH of buffer solutions. Henderson-Hasselbalch equation. Buffer capacity.
- Week 4. 27 September: The most important physiological buffer systems. The bicarbonate/carbonic acid system. Solutions. Gas mixtures. Henry's law, Bunsen coefficient. Decompression sickness. Solubility of CO_2 in blood serum.
- Week 5. Enthalpy change of the solution process and its relation to the solubility. Raoult's law. Laws of dilute solutions. Chemical thermodynamics. First law of thermodynamics in chemistry. Enthalpy change of physical processes. Determination of reaction heat from combustion heat data. Bond energy.
- Week 6. Second law of thermodynamics in chemistry. Entropy content and entropy change. Gibbs free energy (or free enthalpy). Third law of thermodynamics. Free enthalpy changes in biochemistry and in redox reactions. Basics of chemical kinetics. Equilibrium constant. The thermodynamical and kinetic control of reactions.
- Week 7. Catalysis. Activation energy. Arrhenius equation. Electrochemistry. Electrode potential, cation and anion electrodes. The hydrogen electrode. The electromotive force of voltaic (galvanic) cells.
- Week 8. Electromotive force and the Gibbs free energy change of a reaction. The Nernst equation. Concentration cells. Direction of a redox reaction. Non-polarizable electrodes.
- Week 9. Complex ions and coordination compounds. Central ions and ligands. IUPAC nomenclature of coordination complexes. Stability exponent. Some biomedically important coordination complexes and chelating ligands.

- Week 10. Organic chemistry. Introduction, general structure of organic compounds. Isomerism, constitution, configuration, conformation. Stereochemistry, geometric isomerism, chirality, prochirality.
- Week 11. The most important groups of organic compounds. Alkanes, structures, reactions. Alkenes, their structures, properties, reactions. Lecturer: Dr. Pál Bauer
- Week 12. Aromatic compounds. Aromatic properties. Reactions of the aromatic ring. Organic hydroxy compounds. Classification, structures, reactions. Formation of ethers, esters.
- Week 13. Aldehydes, ketones. Reactions, nucleophilic addition. Organic acids, classification, their properties, reactions. Lecturer: Dr. Attila Ambrus
- Week 14. Organic compounds containing nitrogen, amines, amides. Structures, reactions. Halogenated compounds. Organic compounds containing sulfur. Classification, structures, reactions.

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

Lab coordinator **Dr. Gergely Keszler**

Lab Staff **Mrs Mária Kövecses**
Mrs Márta Stroe
Mrs Kinga Pelczer

Laboratory programs are on the 1st floor, Department of Medical Chemistry, Molecular Biology and Pathobiochemistry, "D" passage.

MEDICAL BIOCHEMISTRY, MOLECULAR AND CELL BIOLOGY I.

Second (Spring) Semester

Week	Topics of the lectures
1	Amino acids. Amino acids as electrolytes. Structure and chirality of amino acids. Reactions of amino acids.
	Proteins. The peptide bond. Structure levels in proteins. Primary structure of proteins.
2	Steric structure of globular proteins. Conformation of proteins. Purification of proteins.
	Structural characteristics of fibrous proteins. Collagen.
3	Myoglobin and hemoglobin.
	Enzymes. Enzymes as proteins, enzyme activity. Isoenzymes. Coenzymes.
4	Enzyme kinetics. Mechanism of action of some important enzymes (serine proteases).
	Reversible and irreversible inhibitions of enzymes. Regulation of enzyme activity. Allosteric enzymes.
5	Compartmentation in the eukaryotic cells. Membrane structure. Intracellular membranes. Cell nucleus.
	Movement of cellular organelles. Cytoskeleton, microfilaments, microtubuli, actomyosin. Mechanism of vesicular transport.
6	Metabolism and transport, the principle of metabolom. Metabolic profile of various organelles (endoplasmic retikulum, peroxisomes, lysosomes, mitochondria).
	Nucleic acids – structure and function. Bases, nucleosides, nucleotides, DNA structure, DNA denaturation, hybridization.
7	DNA replication. Replication in procaryotes, leading and lagging strand. Okazaki fragments. DNA-dependent DNA polymerases. DNA ligase. Telomerase. topoizomerases. Replication in eucaryotes. Structure of eucaryotic chromosomes. Mitochondrial DNA. Nucleosome structure.
	DNA repair. Types of DNA damages; mutations, frame shift, nonsense mutations, mismatch repair. Coordination of repair and replication.
8	Transcription in procaryotes. Structure of RNA; t-RNA, r-RNA, m-RNA, differences between the procaryotic and eucaryotic genomes. Transcription complexes, initiation, elongation, termination in procaryotes.
	Transcription in eucaryotes, RNA polymerases, promoters, enhancers silencers. Processing of mRNA, mechanism of splicing. Alternative splicing.
9	The genetic code. Activation of tRNA. Mechanism of translation, initiation, elongation, termination. Antibiotics. Posttranslation modifications.
	Protein transport into intracellular compartments. Proteolysis.
10	Regulation of gene expression in procaryotes. Operon model. Positive and negative regulation in the lac operon.
	Regulation of gene expression in procaryotes at transcrytikon level. Role of chromatine structure. DNS metilation. Enhancer sequences.
11	Post-transcriptional regulation in eucaryotes. Regulation by the lifetime of mRNA. Translational regulation.
	Cell cycle in eucaryotes. Cyclins and cyclin dependent protein kinases. Proteases in the cell cycle. Regulation of G0/G1, G1/S and G2/M transitions. Integration of the repair into the cell cycle.
12	The role of apoptosis in the cellular homeostasis. The apoptotic cell. Biochemical processes during apoptosis: role of mitochondria, activation of caspases, degradation of DNA.
	Molecular biology of malignant tumors. Protooncogenes and cellular oncogenes. Tumor induction by retroviruses. Possible mechanisms of the activation of oncogenes.
13	Anti-oncogens and their roles. Oncogenic effect of DNA viruses. Relationship between cell cycle and oncogenesis.
	Principles of gene technology. Cloning, genomic and cDNA libraries. Blotting techniques and their utilizations. PCR and its utilization in molecular biology. Vectors and endonucleases in the gene manipulation. Synthesis of recombinant proteins.
14	Expression of transgenes in mammalian cells. Transgenic, „knock out“ animals in medical research. The Human Genome Project and its results. The DNA chip. Human gene therapy. Utilization of informatcal methods in biological and medical research.

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)

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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

code:

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

1. Lecture. Introduction. Communication difficulties and possible solutions in the everyday medical practice.
2. Lecture. Suggestive communication in medical practice.
3. Lecture. The specialties of age in medical communication: communication with ill children and elderly people.
- 4: Lecture. Compliance in medical practice. Convincing strategies.

5. Lecture. Communicating bad news (theory).
6. Lecture. Treating complaints; preventive strategies in aggression and communication with aggressive patients.
7. Lecture. Telemedicine.
8. Seminar. Communication in everyday life and in the medical practice. The role of non-verbal and metacommunicative signs in communication.
9. Seminar. The active listening. Communication aspects in empathy.
10. Seminar. Patient information, patient education.
11. Seminar. Creating and maintaining compliance.
12. Seminar. Communicating bad news (practice). How to recognize communication signs of suicide?
13. Seminar. Communication with troubled patients. Communication about sexual problems.
14. Seminar. Cultural aspects in medical communication. Review.

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 exam

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.
4. Doctor-patient consultation.
5. Communication issues of patient information.
6. Patient education and shared decision making.
7. Convincing strategies in medical practice: learning theories and cognitive models;
8. Convincing strategies in medical practice: the role of arguments, behavior change model.
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.
9. Communicating bad news.
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:

- 1 Pilling János (szerk.): Orvosi kommunikáció. Medicina Könyvkiadó, Budapest, 2011.

Recommended text books:

- 1 Tate, P. (2009): The doctor's communication handbook. Radcliffe Publishing, 6th edition
- 2 Hall, J.A.; Roter, D. (2006): Doctors talking with patients / Patients talking with doctors. Praeger; 2nd edition
- 3 Myerscough, Ph. R.; Ford, M. J. (1996): Talking with patients: keys to good communication. Oxford University Press
- 4 Williams, D. (1997): Communication skills in practice: a practical guide for health professionals. Jessica Kingsley Publishers.

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.
- 5. (3 hours)** **Exam:** theoretical and practical

FIRST AID

Tutor: **Dr. Erzsébet Márton**

Topics

Principles of first aid. Recognition of an emergency. Assessment of the scene. Dangerous scene. Safety measurements on the scene. Call for an ambulance. Emotional viewpoints of managing emergencies.

Assessment of the patient. Responsiveness – unresponsiveness. Assessment of the responsive patient: complaints, signs for the severe condition. Positioning of the patient in specific conditions. The unconscious patient. Airway management. Assessment of the vital signs. Recovery position. Heart attack. Sudden death. Chain of survival. Assessment of vital signs.

BLS (Basic Life Support)

BLS

AED (Automated External Defibrillator). PAD (Public Access Defibrillation)

BLS + AED (management of situations)
BLS + AED (Management of situations)
Chocking. Drowning. Electrocutation.
Injuries. Extrication of the patient: Rautek maneuvers. Helmet removal. Mobilization and immobilization of injured patients.
Bleeding control. Bandages. Burns. Shock.
Fractures, dislocation, sprain. Slings.
Stroke. Convulsions. Diabetes mellitus: Hypoglycaemia. Shortness of breath. BLS
Poisoning. Drugs. Drunkenness.
BLS

Note: Participation at 75% of practices is necessary. Compensation of absences is possible in subsequent practices.
Development in learning skills will be controlled all the time during the practices in the semester.
Mode of certifying absences: oral – referring to practices
Requirements: The student should be able to recognize emergencies, and call for help start with BLS + AED provide airway management in unconscious patients provide first aid for patients complaining for chest-pain, shortness of breath, signs for hypoglycaemia and having suffered from fainting, shock condition, convulsion, injuries.
The performance of the above mentioned requirements at the last practice will be evaluated with “accepted” or “not accepted”.

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. Auxilliary 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*

STUDY PROGRAMME

Second Year

3rd semester						
Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOKANT003_3A ¹ AOKHUM004_3A ²	Anatomy, Cell, Histology and Embryology III.	3	4	7	semi-final	Anatomy, Cell, Histology and Embryology II., Biochemistry, Molecular and Cell Biology I.
AOKKIK227_1A	Medical Physiology I.	6	5	11	semi-final	Anatomy, Cell, Histology and Embryology II, Biochemistry, Molecular and Cell Biology I., Medical Biophysics
AOKOBIO10_2A	Biochemistry, Molecular and Cell Biology II.	3	3	6	semi-final	Biochemistry, Molecular and Cell Biology I.
AOKLEK228_3A	Hungarian Medical Terminology III.	–	4	2	pract. mark	Hungarian Medical Terminology II.
AOKTSI009_3A	Physical Education III.	–	1	–	signature	–
Total Number of Credit Points from Compulsory Subjects				26		
Obligatory elective subjects						
AOVCSA249_1A	Introduction to Clinical Medicine	–	2	2	pract. mark	Medical Profession
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 3 rd 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

4 th semester						
Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOKANT003_4A ¹ AOKHUM004_4A ²	Anatomy, Cell, Histology and Embryology/IV.	1	2	3	final#	Anatomy, Cell, Histology and Embryology III.
AOKKIK227_2A	Medical Physiology II.	6	5	11	final#	Anatomy, Cell, Histology and Embryology II., Medical Physiology I.
AOKOBIO10_3A	Biochemistry, Molecular and Cell Biology III.	3	3	6	final#	Biochemistry, Molecular and Cell Biology II.
AOKBL1017_1A	Internal medicine - propedeutics I.	1	2	3	semi-final	Anatomy, Cell, Histology and Embryology II., Medical Physiology I., Medical Communication
AOKLEK228_4A	Hungarian Medical Terminology IV.	-	4	2	pract. mark	Hungarian Medical Terminology III.
AOKTSI009_4A	Physical Education IV.	-	1	0	signature	-
AOKNSG014_1A	Compulsory Nursing Practice (in summer)	-	188 hours workload	-	signature	-
Total Number of Credit Points from Compulsory Subjects				25		
Obligatory elective subjects						
AOVANT095_1A	Anatomy of diagnostic imaging	2	-	2	pract. mark	Anatomy, Cell, Histology and Embryology III.
AOVHUM097_1A	Clinical anatomy - propedeutics	2	-	2	pract. mark	Anatomy, Cell, Histology and Embryology III.
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 3 rd 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

The grade influences the qualification of the Diploma

LIST OF TEXTBOOKS

- 1 Devlin, T.M: Textbook of Biochemistry with Clinical Correlations. 6th ed. J.Wiley and Sons. 2006. ISBN 0-470-03853-5 (paper and online version)
- 2 Guyton-Hall: Textbook of Medical Physiology. W.B. Saunders Company. ISBN 0-7216-5944-6.
- 3 Cockerham, William C.: Medical Sociology. Prentice Hall, Upper Saddle River, 2006.

Recommended textbooks:

- 1 Principles of Medical Physiology. Ed. Fonyo A. Bp. Medicina Publ. House, 2001. ISBN 963 242 726 2
- 2 Ganong: Review of Medical Physiology. Lange
- 3 Berne-Levy-Koeppen-Stanton: Physiology. 4th ed. Mosby
- 4 Monos E: Physiology of the Venous systems. Bp. 1999.
- 5 Monos E: Hemodynamics: Biomechanics of the Blood Circulation. Semmelweis Univ. KODK. Bp. 2002.
- 6 Lodish et al.: Molecular Cell Biology. 1995. 3rd ed. Scientific American Books Inc.
- 7 Murray, Robert K-Granner, Daryl K-Mayes, Peter A-Rodwell, Victor W: Harper's Illustrated Biochemistry. 26th ed. McGraw-Hill. ISBN 0-07-138901-6 (online version: www.lib.sote.hu)
- 8 Biochemistry Laboratory Manual. Ed. Gy. Szabados. Bp. Semmelweis Univ.

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
3. Development and anatomy of the diencephalon.
4. Development and anatomy of the brain stem and cerebellum.
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: mesecephalon autonomous reflex arch, spinal pathways
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. Structure 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
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 of 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.
Brain stem, fourth ventricle, cerebellum

Cross sections of the brain stem.
Demonstration: spinal cord

Coronal and horizontal sections Cerebellum, cerebral cortex

Test. Anatomy of the brain and the spinal cord; nuclei, pathways (tracts), embryology. Regio (r.) frontalis, r. infraorbitalis et buccalis,

R. frontalis, r. infraorbitalis et buccalis, r. Supraclavicularis, r. Axillaris
R. parotideomasseterica, r. mediana colli, r. infraclavicularis, r. Deltoida hypoglossal nerves
R. parotideomasseterica, r. mediana colli, r. infraclavicularis, r. Deltoida.
Dissection of the eye

R. submandibularis, trigonum caroticum, fossa scalenotrachealis. Demonstration: middle and inner ear

Histology lab.

–

Spinal cord, spinal ganglion, medulla oblongata,

Lectures	Dissecting room	Histology lab.
30. Protective and lacrimal apparatus of the eye		
31. Optic nerve, visual pathway, visual cortex. caroticum, fossa scalenotrachealis.	R. submandibularis, trigonum	Development of the eye
32. Outer ear, tympanic cavity, auditory ossicles auditory tube	Demonstration: middle and inner ear	
33. Bony and membranous labyrinth		
34. Vestibular system	Finishing the dissection of the regions	
35. Organ of Corti	Test. Organs of special senses, regions of the head and the neck, cranial nerves	
36. Auditory pathway, auditory cortex. Development of the auditory and vestibular systems	In situ dissection of the brain	Endocrine organs. Pituitary, pineal gland, thyroid gland, parathyroid gland
37. Limbic system		
38. Hypothalamo-hypophyseal systems		
39. Endocrine organs: pituitary, pineal gland	In situ dissection of the brain.	Endocrine organs. Adrenal gland, pancreas, testis, ovary, placenta
40. Endocrine organs: thyroid gland, parathyroid, adrenal gland	Tympanic cavity, inner ear	
41. Parasympathetic nervous system		
42. Sympathetic nervous system		
43. Enteral nervous system	In situ dissection of the brain	Skin. Palmar (non-hairy) skin, hairy skin. Demonstration: axillary skin
44. Skin and appendages I.		
45. Skin and appendages II., mammary gland		

ANATOMY, HISTOLOGY AND EMBRYOLOGY

Second Semester

Lectures	Dissecting room	Histology lab.
Topography of the upper extremity, clinical correlations	Regio (r.) nuchae. r. dorsalis scapulae, r. glutea, r. cubiti post., r. carpi dors., r. poplitea, r. Plantaris. Dissection of the back	
Topography of the lower extremity (clinical correlates), mechanism of walking	R. nuchae, r. dorsalis scapulae, r. Glutea, r. cubiti post., r. carpi dors., r. Poplitea, r. plantaris. Dissection of the back	
Surface- and sectional anatomy I. Head	R. brachii post., r. antebrachii post. r. dorsalis manus, r. femoris post., r. cruris post., retromalleolar regions	Review I.
Surface- and sectional anatomy II. Head	R. brachii post., r. antebrachii post., r. dorsalis manus, r. femoris post., r. cruris post., retromalleolar regions	
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	
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	
Surface- and sectional anatomy V. Abdominal cavity I.	R. brachii ant., r. antebrachii ant., r. Subinguinalis, r. femoris ant., r. cruris ant. Projection of the thoracic organs into the anterior thoracic wall	Review II.
Surface- and sectional anatomy VI.	R. brachii ant., r. antebrachii ant.,	

Lectures	Dissecting room	Histology lab.
Abdominal cavity II.	r. subinguinalis, r. femoris ant., r. cruris ant. Dissection of the organs in the thorac cavity Projection of the abdominal organs to the anterior abdominal wall. Dissection of the abdominal organs	
Surface- and sectional anatomy VII. Male pelvic organs and perineum	Mediastinum, hilum of the lung. Celiac trunk, superior and inferior mesenteric arteries portal vein	Review III.
Surface- and sectional anatomy VIII. Female pelvic organs and perineum	Mediastinum, hilum of the lung. Celiac trunk, superior and inferior mesenteric arteries portal vein	
Surface- and sectional anatomy IX. Skull (brain)	TEST. Ventral regions, thoracic and abdominal cavities. Pelvic organs, internal iliac artery, pelvic venous plexus. Retroperitoneum	
Intracranial compartments	Pelvic organs, internal iliac artery, pelvic venous plexus. Retroperitoneum Orbit, tympanic cavity. Perineum	Review IV.
Presentation of the research activity of the Department of Anatomy Review of the embryology: circulatory and digestive organs Review of the embryology: respiratory and urogenital organs	Orbit, tympanic cavity, nasal cavity, pharynx Perineum. TEST. Pelvic organs, perineum	
Semester examination (final)		

ANATOMY, HISTOLOGY AND EMBRYOLOGY

Third Semester

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

Subject: Anatomy, histology and embryology of the **central and the peripheral nervous system**. Blood supply and innervation of the trunk and limbs. Histology and development of the **endocrine organs**. Anatomy, histology and embryology of the **sensory organs**. Visual pathway, pathway of the pupillary light reflex. Auditory and vestibular pathway. Gustatory apparatus. Olfactory apparatus.

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

LECTURE	LAB	
	Topic	Anatomy
1. Nervous system - Introduction. 2. Meninges, ventricles, liquor. 3. Cytology of neuron. Classification of neurons. Glia.	Spinal cord, its blood supply. Meninges, sinuses, cisternae.	
4. Nerve fibers. Degeneration, regeneration of nerve fibres. 5. Interneuronal synapses, chemical neurotransmission. 6. Peripheral sensory receptors and peripheral effector nerve endings.	Surface of the brain. Brodman areas. Blood supply of the brain. Median-sagittal section of the brain.	
7. Structural organization of the spinal cord. Gray matter. 8. White matter of the spinal cord. Pathways of the spinal cord. 9. Spinal reflexes.	Lateral ventricle, 3 rd ventricle, oblique section of the brain, coronal sections of the brain.	
10. Internal organization of the brain stem. 11. Nuclei of cranial nerves. 12. Diencephalon.	Brain stem, cerebellum, IV th ventricle. Review.	
13. Thalamus. 14. Hypothalamus, hypothalamo-hypophyseal system. 15. Histology of the hypophysis. Portal circulation.	MID-TERM TEST Base of the skull, cranial nerves. Cavernous sinus. Brain <i>in situ</i> .	
16. Adrenal gland, thyroid and parathyroid gland, pineal gland. 17. The dorsomedial (medial lemniscus) sensory system. Somatosensory cortex. 18. The ventrolateral (spinothalamic) sensory system.	Cranial nerves. Spinal cord <i>in situ</i> .	Nervous tissue. I. Spinal cord, spinal ganglion, autonomic ganglion.
19. Gustatory and olfactory apparatus. 20. Limbic system. 21. Histology of cerebral cortex.	Spinal cord <i>in situ</i> . Nerves and blood vessels of the upper limb. Brachial plexus.	Nervous tissue. II. Peripheral nerve. Nerve endings.
22. Motor unit, lower and upper motoneuron, somatomotor cortex. 23. Pyramidal tract. 24. Basal ganglia and their neural connections.	Nerves and blood vessels of the upper and lower limb. Brachial plexus.	Cerebral cortex. Cerebellar cortex. Substantia nigra. Choroid plexus.
25. Histology of cerebellar cortex. 26. Neural connections of the cerebellum. 27. Reticular formation and its neural connections.	Nerves and blood vessels of the trunk and lower limb.	Endocrine organs. I. Hypothalamus. Hypophysis. Pineal gland.
28. Autonomic nervous system. I. Thoracolumbar sympathetic system. 29. Craniosacral parasympathetic system. 30. Development of the nervous system, I. Early stage of development, differentiation of the neural tube.	Review (internal organization of the central nervous system, peripheral nerves).	Endocrine organs. II. Thyroid and parathyroid gland. Adrenal gland. Pancreas.

LECTURE	LAB	
	Anatomy	Histology
31. Development of the nervous system, II. Histogenesis, craniocaudal and dorsoventral differentiation.	MID-TERM TEST Eye, orbit dissection.	
32. Development of the nervous system, III. Development of the brain stem and cerebellum.		
33. Development of the nervous system, IV. Development of the telencephalon, basal ganglia, choroid plexus		
34. Development of the nervous system, V. Neural crest and its derivatives.	Eye, orbit dissection.	
35. Structure of the eye. Fibrous and vascular envelopes of the eye. Refractory media of the eye.		
36. Development of the eye.		
37. Structure of the retina. Morphology of colour vision.	Outer ear. Tympanic cavity.	Eye, optic nerve, eye lid, lacrimal gland.
38. Visual pathway, pupillary reflex. Accommodation.		
39. Outer eye muscles. Accessory organs of the eye. Secretion, drainage and absorption of the tear.		
40. Clinical anatomy.	Inner ear.	Auricle. Auditory and vestibular organ.
41. Clinical anatomy.		
42. Auditory apparatus, outer ear, middle ear	Nervous system - review.	Review.
43. Inner ear. Vestibular apparatus and its neural connections.		
44. Organ of Corti. Auditory pathway.		
45. Development of the auditory apparatus.		

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

Topic	LAB	
	Anatomy	Histology
1. Regional and sectional anatomy of the upper limb.	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.	
2. Regional and sectional anatomy of the lower limb.	Dorsal regions of the head, neck, chest wall and limbs. Cross section of the thigh and leg. Bones and joints of the lower limb. Medial and lateral malleolar regions. Anastomoses between deep and superficial veins. Topography of cistern puncture. <i>In situ</i> dissection of the brain.	
3. Vertebral column and its function.	Dorsal regions of the head, neck, chest wall and limbs. <i>In situ</i> dissection of the brain. <i>In situ</i> dissection of the orbit. Cross section of the neck.	
4. Calvaria, face, mimetic muscles - blood supply and innervation.	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.	
5. Orbit and pterygopalatine fossa.	Ventral regions of the neck, limbs. Surface projection of thoracic viscera. Thoracic cavity <i>in situ</i> . Pleura, pericardium, cardiac valves. Topography of thoracocentesis and cardiac puncture.	
6. Floor of the oral cavity, topography of the salivary glands.	Ventral regions of the neck, head and limbs. Topography of the stellate ganglion. Mediastinum. Surface projection of abdominal viscera. Abdominal cavity <i>in situ</i> .	
7. Topography of the neck.	Ventral regions of the head, neck, limbs. Lung, opening of the pericardium. Blood vessels of the heart.	
8. Gross anatomy of the mammary gland and armpit.	Ventral regions of the head, neck, limbs. Posterior mediastinum. Removal of intestines. Retroperitoneum. Uropoietic system.	
9. Mediastinum.	Abdominal aorta. Lumbar plexus. Retroperitoneum. Ventral regions of the head, neck, limbs. External and internal male reproductive organs.	Nervous system. Sensory organs. Endocrine glands.
10. Posterior abdominal wall, retroperitoneum.	External and internal female reproductive organs. Perineum.	Lymphatic tissue. Blood vessels, bone marrow.
11. Pelvis, female perineum.	External genitalia, perineum. Pelvis, internal iliac artery, sacral plexus.	Digestive tract. I.
12. Topography and CT of the abdomen.	Topography of the rectum. Pelvis, perineum.	Digestive tract. II.
13. Clinical anatomy.	Brain, spinal cord. Review of dissected regions.	Uropoietic system. Male reproductive organs.
14. Clinical anatomy.	Review.	Female reproductive organs. Placenta, umbilical cord.
15. Research activity of the Institute.	Review.	Practical exam.

MEDICAL PHYSIOLOGY

Institute of Human Physiology and Clinical Experimental Research

Tutor: *Dr. Tamás Ivanics*

First Semester

Week **Lecture** (6 hours per week)

- 1 Historic overview, concepts of physiological control, homeostasis. Basics in cell physiology. Cell-to-cell interactions. Cellular membranes and transmembrane transport. Membrane receptors. Ionic equilibria and resting membrane potentials, ion channels and gates. Action potentials, synaptic transmission.
- 2 Muscle. Contractile mechanism. Skeletal, cardiac, and smooth muscles. Biomechanics, electrical properties, metabolism.
- 3 Physiology of blood circulation. Introduction. Functional organization of the cardiovascular system, basic principles and conditions of its healthy functioning. Dynamics of blood and lymph flow: Physiological functions of the blood vessels, their significance in the healthy functioning of the organism. Principles of hemodynamics. Rheology of blood.
- 4 Biomechanical properties of the vessel wall. Significance of vessel geometry. Signal transduction in the blood vessels. Pressure & flow in large vessels. Circulatory resistance. Measurement of pressure, flow and cardiac output. Factors influencing blood pressure. Venous circulation.
- 5 Cardiac functions: Biomechanical basis of cardiac functions. Cardiac pump. Signal transduction in the cardiomyocytes.
- 6 Cardiac cycle. Electrical activity of the heart. Transmembrane potentials. Conduction in cardiac fibers, cardiac excitability, cardiac rhythmicity, electrocardiography, echocardiography.
- 7 Microcirculation. Tissue oxygenization. Fluid movement across the capillary wall. Control of lymphatic flow and interstitial fluid volume. Cardiovascular control mechanisms: Local control mechanisms.
- 8 Cardiovascular control mechanisms: Systemic control mechanisms. Control of cardiac output.
- 9 Circulation through organs and special regions: Coronary circulation. Circulation of blood and cerebrospinal fluid in the brain. The blood-brain barrier. Regulation of cerebral circulation. Brain metabolism & oxygen requirements.
- 10 Splanchnic circulation. Circulation through skeletal muscles. Circulation of the skin. Thermoregulation. Placental & fetal circulation. Physiological aspects of circulatory shock.
- 11 Pulmonary circulation. Structure and function of the respiratory system, pulmonary mechanics. Gas transport between the lungs and the tissues. Regulation of RBC count - erythropoietin, acclimatization.
- 12 Regulation of respiration: Neural and chemical control of respiration. Adaptation of cardiorespiratory system and skeletal muscle to physical exercise.
- 13 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.
- 14 Liver & biliary system. Digestion & Absorption. Carbohydrates, lipids and proteins. Absorption of water and electrolytes. Absorption of vitamins and minerals.

Practice (5 hours weekly)

Introduction. Measurement and processing of data:

Simulation type experiments

„Biopac™ 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

Week Lecture (6 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.
- 2 Tubular functions. Mechanisms adjusting the composition of urine. Fluid compartments. Regulation of extracellular fluid composition and volume. Role of the kidneys in the control of blood pressure. Micturition.
- 3 Regulation of acid-base balance. General principles of endocrine physiology. The pituitary gland. Posterior lobe hormones. Anterior lobe hormones. Growth hormone and physiology of growth.
- 4 The adrenal cortex. Blood supply and its control. Innervation. Structure and biosynthesis of adrenocortical hormones. Effects of glucocorticoids and control of their secretion. Effects of mineralocorticoids and control of their secretion. Effects of adrenal androgens and estrogens. Endocrine regulation of calcium metabolism and the physiology of bone.
- 5 The thyroid gland. Formation and secretion of thyroid hormones. Control of synthesis and secretion. Transport and metabolism of thyroid hormones. Effects of thyroid hormones. Clinical correlates. Endocrine functions of the pancreas and the regulation of carbohydrate metabolism. Hormonal control of intermediary metabolism.
- 6 The reproductive glands. Development and function of the reproductive system. The female reproductive system. The menstrual cycle. Ovarian hormones. Control of ovarian function. Pregnancy. Lactation. The male reproductive system. Gametogenesis. Endocrine function of the testes. Control of testicular function.

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 of motor function. Monosynaptic reflexes. Polysynaptic reflexes. Spinal reflexes.
- 9 Ascending and descending pathways. Spinal and supraspinal control of muscular tone. Effects of lesions. Spinal shock. Control of posture and movement. The vestibular system. Basal ganglia. Cerebellum. Lateral and medial descending pathways involved in motor control (spinal integration, medullary, midbrain and cortical components).
- 10 The visual system. The image-forming mechanism. The photoreceptor mechanism: Genesis of action potentials. Responses in the visual pathways and cortex. Color vision. Eye movements.
- 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 functions. Motivation. Emotion. Sexual, maternal and feeding behavior. Fear and rage.
- 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

1. Absorption of carbohydrates. Glucose carriers and transporters.
2. Glycolysis; entry of other hexoses into glycolysis
3. Pyruvate dehydrogenase. Citric acid cycle. Absorption of lipids. Oxidation of fatty acids. Metabolism of ketone bodies. Digestion of proteins. NADH and amino acid metabolism
4. Oxidative phosphorylation.
5. Gluconeogenesis, gluconeogenesis in starvation
6. Regulation of blood sugar level. Glycogen mobilization in liver and muscle. Glucagon. Secretion of insulin, insulin receptors, influence of insulin on various tissues
7. Biochemistry of diabetes mellitus, type I and II diabetes.
8. Synthesis of fatty acids. Biosynthesis of triacylglycerols and phospholipids. Lipid transport.
9. Metabolism and transport of cholesterol. Bile acids.
10. Degradation of proteins, catabolism of amino acids I.
11. Catabolism of amino acids II.. Metabolism of porphyrines
12. Structure and function of nucleotides. Metabolism of nucleotides.
13. Metabolism of red blood cells. Metabolism of striated and heart muscle. The role of SREBP, PPAR-alpha and beta in muscle metabolism.
14. 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

1. Safety rules for work in the laboratory. & Amidolytic activity of trypsin.
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

1. Na^+ , K^+ ATP-ase. Structure and isoforms of Na^+ K^+ ATP-ase.
2. Cholinergic and noradrenergic neurotransmission. Molecular mechanism of exocytosis.
3. Adrenergic receptors, dopaminergic, serotonergic and glutamatergic neurotransmission, NO, its regulatory role
4. Metabolism of brain
5. General properties of ion channels, K^+ channels, voltage-gated, Ca^{2+} -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.
9. Pathobiochemistry of atherothrombosis and atherosclerosis. Biotransformation I.
10. Biotransformation II
11. Hypothalamus, pituitary gland and endocrine system. Thyroid hormones. Growth factors, growth factor receptors. Cytokines
12. Steroid hormones of adrenal cortex I.
13. Steroid hormones of adrenal cortex II, sex steroids
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)
4. Metabolism of exercise (consultation)
5. Determination of blood sugar level, glycosylated haemoglobin (laboratory lesson)
6. Cystic fibrosis (Consultation)
7. Na^+ , K^+ – ATP-ase activity (laboratory lesson)
8. Cell adhesion molecules and signal transduction (consultation)
9. Biochemistry of haemostasis (laboratory lesson)
10. Haemostatic abnormalities (Consultation)
11. Microsomal drug metabolism (laboratory lesson)
12. Extracellular matrix – wound healing and tumor angiogenesis
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

AOMAGSZO_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:

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

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 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:

1. Graham Scambler (2008): Sociology as Applied to Medicine. Saunders, London
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 Torzsa 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 \longleftrightarrow 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.

PRE-CLINICAL MODULE



*Faculty of Medicine
3rd year*

STUDY PROGRAMME

Third year

5 th semester						
Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOKKOR_1A	Pathophysiology and Clinical Lab. Diagnostics I.	2,5	2,5	5	semi-final	Anatomy, Histology and Embryology IV., Medical Physiology II., Medical Biochemistry and Molecular Biology II.
AOMIKMIK_1A	Medical Microbiology I.	2	3	5	semi-final	Anatomy, Histology and Embryology IV., Medical Physiology II., Medical Biochemistry and Molecular Biology II.
AOPTKPAT11A ¹ AOPATPAT21A ²	Pathology and Histopathology I.	3	4	7	semi-final	Anatomy, Histology and Embryology IV., Medical Physiology II., Medical Biochemistry and Molecular Biology II.
AOKGEN025_1A	Immunology	2	2	4	semi-final#	Medical Biochemistry and Molecular Biology II.
AOBL1BEL11A ³ AOBL2BEL21A ⁴ AOBL3BEL31A ⁵	Internal Medicine I.	3	4	7	semi-final	basic module
AOMAGPSZ_1A	Medical Psychology I.	10/sem.	18/sem.	1	pract. mark	basic module
AOKLEK228_5A	Hungarian Medical Terminology V.	-	4	2	final#	Hungarian Medical Terminology IV.
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
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¹1st Department of Pathology
²2nd Department of Pathology
³1st Department of Internal Medicine
⁴2nd Department of Internal Medicine
⁵3rd Department of Internal Medicine

Third year

6 th semester						
Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOKORKOR_2A	Pathophysiology and Clinical Lab. Diagnostics II.	2,5	2,5	5	final#	Pathophysiology and Clinical Lab. Diagnostics I., Immunology
AOMIKMIK_2A	Medical Microbiology II.	2	3	5	final#	Medical Microbiology I., Immunology
AOPTKPAT12A ¹ AOPATPAT22A ²	Pathology and Histopathology II.	3	4	7	final#	Pathology and Histopathology I.
AOBL1BEL12A ³ AOBL2BEL22A ⁴ AOBL3BEL32A ⁵	Internal Medicine II.	3	4	7	semi-final	Internal Medicine I.
AOMAGPSZ_2A	Medical Psychology II.	10/sem.	18/sem.	2	final#	Medical Psychology I.
AOMAGOET_1A	Medical Ethics	1	1	2	semi-final	basic module
AOFRMFRM_1A	Pharmacology and Pharmacotherapy I.	1,5	0,5	2	pract. mark	basic module
AOKNSGO32_1A	Compulsory Internal Medicine Practice (in summer)	–	188 hours workload	–	signature	–
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

¹1st Department of Pathology

²2nd Department of Pathology

³1st Department of Internal Medicine

⁴2nd Department of Internal Medicine

⁵3rd Department of Internal Medicine

The grade influences the qualification of the Diploma.

LIST OF TEXTBOOKS

- 1 Cecil's Essentials of Medicine. Ed. Andreoli, Carpenter, etc. 5th ed. W.B. Saunders, 2001. ISBN 0-7216-8179-4
- 2 Bickley, L.S.-Hoekelman R.A: Bates' Guide to Physical Examination and History Taking. 7th ed. J.B. Lippincott Williams & Wilkins, 1998. ISBN 0-7817-1655-1
- 3 Current Medical Diagnosis and Treatment. Tierney, McPhee, Papadakis, Appleton and Lange McGraw-Hill 2002. ISBN 0-07-136466-8
- 4 Marshall: Illustrated Textbook of Clinical Chemistry. Mosby. 2nd ed. Gower Med. 1992
- 5 F.Heckner et al.: Practical Microscopic Hematology. 4th ed. 1993. Williams and Wilkins Trade Cldh. ISBN 0-8121-1711-5
- 6 Peter E.S.-Freund-Meredith B.McGuire:Healts, Illness, and the Social Body. (A Critical Sociology. Prentice Hall. Upper Saddle River, New Jersey.
- 7 Erich H. Loewy-Roberta Springer Loewy (2004): Textbook of Health Care Ethics. 2nd edition. Dordrecht-Boston-London: Kluwer academic Publishers ISBN: 1-4020-1460-0
- 8 Behavior & Medicine, 4th Edition, Danny Wedding, Hogrefe & Huber Publishers, Seattle, 2006.
- 9 Murray, Rosenthal, Kobayashi, Pfaller: Medical Microbiology. 4th ed. 2002. Mosby Inc. ISBN 0-323-01213-2
- 10 Robbins: Basic Pathology, 2008. V. Kumar, A. K. Abbas, N. Fausto, R. Mitchell Saunders; 8 edition
- 11 Szende B, Suba Zs.: Introduction to Histopathology. Bp. Medicina, 1999.
- 12 Katzung: Basic and Clinical Pharmacology. Lange 10th ed, 2007
- 13 Falus A. Immunology, Semmelweis PH, 2001.
- 14 Hand-out: on www.dgci.sote.hu
- 15 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

Recommended textbooks:

- 1 Harrison's Principles of Internal Medicine. Companion Handbook. 12/1997 14th ed. 096009. Ed. by Anthony Fauci, E.Braunwald, K.J.Isselbacher et al. Paper Text ISBN 0-07-021530-8 LCCN:97-042634
- 2 Harrison's Principles of Internal Medicine. 15th ed. McGraw Hill Inc. 2001. ISBN 0-07007272-8 (Combo) 0-07-007273-6 (Vol.1.), 0-07-007274-4 (Vol.2.), 0-07913686-9 (Set)
- 3 Cecil Textbook of Medicine. Ed. Goldmann, L. Bennett, J.C. 21st ed. W.B.Saunders 2000. ISBN 0-7216-7995-1 Vol.1-2. ISBN 0-7216-7996-X (Single Vol.)
- 4 Concise Oxford Textbook of Medicine. Ed.Ledingham, Warrell. Oxford University Press, Oxford, 2000. ISBN 0192628704
- 5 The Merck Manual. 16th ed. Merck Research Laboratories, 1996.
- 6 William J. Marshall, Stephen K.Bangert: Clinical Chemistry. 5th ed. Elsevier Health Sciences 2004. ISBN 0723433283.
- 7 Stephen J. McPhee, William F. Ganong: Pathophysiology of Disease: An Introduction to Clinical Medicine, 5th ed. McGraw-Hill.2006. ISBN 10: 0-07-144159-X
- 8 H. Thernl, H. Diem, T. Haferlach: Color Atlas of Hematology 2nd ed. Georg Thieme Verlag 2004. ISBN: 9783136731024
- 9 Kathryn L. McCance, Sue E. Huether: Pathophysiology: The Biologic Basis for Disease in Adults And Children 5th ed. Mosby Inc 2005 ISBN-10: 0323036236
- 10 N. Goldschlager et al.: Principles of Clinical Electrocardiography. 3rd ed. 1989. Appleton and Lange ISBN 0-8385-7951-5.
- 11 Mahta, Atul B. Hoffbrand, A. Victor: Haematology at a Glance 2nd ed. Blackwell Publishing 2005. ISBN: 1405126663
- 12 Carl A. Burtis: Tietz Textbook of Clinical Chemistry. W.B. Saunders 3rd 1999 ISBN 0721656102
- 13 Carl A. Burtis: Tietz Fundamentals of Clinical Chemistry. WB. Saunders 5th 2001 ISBN 0721686346

- 14 Davis et al.: Clinical Laboratory Science. (Strategies for Practice.) 1988. Lippincott-Raven Cldh Text. ISBN 0-397-50860-3
- 15 E.Rubin-J.L. Farber: Pathology (J.B. Lippincott 1994). – 3rd edition (1999)
- 16 Nemes Z.: Atlas of Histopathology (TEMPUS edition, Debrecen 1998)
- 17 CP.L. Wheater, H.G. Burkitt, Stevens J.S. Lowe: Basic Histopathology, a Colour Atlas and Text. (Churchill Livingstone; 4Rev Ed edition, 2002)
- 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
- 21 Alan Stoudemire: Human Behaviour: An Introduction for Medical Students. Lippincott Company, 1994. 2nd ed. ISBN 0-397-51337-2.
- 22 Kopp M. - Skrabski Á.: Behavioural Sciences Applied in a Changing Society, Corvina, 1996.
- 23 Fadem B: Behavioural Science.,Lippincott Williams & Wilkins, 5th ed., 2008.
- 24 Sarafino E.P.: Health Psychology. Biopsychosocial interactions. 6th ed., New York, Wiley, 2008.

PATHOPHYSIOLOGY

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

First Semester

Lectures

I. Pathophysiology of Circulation

Heart Failure I
Heart Failure II

II. Pathophysiology of Fluid and

Electrolyte Balance
Disturbances in Fluid, Na⁺ and K⁺ Balance

III. Pathophysiology of Acid-Base Balance

Respiratory and Metabolic Disturbances

IV. Pathophysiology of the Kidney

Acute Renal Failure

Chronic Renal Failure

V. Pathophysiology of Respiration

Respiratory Insufficiency

VI. Pathophysiology of the Peripheral Circulation

Shock
Hypertension

VII. Pathophysiology of Metabolic Disorders

Metabolic Disturbances in Diabetes

Hepatic Insufficiency
Nutritional Disorders, Obesity

Disturbances in Protein, Amino Acid and
Metabolism Purine Metabolism Disorders

VIII. Pathophysiology of the Gastrointestinal Tract

Gastric and Duodenal Ulcer

Malabsorption-Maldigestion

Lab

The normal electrocardiogram
Arrhythmias I: Disorders of Impulse
Formation

Arrhythmias II: Disorders of Impulse
Conduction

Arrhythmias III: Complex Arrhythmias

ECG Abnormalities in Cardiac
Hypertrophy and Metabolic Disorders
ECG Sign of the Abnormalities of
Coronary Circulation

ECG Signs and Laboratory Diagnosis of
Myocardial Infarction

Practice, Examples, Exam
Laboratory Evaluation of Fluid and
Electrolyte Disorders

Laboratory Evaluation of Acid-Base
Disorders
Laboratory Evaluation of Kidney Diseases
Laboratory Evaluation of Hemostatic
Disorders
Laboratory Evaluation of Carbohydrate

Laboratory Diagnosis of Hepatobiliary
Diseases
Laboratory Evaluation of GI-Tract
Function

PATHOPHYSIOLOGY

Second Semester

Lecture

IX. Pathophysiology of Hematologic Disorders

Anemias

Myeloproliferative Diseases
Disturbances in Hemostasis

X. Pathophysiology of Lipid Metabolism, Atherosclerosis

Lipid Abnormalities, Atherosclerosis

XI. Pathophysiology of the Immune System

Inflammation

Immunodeficiency and Tumor Immunity

Autoimmunity

XII. Pathophysiology of Endocrine Disorders

Disturbances in Pituitary Function
Disturbances in Thyroid Function

Disturbances in Adrenal Gland and Sexual Function

Metabolic Bone Diseases

XIII. Pathophysiology of the Nervous System

Motor and Sensory Disturbances
Disturbances in "Higher" CNS Function

Pathophysiology of Pain

Lab

Evaluation of the Leukocyte-Monocyte System
Evaluation of Erythropoietic System
Evaluation of Anemias

Evaluation of Granulocytopenic Disorders

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

Practice, Examples, Exam
Laboratory Evaluation of Plasma Proteins and Enzymes
Laboratory Evaluation of Lipid and Lipoprotein Disorders
Hypothalamic-Pituitary Tests

Thyroid Function Tests
Laboratory Evaluation of Ca⁺⁺ and Phosphate
Metabolism
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

Week	Lectures (2 hours per week)
1.	Introduction. General information about the tuition. The place of Medical Microbiology among natural sciences, its significance, sub-fields and short history. Fundamentals of the morphology, physiology and genetics of bacteria.
2.	Pathogenic nature and virulence of bacteria. Pathomechanism, molecular pathogenesis, virulence factors. Infection and disease.
3.	Defence mechanisms of the host against infections. Active and passive immunisation. Vaccines.
4.	Antibacterial drugs: Modes of action and interactions of antibacterial drugs. Principles and practice of the antibacterial chemotherapy. Origin, mechanisms, induction, transfer, spreading, elimination and control of 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.
6.	Gram-positive aerobic cocci: Streptococcus and Staphylococcus genus. Normal flora of the skin.
7.	Gram-negative aerobic and microaerophilic cocci and coccobacilli: Neisseriaceae, Pasteurellaceae, Haemophilus genus Normal flora of the upper respiratory tract.
8.	Gram-negative aerobic rods and coccobacilli: Pseudomonas, Legionella, Brucella, Bordetella, Francisella genus.
9.	Gram-negative facultative anaerobic rods Normal flora of the gastrointestinal tract. <ul style="list-style-type: none"> • 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
13.	Spirochaetales: Treponema, Borrelia. Leptospira.
14.	Rickettsiales, Chlamydiales, Mycoplasmatales

First Semester

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

MEDICAL MICROBIOLOGY

Second Semester

Week	Lectures (2 hours per week)
1.	Medical Mycology
2.	Medical Parasitology - 1
3.	Medical Parasitology - 2
4.	Medical Parasitology - 3
5.	General Virology
6.	• DNA viruses - 1
7.	• DNA viruses - 2
8.	• RNA viruses - 1
9.	• RNA viruses - 2
10.	• RNA viruses - 3
11.	• Hepatitis viruses
12.	Retro viruses. AIDS. Viral oncogenesis
13.	• Slow viruses and Prions. Control of viral diseases. Antiviral chemotherapy
14.	• Iatrogenic and Nosokomial infections

Week	Practicals (3 hours per week)
1.	Medical Mycology
2.	Medical Parasitology - 1
3.	Medical Parasitology - 2
4.	Medical Parasitology - 3
5.	Midterm exam I. General Virology
6.	DNA viruses
7.	RNA viruses - 1
8.	RNA viruses - 2
9.	Midterm exam II.
10.	• Clinical Bacteriological Diagnosis – 2: Respiratory tract infections
11.	• Clinical Bacteriological Diagnosis – 3: Infections of the uro-genital tract. Abdominal and Enteral infections. Sexually transmitted diseases
12.	• Clinical Bacteriological Diagnosis – 4: Bacteraemia, sepsis, endocarditis, meningitis
13.	Summary and review
14.	Practical exam

PATHOLOGY

1st Dept. of Pathology and Experimental

Cancer Research

Tutor: **Dr. Gergely Rác**

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
2. Cell injury
3. Cell injury
4. Inflammation
5. Inflammation
6. Wound healing, regeneration and fibrosis
7. Immunopathology
8. Neoplasia
9. Neoplasia
10. Neoplasia
11. Genetic diseases
12. Haemodynamic disorders
13. Haemodynamic disorders

Histopathology practices

- Autopsy demonstration
- Nutmeg liver H&E (1)
- Cardiac fibrosis in liver H&E(7)
- Pulmonary edema H&E (2)
- Haemosiderin in alveolar macrophages H&E (8)
- Thromboembolism H&E (3)
- Hemorrhagic infarction of the lung H&E (4)
- Anemic infarction of the kidney H&E(5)
- Emollition of the brain H&E (6)
- Fatty degeneration of the liver H&E (12)
- Phlegmone H&E(13)
- Cerebral abscess H&E(14)
- Fibrinous pericarditis H&E (15)
- Pseudomembranous colitis (16)
- Actinomycosis H&E (98)
- Candidiasis PAS (17)
- Aspergillosis (slide demonstration)
- Acute appendicitis H&E(66)
- Oxyuris in appendix H&E(67)
- Chronic polyposis sinusitis H&E (18)
- Chronic abscess (9)
- Granulation tissue H&E (19)
- Foreign-body granuloma H&E (20)
- Metaplasia (slide demonstration)
- Dysplasia of the cervical epithelium (CIN) H&E(24)
- In-situ carcinoma of the cervix H&E (25)
- Invasive squamous cell carcinoma of the cervix H&E (26)
- Squamous cell papilloma H&E (23)
- Squamous cell carcinoma of the larynx H&E (10)
- Tubulovillous adenoma of the colon H&E (30)
- Adenocarcinoma of the colon H&E(31)
- Metastasis in lymph node H&E (36)
- Metastatic carcinoma in the lung (slide demonstration)
- Leiomyoma H&E (37)
- Leiomyosarcoma (slide demonstration)
- Lipoma H&E (11)
- Liposarcoma (slide demonstration)
- Malignant fibrous histiocytoma H&E (38)
- Immunohistochemistry (slide demonstration)

Lectures (3 hours per week)

- 14. Environmental and nutritional pathology
- 15. Blood vessels
- 16. Blood vessels
- 17. Heart
- 18. Heart
- 19. Respiratory system
- 20. Respiratory system
- 21. Respiratory system
- 22. Infectious diseases
- 23. Infectious diseases
- 24. Infectious diseases
- 25. Gastrointestinal tract
- 26. Gastrointestinal tract
- 27. Gastrointestinal tract
- 28. Pancreas

Histopathology practices

- Atherosclerosis of the aorta H&E (45)
- Benign nephrosclerosis H&E(46)
- Coronary-sclerosis H&E(47)
- Polyarteritis nodosa H&E (48)
- Giant cell arteritis H&E (49)
- Cystic medianecrosis of the aorta H&E (86)
- Fatty infiltration of the myocardium H&E (41)
- Myocardial infarction, early H&E (42)
- Myocardial infarction, old H&E (43)
- Myocarditis H&E(44)
- Endocarditis H&E(96)
- IRDS H&E (50)
- Lobar pneumonia H&E(51)
- Bronchopneumonia H&E (52)
- Pneumoconiosis H&E (54)
- Pleurafibrosis H&E (97)
- Miliary tuberculosis in lung H&E (55)
- Tuberculous lymphadenitis H&E (56)
- Sarcoidosis H&E (57)
- Oat cell carcinoma of the lung H&E (58)
- Mesothelioma H&E (59)
- Nasopharyngeal carcinoma (slide demonstration)
- Mixed tumor of the parotid gland H&E(32)
- Warthin-tumor (slide demonstration)
- Mucoepidermoid carcinoma (slide demonstration)
- Adenoid cystic carcinoma (slide demonstration)
- Chronic peptic ulcer H&E (60)
- Chronic gastritis H&E (61), Giemsa (62)
- Signet ring cell carcinoma of the stomach H&E(63), PAS (64)
- Ventricular-lymphoma (slide demonstration)
- Villous atrophy in small intestine (65)
- Ulcerative colitis H&E(68)
- Crohn's disease H&E (69)
- Carcinoid H&E (53)
- Peritoneal carcinosis H&E (99)
- Organ demonstration

PATHOLOGY

Second Semester

Lectures (3 hours per week)

- 29. Liver and biliary system
- 30. Liver and biliary system
- 31. Liver and biliary system
- 32. Kidney

Histopathology practices

- Alcoholic hepatitis H&E(70)
- Chronic hepatitis H&E (71)
- Liver cirrhosis H&E(72)
- Hepatocellular carcinoma H&E (73)
- Cavernous haemangioma of liver H&E (35)
- Chronic cholecystitis H&E(74)

Lectures (3 hours per week)

- | | |
|-------------------------------|---|
| 33. Kidney | Histopathology practices
Chronic pancreatitis H&E(75)
Acute hemorrhagic necrotising pancreatitis H&E(76)
Pancreatic pseudocyst (slide demonstration)
Adenocarcinoma of pancreas H&E (77)
Islet cell tumor of pancreas (slide demonstration) |
| 34. Urinary tract | Diabetic nodular glomerulosclerosis
(Kimmelstiel-Wilson) H&E (78) |
| 35. Male genital syste | Glomerulonephritis H&E (79)
End stage kidney H&E (80)
Acute rejection in transplanted kidney H&E (22) |
| 36. Gynecologic pathology | Acute pyelonephritis H&E (81) |
| 37. Gynecologic pathology | Chronic pyelonephritis H&E (82)
Renal cell carcinoma H&E (83)
Normal adrenal cortex (slide demonstration)
Wilm's tumor H&E(84)
Transitional cell carcinoma H&E (28) |
| 38. Neonatology | Nodular hyperplasia of the prostate H&E(85) |
| 39. Breast | Adenocarcinoma of prostate H&E(87)
Seminoma H&E (88)
Embryonal carcinoma (slide demonstration)
Teratoma H&E(89) |
| 40. Blood and lymphoid organs | Placenta retention H&E (90) |
| 41. Blood and lymphoid organs | Extrauterine gravidity H&E (91)
Arias-Stella phenomenon (slide demonstration)
Hydatiform mole H&E (92)
Choriocarcinoma H&E (93)
Endometrial hyperplasia H&E (94)
Endometriosis (slide demonstration)
Endometrium carcinoma H&E (95) |
| 42. Blood and lymphoid organs | Chronic cervicitis H&E (123) |
| 43. Blood and lymphoid organs | HPV infection in cervix H&E (124)
In situ hybridisation (slide demonstration)
Condyloma acuminatum (slide demonstration)
Follicular cyst of the ovary H&E (125)
Mucinous cystadenoma of the ovary H&E(29)
Mucinous cystadenocarcinoma (slide demonstration)
Borderline serous papillary cystadenoma of the ovary H&E (126)
Serous papillary cystadenocarcinoma of the ovary (slide demo)
Granulosa cell tumor (slide demonstration) |
| 44. Endocrinology | Fibrocystic disease of the breast H&E(101) |
| 45. Endocrinology | Peri- and intracanalicular fibroadenoma of the breast H&E (33)
Phylloid tumor (slide demonstration)
Intraductal carcinoma H&E (102)
Invasive ductal carcinoma H&E(103)
Invasive lobular carcinoma H&E (104)
FNAB of the breast (cytol. smear demonstration) |
| 46. Skin | Normal bone marrow H&E (127) |
| 47. Skin | Leukemic bone marrow H&E(128)
Leukemic infiltration of parenchymal organs
(slide demonstration)
Multiple myeloma H&E (106)
Amyloidosis Congo (21) |

Lectures (3 hours per week)

- 48. Head and neck

- 49. Bones and joints
- 50. Bones and joints

- 51. Bones and joints

- 52. Eye

- 53. Skeletal muscle
- 54. Nervous system
- 55. Nervous system

- 56. Nervous system
- 57. Clinicopathologic conference

Histopathology practices

- 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)
- Colloid goiter H&E(110)
- Graves disease H&E (111)
- 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)
- Osteosarcoma H&E (114)
- Rhabdomyosarcoma H&E (115)
- Rheumatoid arthritis H&E (116)
- Autoimmun diseases (slide demonstration)
- Basocellular carcinoma H&E (27)
- Verruca vulgaris H&E (100)
- Naevus pigmentosus H&E (39)
- Malignant melanoma H&E (40)
- Metastatic melanoma (slide demonstration)
- Bowen's disease (slide demonstration)
- Capillary haemangioma of the skin H&E (34)
- Purulent meningitis H&E(117)
- Encephalitis H&E (118)
- Meningeoma H&E (119)
- Glioblastoma multiforme H&E(120)
- Schwannoma H&E (121)
- Neuroblastoma H&E (122)
- Ganglioneuroblastoma (slide demonstration)
- Paraganglioma (slide demonstration)
- Review

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 Tímár**

Tutor: **Dr. András Kíss**

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Lectures

List of textbooks

Histopathology practices – slides for the histopathology exam and slide demonstrations

List of oral questions

General information

Lectures, practices, competition

Consultation, Examinations – Semifinal

Examinations – Final

Schedule

Schedule for the academic year

Lectures

1st Semester - 2011

09.12. M. 1. lecture

Dr. Tímár

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. Tímár

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 hemodinamics. Hemorrhage, active and passive hyperemia. Disorders of water and electrolytes. Edema. Thrombosis, embolism. Infarction. Shock

09.21. W. 4. lecture

Dr. Tímár

Inflammation I.

Definition. Symptoms. Vascular permeability. Inflammatory mediators and their origin. Cellular recruitment. Acute inflammation. Systemic manifestations of inflammation. Inflammation of avascular tissues. Wound healing, regeneration and repair: Classification of cells and tissues according to their regenerative capability. Extracellular matrix. Regeneration, repair.

09.26. M. 5. lecture

Dr. Lotz

Inflammation II.

Chronic inflammation, fibrosis, scarring. Granulomatous inflammations: (tuberculosis, syphilis. etc.)

10.09.28. W. 6. lecture

Dr. Tímár

Immunopathology. Constituents of the immune system
Hypersensitive reactions. Allergy. Transplantation.
Immunodeficiency. AIDS. Infections of immunodeficient individuals.

10.03. M. 7. lecture

Dr. Tímár

Immunopathology – Autoimmune diseases.

Etiology. Monosystemic diseases (e.g. chr. Atrophic gastritis, myasthenia gravis Basedow dis., Hashimoto thyroiditis, 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.

Smoking, alcoholism, drugs. Iatrogenic injuries. Environmental chemical and physical factors. Obesity, protein malnutrition, vitamins.

10.10. M. 9. lecture

Dr. Schaff

Neoplasia I.

Causes of neoplasia. Epidemiology. Chemical, physical and biological carcinogenesis. Tumor prevention.

10.12. W.10. lecture

Dr. Tímár

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. Tímár

Neoplasia III.

Tumor growth, tumor progression, metastasis.

10.19. W. 12. Lecture

Dr. Schaff

Neoplasia IV.

Classification of tumors. Histologic types of tumors. Characteristics of benign and malignant tumors. Premalignant lesions. Paraneoplasia.

10.24. M. 13. Lecture

Dr. Kulka

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

10.26. W. 14. lecture

Dr. Tímár

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.

Chromosomal abnormalities, single-gene abnormalities. Autosomal dominant and recessive inheritance, sex-linked disorders. Lysosomal storage diseases. Morphogenic disorders, malformations, multifactorial inheritance. Prenatal diagnosis.

11.07. M. 16. lecture

Dr. Székely

Pathological Diagnostics

Tumor Screening, Cytodiagnosics. The morphologic and technical basis of aspiration cytology. Aim and clinicopathological 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.

Structure of vessels. Atherosclerosis. Aneurysms. Hypertensive vascular disease. Inflammatory disorders of blood vessels. Microvascular disease. Diseases of veins and lymphatic vessels. Tumors of vessels.

11.14. M. 18. lecture

Dr. Glasz

Cardiovascular Pathology II.

Endocarditis, myocarditis, pericarditis. Rheumatic heart disease. Ischemic heart disease.

11.16. W. 19. lecture

Dr. Glasz

Cardiovascular Pathology III.

Congenital heart diseases. Cardiomyopathies. Heart failure. Systemic diseases involving the heart. Cardiac tumors.

11.21. M. 20. lecture

Dr. Tímár

Skin Basic notions in skin pathology.

Diseases of the epidermis and dermo-epidermal junction. Diseases of the dermis: vessels, connective tissue, panniculus. Tumors of the skin. Manifestations of systemic diseases of the skin.

11.23. W. 21. lecture

Dr. Tímár

Head and neck

Oral cavity, lips, tongue, teeth, salivary gland. Nose and sinuses, nasopharynx. Ear of the esophagus. Developmental disorders, diverticulio, esophagitis, tumors of the esophagus. Larynx and trachea. (Developmental abnormalities, Infections/Inflammation, Trauma, Tumors).

11.28. M. 22. lecture

Dr. Székely**Respiratory system I.**

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

Dr. Tímár

Respiratory system II. Development of lung cancer. Neoplasia (primary cancer of the lung, metastasis, benign tumors). Etiology, genetic abnormalities. Diseases of the pleura.

12.05. M. 24. lecture

Dr. Schaff**Gastrointestinal tract I.**

Esophagus (anatomy and developmental disorders, inflammation, trauma, tumors).

12.07. W. 25. lecture

Dr. Schaff**Gastrointestinal tract II.**

Stomach (congenital abnormalities, inflammations, peptic ulcer, neoplasms). Small intestine (congenital disorders, infections, vascular disease, Crohn-disease, malabsorption, Whipple's disease, neoplasms, pneumatosis cystoides).

12.12. M. 26. lecture

Dr. Schaff**Gastrointestinal tract III.**

Colon (congenital disorders, infections, diverticular disease, inflammation, Crohn-disease, ulcerative colitis, vascular diseases, neoplasms, other disorders). Appendix. Peritonitis.

12.14. W. 27. lecture

Dr. Arató**Bones and joints**

The structure of the bone and cartilage. Osteogenesis. Growth and maturation disorders of the skeleton. Aseptic bone necrosis. Reactive osteogenesis. Osteomyelitis and specific inflammations. Metabolic disorders. Tumors and tumor-like lesions of the bones. Joints

2nd Semester - 2012

02.06. M. 28. lecture

Dr. Schaff**Liver and biliary system I.**

Anatomy of the liver, function. Bilirubin-metabolism and jaundice. Hepatic failure. Hepatorenal syndrome. Viral hepatitis. Chronic hepatitis. Cirrhosis. Portal hypertension. Non-viral hepatitis.

02. 08. W. 29. lecture

Dr. Schaff**Liver and biliary system II.**

Alcoholic liver disease, toxic liver injury. Hemochromatosis. Vascular disorders. Neoplasms.

02.13. M. 30. lecture

Dr. Schaff**Liver and biliary system III.**

Gallbladder and bile ducts (congenital anomalies, cholecystitis, cholelithiasis, cholangitis, neoplasms).

02.15. W.

TDK Conference

02.20. M. 31. lecture

Dr. Székely**Pancreas**

Pathology of the exocrine pancreas: Developmental abnormalities, inflammations, tumors of the exocrine pancreas.

02.22. W. 32. lecture

Dr. Székely**Endocrinology I.**

Pathology of the endocrine pancreas: Diabetes mellitus.

<p>02.27. M. 33. lecture Dr. Székely</p>	<p>Endocrinology II. The hypothalamus-hypophysis system. Pathology of the pituitary gland. The thyroid gland: hypo- and hyperfunction, inflammations, tumors. Pathology of the parathyroid gland. Hypo- and hyperfunction and other diseases of the adrenal cortex. Tumors of the adrenal gland. Pineal gland. Ectopic hormone production. Pathology of the thyroid gland.</p>
<p>02.29. W. 34. lecture Dr. Kardos</p>	<p>Kidney Pathology I. Anatomy. Clinical syndromes. Glomerula diseases. Renal disease and systemic disorders. Congenital abnormalities. Inflammatory and non-inflammatory lesions.</p>
<p>03.05. M. 35. lecture Dr. Székely</p>	<p>Kidney Pathology II. Tubulointerstitial diseases. Hydronephrosis. Lithiasis.</p>
<p>03. 07. W. 36. lecture Dr. Timár</p>	<p>Kidney Pathology III. Tumors of the kidney. Kidney transplantation.</p>
<p>03. 12. M. 37. lecture Dr. Székely</p>	<p>Uropathology Congenital abnormalities of the urinary tract. Inflammations. Urinary bladder (malformations, inflammations, tumors). Urethra</p>
<p>03.14. W. 38. lecture Dr. Székely</p>	<p>Male genital system Diseases of the epididymis, testis, prostate, penis and scrotum.</p>
<p>03.19. M. 39. lecture Dr. Schaff</p>	<p>Gynecologic pathology I Precancerous lesions of the cervix. Cervix carcinoma. Endometrial hyperplasias. Benign and malignant tumors of the endometrium.</p>
<p>03.21. W. 40. lecture Dr. Schaff</p>	<p>Gynecologic pathology II. Inflammations of the vulva, vagina and uterus. Tumors of the vulva, vagina and uterus. Pathology of the fallopian tubes. Normal menstrual cycle. Bleeding abnormalities. Pathology of pregnancy. Ovarial diseases.</p>
<p>03.26. M. 41. lecture Dr. Kiss</p>	<p>Neonatology Premature birth and its complications. Intrauterine infections and their consequences. Twin pregnancy. Diseases of the perinatal period. Sudden infant death.</p>
<p>03.28. W. 42. lecture Dr. Kulka</p>	<p>Breast I Symptoms and diagnosis of breast diseases. Malformations. Benign symptomatic lesions (inflammations, fibrocystic disease, epithelial dysplasia and its significance, benign tumors)</p>
<p>04.11. W. 43. lecture Dr. Kulka</p>	<p>Breast II Malignant tumors - epidemiology, risk factors. Histologic types of breast carcinoma. Prognostic factors in breast cancer Non-epithelial breast malignancies Screening: non-palpable breast lesions The male breast.</p>
<p>04.16. M. 44. lecture Dr. Székely</p>	<p>Blood and lymphoid organs I. Hemopoetic system. Normal function (bone marrow, lymph nodes, spleen). Morphology and immunologic evaluation. Disorders of platelets and coagulation. Anemias, polycythemia, Neutrophilia. Proliferative disorders of mast cells. Monocytosis. Sinus histiocytosis. Benign disorders of lymphoid cells.</p>
<p>04. 18 . W. 45. lecture Dr. Székely</p>	<p>Blood and lymphoid organs II. Chronic myeloproliferative syndromes (CML, myelofibrosis, thrombocytomia). Acute myeloproliferative syndromes (acute leukaemias). Lymphocytic leukaemias. Disorders of the spleen. Lymphomas (Hodgkin, non-Hodgkin). Metastatic tumors in bone marrow and lymph nodes.</p>

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. Trauma, vascular and circulatory disorders. CSF dynamics. Encephalomyelitis, meningitis. Congenital malformations. Metabolic storage.
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. Neoplasms (neuroectodermal, mesenchymal, embryonic, ectopic tissue, metastasis). Peripheral nervous system (neuropathies, inflammations, trauma, tumors). Skeletal muscle and soft tissue tumors Muscular dystrophies, myopathies, diseases of neuromuscular junction, fatty tumors, fibrous tumors, fibrohistiocytic tumors, tumors of skeletal muscles.
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

1. **Kumar, Abbas, DeLancey, Malone Robbins and Cotran: Pathologic Basis of Disease (Elsevier Saunders, Eighth Edition, 2010), ISBN: 978-1-4160-3121-5**
2. Kumar-Abbas-Fausto Robbins and Cotran: Pathologic Basis of Disease (Elsevier Saunders, 2005), ISBN: 0-8089-2302-1
3. Szende B., Suba Zs Introduction to Histopathology (Medicina, 1999)

Recommended literature

1. E. Rubin-J. L. Farber: Pathology (J.B.Lippincott 1994). ? 3rd edition (1999)
2. Nemes Z. Atlas of Histopathology (TEMPUS edition, Debrecen 1998)
3. CP. L. Wheeler, H.G, Burkitt, a Stevens J.S. Lowel.: Basic Histopathology a Colour Atlas and Text. (Churchill Livingstone; 4Rev Ed edition, 2002)

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)
Leiomyosarcoma (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**

- 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)
Tuberculous 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 thyroiditis (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)
Embryonal carcinoma of testis H&E (61)
- 21.practice** Extrauterine (tubal) gravidity H&E (71)
Endometrial hyperplasia H&E (72)
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- 22.practice** Mucinous cystadenoma of the ovary H&E (75)
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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

1. Irreversible cell injury. Cell death. Necrosis.
2. Morphologic reaction to persistent stress (Atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia).
3. Intracellular storage and calcification. Hyalin.
4. Cellular aging.
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).
9. Spread and systemic manifestations of inflammation.
10. Lymphocytes and macrophages in inflammation
11. Extracellular matrix.
12. Repair and wound healing.
13. Regeneration and healing in different tissues.
14. Cellular components of the immune response.
15. Types of hypersensitivity.
16. Immune reaction to transplanted organs.
17. Immunodeficiencies (congenital, aquired).
18. Autoimmunity.
19. Principles of teratology. Errors of morphogenesis.
20. Clinically important malformations.
21. Syndromes linked to chromosomal abnormalities.
22. Autosomal dominant disorders.
23. Autosomal recessive disorders.
24. Sex linked disorders. Multifactorial inheritance.
25. Diseases of infancy and childhood.

26. Hemodynamic disorders of perfusion.
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.
35. Nutritional disorders. Avitaminosis.
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.
45. Developmental abnormalities of the kidneys. Cystic disease of the kidney.
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.
54. Anemias and disorders of hemostasis.
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.
3. Growth characteristics of cancer. Tumor markers.
4. Invasion and metastasis.
5. Grading and staging of cancer.

6. Physical and chemical carcinogenesis.
7. Viral carcinogenesis.
8. Chromosomal and gene alterations in cancer.
9. Immunological aspects of cancer.
10. Effect of cancer on the host. Paraneoplastic syndromes.
11. Heredity and cancer.
12. Epidemiology of cancer.
13. Premalignant lesions. Screening.
14. Risk factors in cancer.
15. Tumors of blood vessels and heart.
16. Pathology of larynx and trachea.
17. Primary lung cancer.
18. Benign and metastatic lung tumors. Tumors of the pleura.
19. Neoplasms of the esophagus.
20. Neoplasms of the stomach.
21. Neoplasms of small intestine.
22. Neoplasms of colon.
23. Viral diseases.
24. Diseases caused by mycoplasma, chlamidia, rickettsiae and spirochetes.
25. Diseases caused by bacteria (salmonellosis, plague, tularemia, H.influenzae, pertussis, chancroid, legionellosis).
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, athropods.
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.
38. Paget's disease and benign bone tumors.
39. Malignant tumors of the bones.
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.
55. Non-Hodgkin's malignant lymphomas.
56. Hodgkin's disease.
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.
3. Inflammatory diseases of blood vessels. Microvascular disease.
4. Aneurysms and diseases of the veins.
5. Ischemic heart disease. Heart failure.
6. Congenital heart disease.
7. Rheumatic and other "hypersensitivity" diseases of the heart.
8. Inflammatory, nutritional, endocrine and metabolic diseases of the heart
9. Cardiomyopathies.
10. Congenital lesions of the lung. Lesions in conducting airways. Diffuse alveolar damage. Idiopathic alveolar filling disease.
11. Infections affecting the lung. Tuberculosis.
12. Chronic airflow obstruction. Chronic bronchitis. Bronchiectasia.
13. Asthma.
14. Emphysema.
15. Pneumoconiosis.
16. Restrictive, infiltrative or interstitial lung disease.
17. Diseases of the pleura.
18. Diseases of the pulmonary vasculature.
19. Congenital disorders of the gastrointestinal tract.
20. Pathology of esophagus (except congenital disorders and tumors).
21. Gastritis.
22. Peptic ulcer disease.
23. Infections and vascular diseases of small intestine. Malabsorption.
24. Diverticular and vascular disease of the colon. Inflammatory bowel disease.
25. Pathology of the appendix.
26. Peritonitis. Retroperitoneal fibrosis.
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.
31. Bone fractures. Osteonecrosis. Reactive bone formation.
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.
40. Portal hypertension. Vascular disorders of the liver.
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 than 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

SEMIFINAL:

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 can not 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 essays.

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)

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.

0-36 pts:	1
37-42 pts:	2
43-48 pts:	3
49-54 pts:	4
55-60 pts:	5

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, preprepared 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. Tímár (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 behavior 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

	I. semester	II. semester
Monday	11:50–13:00	10:45–11:55**
Wednesday	8:00–9.10	8:00–9.10 **

Practices

		I. semester	II. semester
Gr. 6	Tuesday	13:00–14:30	11:10–12:50**
Gr. 1-4, 5, 7	Wednesday	9:30–12:50	9:30–12:50**
Gr. 6	Thursday	11:10–12:40	11:10–12:40**

** 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 KULKÁ / Dr. Judit Halász / Dr. Zsuzsanna Rác
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 Tímár
Head of Department

INTERNAL MEDICINE

1st Dept. of Internal Medicine

3rd Dept. of Internal Medicine

Tutor: **Prof. Dr. Ferenc Szalay, Dr. Katalin Keltai, 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 conductance 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 pain.

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.

The technique of physical examination. Inspection. Palpation. Percussion, Auscultation. Continuous 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)

Principles of medical endocrinology. Clinical assessment of endocrine status. Neuroendocrine regulation and its disorders. Hypothalamic disease with neuroendocrine disturbances. Disorders of the anterior pituitary. Disorders of the posterior pituitary. Thyroid physiology. Tests of thyroid function and thyroid regulation. Hyperthyroidism. Hypothyroidism. Thyroiditis. Sporadic and endemic goiter. Benign and malignant tumors of the thyroid. Disorders of the adrenal cortex. Laboratory evaluation of adrenocortical function. Adrenocortical hypofunction. Cushing's syndrome. Mineralocorticoid excess states. The adrenogenital syndromes. The adrenal medulla and the sympathetic nervous system. The parathyroid glands. Hypercalcemia and hypocalcemia. Gonadal diseases. Hirsutism. Diseases of the breast. Polyglandular disorders. The carcinoid syndrome. Diabetes mellitus (1). Etiology, pathogenesis, clinical forms. Diabetes mellitus (2). Complications. Treatment. Hypoglycemic disorders. Pancreatic islet cell tumor The hyperlipoproteinemias. Nutritional diseases. Nutritional assessment. Protein-caloric undernutrition. Anorexia nervosa. Obesity. Disorders of purine metabolism. Gout. Alcoholism. Disorders of vitamin metabolism: deficiencies, metabolic abnormalities and excesses. Disordered fluid and electrolyte homeostasis. Inborn errors of metabolism in the adult.

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, pheochromocytoma, 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

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

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:

Textbook: Falus A. Immunology, Semmelweis PH, 2001.

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.

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

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:

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

Recommended text books:

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

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.

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

Department:

Institute of Behavioral Sciences

Department of Psychology

NET Building, 20th floor
1089. Budapest, Nagyváradi 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:

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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:

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

Recommended text books:

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

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 beneficence.
The principle of justice.
Arguments against „principlism“.

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?

The practice of active euthanasia in the Netherlands. The Rammelink Report.

Refusal of life sustaining treatment by competent and incompetent patients.

Possibilities to extend the autonomy of patients: living will, durable power of attorney, substituted judgement, etc.

The concept of medically futile treatment.

Ethical problems of the treatment of handicapped newborns. (The debate about the treatment of spina bifida babies, the Baby Doe case, the legal situation, etc.)

12. week (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:

kovjz@net.sote.hu

Ágnes Dósa, MD, JD, PhD e-mail: dosaagj@yahoo.com

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Department:

Institute of Behavioral Sciences

Department of Bioethics

NET Building, 19th, 20th floor

1089. Budapest, Nagyvárád tér 4.

Tel: 210-2953

Secretary: NET Building, 20th floor, Room-2005

List of questions

1. Deontological theories of ethics.
2. Utilitarian theories of ethics.
3. Kant and the categorical imperative
4. Virtue ethics
5. The principles of medical ethics
6. Justice and medical ethics: the allocation of scarce medical resources.
7. Paternalism in medical practice
8. Informed consent
9. Information disclosure for terminally ill patients
10. Advance Directives
11. Surrogate and Substitute Decisions
12. Medical confidentiality
13. Experimentation on human subjects
14. Objection to Transplantation of Organs and Counterarguments
15. Ethical problems of live organ donation
16. Organ donation from brain-dead donors: the system of donor cards.
17. Organ donation from brain-dead donors: presumed consent
18. Stages of Dying
19. No-Code Decisions
20. Withholding Fluids and Nutrition in terminally ill patients
21. Active and Passive Euthanasia
22. Withdrawing and withholding life sustaining treatment.

Textbook:

Conrad Fischer—Caterina Oneto (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 Tímár**

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):

General pharmacology – History of pharmacology. Pharmacodynamics. Pharmacokinetics.

Clinical pharmacology and pharmacotherapy – Evidence based medicine. Clinical trials (Phase I. II. III. IV.). Ethic disciplines. The role of placebo in clinical trials. Reports on adverse events and reactions. Differences in the pharmacokinetics of drugs in relation with age and diseases. Factors influencing the drug-body interactions. Special aspects of pediatric and geriatric pharmacology.

Drug discovery, basic and clinical evaluation of new drugs.

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.

The pharmacology of gonadal system – Gonadal hormones and inhibitors. Hormonal contraception. Agents affecting the function of uterus. Drugs enhancing or reducing sexual activity. Drug therapy in pregnancy.

Vitamins.

Pharmacology of analgesia. Reduction of inflammation – Nonsteroidal anti-inflammatory drugs and non-opioid analgesics. Opioid analgesics and antagonists. Treatment of acute and chronic pain, treatment of pain associated with cancer. Drugs used in gout.

Code: AOFRMFRM_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 Hunyadi* M.D., Ph.D., D.Sc.
Professor Péter Enyedi M.D., Ph.D., D.Sc.
Péter Várnai M.D., Ph.D., associate professor
Miklós Geiszt M.D., Ph.D., associate professor
Gábor Czirják M.D., Ph.D., assistant professor

Credits: 4

Programme:

The primary purpose of this course is the synthesis of the theoretical and practical knowledge of the students. The thematic of the course includes various clinical and non-clinical practical problems (e.g. acclimatisation). The students will receive questions related to a specific problem and they have usually one week to find the proper answer in available electronic and printed information sources. Problem solving is based on the discussion of the students with directions from the instructors. This course requires the active participation of the students. The role of the instructor is to determine the thematic 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.
2. Structure and function of plasma membrane.
3. Structure and function of cell nucleus.
4. Nucleolus and ribosomes.

5. Structure and function of endoplasmic reticulum.
6. Golgi and secretion.
7. Endocytosis. Intracellular digestion
8. Protein and lipid transport mechanisms in eukaryotic cell.
9. Mitochondria and peroxisomes
10. Cytoskeleton and movement.
11. Cell communication. Regulation of cellular functions.
12. Cells in their social context.
13. Cell cycle and its regulation
14. Cellular aging and cell death.

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:

Alberts et al.: Essential Cell Biology. (second edition) Garland Publ. Inc. 2004.

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

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.
4. Gene expression and its regulation.
5. Mutations and polymorphisms.
6. Cytogenetics, numerical and structural chromosomal aberrations.
7. Monogenic inheritance: autosomal dominant and recessive.
8. Monogenic inheritance: sex-linked dominant and recessive.
9. Role of sex in inheritance.
10. Biology of sex.
11. Tools of human molecular genetics.
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).

Core text:

Thompson & Thompson: Genetics in Medicine (Saunders, 7th edition ISBN: 9781416030805).
Lecture presentations and additional texts are available on the homepage: www.dgci.sote.hu

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 weeks 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 oscillometry, 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

1 st semester						
Subject Code	Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOVNEI263_1A	History of Medicine	2	-	2	pract. mark	-
AOVHUM084_1A	Developmental Biology I.	2	-	3	pract. mark	Anatomy, Cell, Histology and Embryology II. / Anatomy, Histology and Embryology II.
AOVKPK088_1A	Library Informatics	2	-	3	pract. mark	-
AOVKIK102_1A	Clinical cardiovascular physiology	2	-	2	pract. mark	Medical Physiology II.
AOVGEN083_1A	Basic Cell Biology	2	-	3	pract. mark	-
AOVDEMI56G1A	Teaching assistance (Demonstrator)	1	-	1	pract. mark	Anatomy, Cell, Histology and Embryology II. / Anatomy, Histology and Embryology II.
2 nd semester						
Subject Code	Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOVNEI263_1A	History of Medicine	2	-	2	pract. mark	-
AOVHUM097_1A	Clinical anatomy – propeudeutics	2	-	2	pract. mark	Anatomy, Cell, Histology and Embryology III./ Anatomy, Histology and Embryology III.
AOVHUM084_2A	Developmental Biology II.	2	-	3	pract. mark	Developmental Biology I.
AOVKIK102_1A	Clinical cardiovascular physiology	2	-	2	pract. mark	Medical Physiology II.
AOVANTO95_1A	Anatomy of diagnostic imaging	2	-	2	pract. mark	Anatomy, Cell, Histology and Embryology III./ Anatomy, Histology and Embryology III.
AOVGEN247_1A	Basic Genetics	2	-	2	pract. mark	Biochemistry, Molecular and Cell Biology II. / Medical Biochemistry and Molecular Biology II.
AOVIN244_1A	Introduction to Medical Informatics	-	1	1	pract. mark	-
AOVKPK088_1A	Library Informatics	2	-	3	pract. mark	-
AOVDEMI56H1A	Teaching assistance (Demonstrator)	1	-	1	pract. mark	Anatomy, Cell, Histology and Embryology II./ Anatomy, Histology and Embryology II.

ELECTIVE SUBJECTS

1 st semester							2 nd semester						
Subject Code	Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite	Subject Code	Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOVKIK099_1A	Clinical Physiology of Respiration and Respiratory Diseases	2	-	2	pract. mark	Medical Physiology II.	AOSMMS174_1A	Traditional Chinese Medicine	2	-	2	pract. mark	basic module
AOSMMS174_1A	Traditional Chinese Medicine	2	-	2	pract. mark	basic module	AOVGEN083_1A	Basic Cell Biology	2	-	2	pract. mark	-
AOVGEN083_1A	Basic Cell Biology	2	-	2	pract. mark	-	AOSGEN135_1A	Inflammation Biology	2	-	2	pract. mark	Anatomy, Cell, Histology and Embryology II./ Anatomy, Histology and Embryology II.
AOSGEN135_1A	Inflammation Biology	2	-	2	pract. mark	-	AOVFIZ090_1A	Bases of Medical Physics	1	1	3	pract. mark	-
AOVFIZ090_1A	Bases of Medical Physics	1	1	3	pract. mark	-	AOSKIK151_1A	Cardiorespirational and neurophysical measuring techniques	2	-	2	pract. mark	basic module
AOSKIK151_1A	Cardiorespirational and neurophysical measuring techniques	2	-	2	pract. mark	basic module	AOSMAG139_1A	Jewish Medical Ethics I.	2	-	2	pract. mark	-
AOSMAG139_1A	Jewish Medical Ethics I.	2	-	2	pract. mark	-	AOSNEI246_1A	History of Medical Professionalism	2,5	-	2	pract. mark	-
AOSNEI246_1A	History of Medical Professionalism	2,5	-	2	pract. mark	-	AOVCSA249_1A	Introduction to Clinical Medicine	-	2	2	pract. mark	Medical Profession
AOVCSA249_1A	Introduction to Clinical Medicine	-	2	2	pract. mark	Medical Profession	AOVOVM093_1A	Basics of Medical Chemistry	2	-	3	pract. mark	-
AOVOVM093_1A	Basics of Medical Chemistry	2	-	3	pract. mark	-	AOVTDK158G1A	Work within the union of research students (TDK munka)	1	-	1	pract. mark	-
AOVTDK158G1A	Work within the union of research students (TDK munka)	1	-	1	pract. mark	-							
AOVTDK164G1A*													
AOSMMS174_1A	Traditional Chinese Medicine	2	-	2	pract. mark	basic module	AOSMMS174_1A	Traditional Chinese Medicine	2	-	2	pract. mark	basic module
AOVELT101_1A	Problem based medical physiology	2,5	-	4	pract. mark	Medical Physiology II.	AOVELT101_1A	Problem based medical physiology	2,5	-	4	pract. mark	Medical Physiology II.
AOVKIK102_1A	Clinical cardiovascular physiology	2	-	2	pract. mark	Medical Physiology II.	AOVKIK102_1A	Clinical cardiovascular physiology	2	-	2	pract. mark	Medical Physiology II.
AOSGEN142_1A	Sexual genetics	2	-	2	pract. mark	Anatomy, Cell, Histology and Embryology II./ Anatomy, Histology and Embryology II.	AOSGEN142_1A	Sexual genetics	2	-	2	pract. mark	Anatomy, Cell, Histology and Embryology II./ Anatomy, Histology and Embryology II.
AOVGEN247_1A	Basic Genetics	2	-	2	pract. mark	-	AOVGEN247_1A	Basic Genetics	2	-	2	pract. mark	-
AOSMAG139_2A	Jewish Medical Ethics II.	2	-	2	pract. mark	-	AOSMAG139_2A	Jewish Medical Ethics II.	2	-	2	pract. mark	-
AOSGEN176_1A	Chemotaxis – Its significance in biology and clinical sciences	2	-	2	pract. mark	Medical Chemistry	AOSGEN176_1A	Chemotaxis – Its significance in biology and clinical sciences	2	-	2	pract. mark	Medical Chemistry
AOVCSA248_1A	Medical Profession	0,67	1,33	2	pract. mark	-	AOVCSA248_1A	Medical Profession	0,67	1,33	2	pract. mark	-
AOVTDK158H1A	Work within the union of research students (TDK munka)	1	-	1	pract. mark	a grade of 4 or 5 in the related subject	AOVTDK158H1A	Work within the union of research students (TDK munka)	1	-	1	pract. mark	a grade of 4 or 5 in the related subject
AOVTDK164H1A*							AOVTDK164H1A*						

* 2nd TDK research and/or demonstrator activity

CLINICAL MODULE



*Faculty of Medicine
4th year*

STUDY PROGRAMME

Fourth Year

7th semester						
Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOFRMFRM_2A	Pharmacology and Pharmacotherapy II.	1.5	2.5	4	semi-final	Pharmacology and Pharmacotherapy I.
AOKOZKOZ_1A	Public Health I.	1	1.5	2	semi-final	Preclinical module
AOKARKAR_1A	Cardiology	1	2	3	semi-final	Internal Medicine II.
AOBL1BEL13A ¹ AOBL2BEL23A ² AOBL3BEL33A ³	Internal Medicine III.	1	3	4	semi-final	Internal Medicine II.
AOSB1SEB_1A	Surgery I.	2	2	4	semi-final	Preclinical module
AOFULFUL_1A	Otorhinolaryngology (either)	1	2	3	semi-final #	Preclinical module
AOBORBOR_1A	Dermatology (or)	1.5	2.5	4	semi-final #	Preclinical module
AOPULPUL_1A	Pulmonology (either in the 1st or in the 2nd semester)	1	2	3	semi-final	Internal Medicine II.
AOSZBFOG_1A	Oral Surgery and Dentistry	2	-	2	semi-final #	Preclinical module
AORADRAD_1A	Radiology	2	2	4	semi-final #	Preclinical module
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
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Fourth Year

8th semester						
Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOFRMFRM_3A	Pharmacology and Pharmacotherapy III.	2	2	4	final#	Pharmacology and Pharmacotherapy II.
AOKOZKOZ_2A	Public Health II.	1	1.5	3	semi-final#	Public Health I.
AOBL1BEL14A AOBL2BEL24A AOBL3BEL34A	Internal Medicine IV.	1	3	4	semi-final	Internal Medicine III.
AOSB1SEB_2A	Surgery II.	2	2.5	4	pract.mark	Surgery I.
AOFULFUL_1A	Otorhinolaryngology (either)	1	2	3	semi-final#	Pre-clinical module
AOBORBOR_1A	Dermatology (or)	1.5	2.5	4	semi-final#	Pre-clinical module
AOPULPUL_1A	Pulmonology (either in the 1st or in the 2nd semester)	1	2	3	semi-final	Internal Medicine II.
AOORTORT_1A	Orthopaedics	1	2	3	semi-final#	Surgery I.
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		

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

- 1 Cecil's Essentials of Medicine. Ed. Andreoli, Carpenter, Griggs. Loscalzo.W.B. Saunders. 5th ed. 2001. ISBN 0-7216-8179-4
- 2 Adler: ABC of AIDS. 1993. 3rd ed. ISBN 727907611. BMJ
- 3 Adler: ABC of Sexually Transmitted Diseases. 3rd ed. 1995. ISBN 72790261X. BMJ
- 4 Becker,W.- Naumann,H.- Pfaltz R.: Ear, Nose and Throat Diseases. Thieme. Stuttgart, New-York, 1994. ISBN 0-86577-536-2 or 3-13-671202-3
- 5 Répássy,G.: Otolaryngology. Eger, Radó Ny. 2000.
- 6 Katzung: Basic and Clinical Pharmacology, Lange 10th ed, 2007
- 7 Churchill's pocketbook of cardiology. Grubb, NR-Newby,D.E. Edinburgh 2006.
- 8 Richard B. Gunderman: Essential Radiology: Clinical Presentation, Pathophysiology, Imaging, 2nd ed, Thieme Medical , 2006. ISBN 1588900827, 9781588900821
- 9 The New Public Health: An Introduction for the 21st Century. By:T.Tulchinsky, E.A. Varavikova. 2000. ISBN 03350-5
Note: The list of the textbooks in Public Health, please find after its syllabus!
- 10 Adams,J.C-Hamblen,D.L.:Outline of Orthopaedics. 12th ed. Churchill Livingstone, Edinburgh, 1995. ISBN 0443 05149 6
- 11 Horst Cotta: Orthopaedics. Georg Thieme Verl. New York, 1980. ISBN 3-13590001-0
- 12 Bourne,Brewis: Lecture Notes on Respiratory Disease. Blackwell. 5th ed. 1998. ISBN 0-632-04968-5
- 13 Sabiston Essentials of Surgery. Saunders. 1994. ISBN 0-7216-3492-3.
- 14 Davis-Christopher : Textbook of Surgery rövidített változata!
- 15 Szabó Gy.: Oral and Maxillofacial Surgery. Bp. Semmelweis Kiadó, 2001.
- 16 Szender B.-Suba Zs.: Introduction to Histopathology. Bp. Medicina. 1999.
- 17 Koesner, K.R.: Manual of Minor Oral Surgery for the General Dentist. Blackwell Munksgaard, 2006.

Recommended textbooks:

- 1 Cecil Textbook of Medicine. 21th ed. W.B. Saunders, 2000. Vol.1-2.
- 2 Lynn S. Bickley: Bates' Guide to Physical examination and history taking
- 3 Tulassay Z. (Ed): A belgyógyászat alapjai (I.-II.)
- 4 Internet links for Internal Medicine
- 5 Current Medical Diagnosis and Treatment. (Ed.)Tierney,McPhee,Papadakis. Appleton & Lange, McGraw-Hill 2002. ISBN 0-07-136466-8
- 6 Harrison's Principles of Internal Medicine. 15th ed. McGraw-Hill Inc. 2001.
- 7 Concise Oxford Textbook of Medicine. Ed. Ledingham, Warrell. Oxford University Press, Oxford, 2000.
- 8 Davis-Foster-Gamelli: Essentials of Clinical Surgery. Mosby Year Book
- 9 Davis-Christopher (ed.: Sabiston): Textbook of Surgery. The biological basis of modern surgical practice. Saunders Company.
- 10 Duckworth,T.: Orthopaedics and Fractures. 3rd ed. Blackwell Science, 1995.
- 11 Szécsény-Berentey: Sebészet. Bp. Medicina.
- 12 Gaál: Sebészet. Bp. Medicina.
- 13 Littmann: Sebészeti műtétan. Bp. Medicina.
- 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.
Publisher: McGraw-Hill Edition: 6th Edition ISBN: 0-07-138076-0, 0-07-138066-3, 0-07-138067-1
- 15 full-text online access:
<http://gateway.ut.ovid.com/gw1/ovidweb.cgi?New+Database=Single|O&S=IDNJHKIDNGILP00>
- 16 Shimizu's Textbook of Dermatology – accessible online also

- 17 Clinical Dermatology
Editor: Rona M. MacKie 5th Edition Oxford Core Texts, 2003
ISBN13: 9780198525806 ISBN10: 019852580X Paperback or the latest edition
- 18 Dermatology
Editor: Otto Braun-Falco, Gerd Plewig, Helmut H. Wolff, Walter Burgdorf
Publisher: Springer Verlag; 3 edition (November 2009)
- 19 Peterson: Contemporary Oral and Maxillofacial Surgery. Mosby, 2003.
- 20 Peterson: Principles of Oral and Maxillofacial Surgery. Decker, 2004.
- 21 Robinson, Howe: Tooth Extraction. A Practical Guide. Oxford, 2000.
- 22 Forrai J.-Ballér P.: Chrestomathy on the History of Medicine. SOTE, Bp. 1992.
- 23 W. E. Erkonen, W. L. Smith: Radiology 101: the basics and fundamentals of imaging, 2nd ed, Lippincott Williams & Wilkins, 2004. ISBN 0781751985, 9780781751988
- 24 R. A. Novelline: Squire's fundamentals of radiology, 6th ed, Harvard University Press, 2004. ISBN 0674012798, 9780674012790

PHARMACOLOGY AND PHARMACOTHERAPY

Tutor: *Dr. Júlia Tímár*

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.

Antidepressant and mood-stabilizing agents. Anorexigenic drugs. Nootropic drugs. Antiepileptics.

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, 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

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

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):

Pharmacology of cardiovascular system – Drugs used in heart failure. Agents used in cardiac arrhythmias. Antihypertensive agents. Vasodilators and antianginal agents. Drugs used in peripheral vascular diseases. Agents used in hyperlipidemia. Diuretics and antidiuretics.
Clinical pharmacology of cardiovascular diseases – Hypertension, heart failure, ischemic heart diseases, atherosclerosis, arrhythmias.

Pharmacology of drugs used to treat diseases of the blood – Drugs used in anemias. Drugs used in disorders of coagulation.

Pharmacology of drugs used to treat diseases of the blood – Drugs used in bronchial asthma. Cough suppressants. Expectorants. Mucolytic agents. Treatment strategy of bronchial asthma and COPD.

Pharmacology of the gastrointestinal system – Agents improving digestion. Laxatives and antidiarrheal agents. Emetics, antiemetics and prokinetic agents. Drugs affecting liver function. Drugs affecting biliary function. Drugs used to treat inflammatory bowel disease. Treatment strategy of peptic ulcer, gastroesophageal reflux disease and IBD

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

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

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:

- Prof. Dr. Anna Tompa (editor). An Overview of Public Health. Semmelweis University Department of Public Health. Budapest, 2005.
- Materials presented and discussed at lectures and practicals

Other recommended sources:

- Tulchinsky TH, Varavikova EA. The New Public Health: An Introduction for the 21st Century. Academic Press, 2000.
- Detels R, McEwen J, Beaglehole R, Tanaka H. (eds.). Oxford Textbook of Public Health 4th edition. Oxford University Press, 2002. Available online at University workstations from the Central Library's website (<http://www.lib.sote.hu>) through the OVID system's Books@OVID database.
- 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>
- Heymann DL. Control of Communicable Diseases Manual 18th edition. American Public Health Association Press, 2005. Earlier editions are available to read at the department's library (NET, 21st floor).
- 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 – invasive cardiology
10. Common practice – non-invasive cardiology

11. Common practice – electrophysiology
12. Common practice – pediatric cardiology
13. Common practice – cardiac surgery
14. Practical exam

Students are strongly recommended to visit regularly our website where updated informations are available: <http://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.

Urinary tract infections. Cystic diseases of the kidney. Renal neoplasms.

Disorders of the immune system. Introduction. Organ-specific and systemic autoimmune 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.

Spondyloarthropathies. Ankylosing spondylitis. Reactive arthritis. Psoriatic arthropathy.

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

Disorders of the myocardium. Ischemic and non-ischemic cardiomyopathy. Congestive heart failure. Cor pulmonale.

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; pace maker, defibrillator, devices used to maintain blood pressure.

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

Diseases of blood vessels. Atherosclerosis, aneurism. Diseases of aorta and carotid arteries.

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. Biborka 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)

Introduction of the Department. The OP, the instruments of OP. The organization. The wards, etc. The central sterilization station. The admission system of the patients.
The preoperative wash-up. Asepsis, antisepsis, Get dressed for OP. The practical preparation of the skin.
The surgical instruments. What and when.
The treatment of wounds. The wound healing. The type of wounds. Bandaging procedures.
Injections. - Hypodermic, intracutan, intra muscular etc.,-
The suture technics. Sutures, knots, clips, etc.-
Laparoscopic technics.
Transfusion. The blood groups. Possible reactions and complications.
Anaesthesiology. - General anaesthesia. Narcosis systems. The intensive care unit.
The post operative treatments.
The resuscitation. - The CPR. - The latest pharmaceutical aspects of the CPR.
- Demonstration on AMBU unit.
Ward practices. (5x) - Investigate the surgical patients. The method of physical examinations. The evaluation of the findings.

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 cholelithiasys and biliary surgery
Pancreas I. - Acut pancreatitis
Pancreas II. (Chr. Pancreatitis. Tumours)
The artificial nutrition - Enteral, parenteral
The acute gastrointestinal bleeding
Catastrophic surgery. - Surgery of tropical diseases
Pediatric Surgery
Consultation - Questions-answers

Site of lectures: (előadások helye): lecture hall

PRACTICALS: all in wards (2,5 hours per week)

OTORHINOLARYNGOLOGY, HEAD AND NECK SURGERY

Tutor: *Dr. László Noszek*

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.

Dyspnoea 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.

Operating theatre. Video. Voice prostheses.

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). Dermatoallergy.
Dermatoimmunopathology. Basics of the skin immune system (SIS). Bullous skin disorders. Psoriasis. Skin symptoms of autoimmune diseases. Skin symptoms of vascular diseases.
Oncodermatology. Skin symptoms of internal diseases. Basic principles of general and topical dermatological treatment.

The goal of the training:

- a. Knowledge of diagnostics, ethiopathogenesis and treatment of skin diseases concerning the competency of general practitioners.
- b. Problem-oriented assessment of skin symptoms and the knowledge of their connections to general medicine.

1,5 hours every week. Half of the fourth year students takes the subject in the first semester, the other half in the second semester. The curriculum contains the following topics: anatomy and functions of the skin, dermatoinfectology, oncodermatology, atopic dermatitis, ekzema, drug eruptions, bullous diseases, allergic skin diseases, autoimmun skin disorders, sexually transmitted diseases.

2,5 hours every week. Half of the fourth year students takes the subject in the first semester, the other half in the second semester. Students examine patients, master the description of skin symptoms, evaluation of symptoms and dermatological treatment options.

Fungal infections are discussed during a special practice.

Important notes:

All preclinical modules are required. Registration in the Neptun system is imperative at the beginning of the semester.

Attendance of the lectures and practices is compulsory. Three absences are accepted. Lectures are compulsory. Each student should attend the practice of one particular teacher. Attendance of a practice at another teacher is accepted for the missed practices. The deputy teacher's signature is required.

Semester requirement: One mid-term exam (written test) – around the 10th week of the semester. Optional: at the end of semester a competition for clinical examination (a written quiz with projected clinical cases) is announced. The best students are dispensed from taking the practical part of the semi-final examination.

Sign up in the Neptun system is imperative.

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. Márta 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)
Pulmonary tuberculosis (epidemiology, etiology, primary and
postprimary tb, clinical feature and risk groups. Common signs
and symptoms. Diagnosis and 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.
Scheuermann's disease. Vertebra plana, Calve.
Scoliosis. Theories concerning the etiology of various kinds of scoliosis.
Pathological, clinical and radiological symptoms and appearance. Symptomatology

and therapy of the functional scoliosis. Symptoms and therapy of scoliosis with recognized etiology (congenital, paralytic, rachitic). Degenerative diseases of the spine. Etiology of low back pain, clinical symptoms, therapy. Low back of disc origin. Significance of the intervertebral discs under normal and pathological conditions. Symptomatology of the ischias syndrome and its therapy. Spondylolysis and spondylolisthesis. Lumbalization and Sacralization. Deformities and diseases of the neck and the upper extremity. Congenital torticollis, Klippel-Feil deformity. Cervical rib. Sprengel deformity. Obstetricalisparalysis. Recurrent dislocation of the shoulder. Cervicobrachial syndrome. Periarthritis of the shoulder. Dupuytren contracture. Kienböck disease. Tennis elbow. Madelung deformity. Sudeck dystrophy of the upper extremity. Osteoarthritis of the hip. Etiology, pathology, clinical and radiological symptoms. Methods of conservative and operative Treatment. Diseases of the child's hip. Legg-Perthes-Calve disease. Slipped capital femoral epiphysis. Acute and chronic arthritis of the hip. Congenital dislocation of the hip. Anatomy and development of the hip joint. Concept of dysplasia. Subluxation and luxation. Pathology. Early and late clinical and X-ray signs. Early and late conservative therapy. Various methods of operative treatment. Palliative operation. Diseases of the knee. Recurrent dislocation of the patella. Osteochondritis of the tibial tubercle (Osgood-Schlatter disease). Osteochondrosis of the tibia. Varus, valgus and hyperextension deformity. Osteoarthritis. Chondromalacia of the patella. Meniscus lesions. Diseases of the foot. Congenital clubfoot. Tarsal synostosis. Hallux valgus. Aseptic necrosis of the bones of the foot. Osteoarthritis of the joints of the foot. Flatfoot. Neuromuscular diseases. Classification and treatment. Infantile cerebral palsy. Disturbances of the development of the vertebral body and neural arch. Muscular defects. Progressive muscular dystrophy and other diseases of the muscles. Primary tumors of bones and their classification. Benign bone tumors. Osteoid osteoma. Semimalignant and malignant tumors (giant cell tumor, chondroma, osteosarcoma, chondrosarcoma, multiple myeloma, Ewing sarcoma). Main pathologic features.. ‘ Bone disorders. Osteoporosis, osteomalacia, osteogenesis imperfecta, Paget disease. Developmental anomalies. Congenital anomalies of the extremities.

Consultation.

ORTHOPEDICS

Practices

Instruction of correct behaviour in the Hospital and during practicals. Introduction to the Hospital. Therapeutic aims of Orthopedics. Methods of the clinical practicals. Methodology of learning Orthopedics. Diagnostic and therapeutic methods of Orthopedics. Anamnesis. Inspection, palpation, examination of motions. Basics of radiological examination of the musculoskeletal system. Normal Roentgen anatomy of the bones and joints. Form and function. Methods of examination of limb shortening and alterations of the forms. Contracture. Limping.

Fixation, relief of weight bearing, plaster splints, plaster bandages. Examination of patients. Examination of the diseases and deformities of the spine, malposture (Calves deformity, spondylarthrosis).

Preparation of plaster splints, bandages. Examination of patients with lumbago, ischias syndrome, spondylolysis, spondylolisthesis. Demonstration of Roentgenograms.

Examination of scoliotic patients. Preparation of plaster and other corsets.

Examination of patients. Tuberculous spondylitis. Demonstration of Roentgenograms. Preparation of plaster beds.

Examination of patients with congenital dislocation of the hip. Early and late symptoms of this disease. Demonstration of Roentgenograms.

Examination of patients with congenital dislocation of the hip. Demonstration of the means and methods of therapy and their application.

Examination of patients with juvenile osteochondritis of the hip. Epiphyseolysis.

Infantile coxa vara. Demonstration of Roentgenograms and methods of treatment. Preparation of hip spica.

Examination of patients with osteoarthritis of the hip. Examination of contractures of the hip. Demonstration of Roentgenograms.

Examination of patients with recurrent dislocation of the patella, Osteoarthritis, tuberculous arthritis of the knee. Punction of the knee joint. Methods of fixation of this joint, preparation of plaster bandage.

Examination of patients with diseases and deformations of the neck, upper extremity. Torticollis, cervicobrachial syndrome, 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: AORADRAD_1A

Credits: 4

Course Director: Dr. Viktor Bérczi

Course topics (order of lectures could change)

Introduction. Clinical importance of imaging modalities. Gastrointestinal tract I-II. Urogenital radiology. Neuroradiology. Head and neck imaging. Chest imaging. Cardiovascular imaging. Intervention (vascular/ non-vascular). Pediatric radiology. Musculoskeletal imaging. Mammography-oncoradiology (screening methods). Nuclear medicine. Radiotherapy – Biology of radiation

Practices

Demonstration of imaging methods. Clinical radiology by interactive case reviews. Consultation. (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.

CLINICAL MODULE



*Faculty of Medicine
5th year*

STUDY PROGRAMME

Fifth Year

9th semester						
Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOBL1BEL15A ¹ AOBL2BEL25A ² AOBL3BEL35A ³	Internal Medicine V.	1	3	4	semi-final	Internal Medicine IV.
rAOSB1SEB_3A	Surgery III.	1	1	2	semi-final	Surgery II.
AONO1SZU_1A	Obstetrics and Gynecology I.	2	-	2	pract. mark	Surgery II.
AOGY1GYE11A ⁴ AOGY2GYE21A ⁵	Paediatrics I.	2	3	5	pract. mark	Internal Medicine IV.
AOPSIELM_1A	Psychiatry I.	1.5	2	3	semi-final	Internal Medicine IV.
AONEUNEU_1A	Neurology I.	2	1.5	3	pract. mark	Internal Medicine IV.
AOIGSIGS_1A	Forensic Medicine I.	1	2	2	pract. mark	Pre-clinical module
AOANEANE_1A	Anaesthesiology and Intensive Therapy	1.5	1	2	semi-final	Surgery II.
AOTRATRA_1A	Traumatology	2	2	4	semi-final	Surgery I.
AOSZ1SZE_1A	Ophthalmology	2	2	4	semi-final#	Surgery I.
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

Fifth Year

10th semester						
Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOBL1BEL16A ¹ AOBL2BEL26A ² AOBL3BEL36A ³	Internal Medicine VI.	1	3	4	semi-final	Internal Medicine V.
AON01SZU_2A ⁴ AON02SZU_2A ⁵	Obstetrics and Gynecology II.	2	1 week/sem.	4	semi-final	Obstetrics and Gynecology I.
AOGY1GYE12A ⁶ AOGY2GYE22A ⁷	Paediatrics II.	2	3	5	semi-final	Paediatrics I.
AOPSIELM_2A	Psychiatry II.	1.5	2	4	pract. mark	Psychiatry I.
AONEUNEU_2A	Neurology II.	2	1.5	4	semi-final	Neurology I.
AOIGSIGS_2A	Forensic Medicine II.	1	2	3	semi-final#	Forensic Medicine I.
AOANESOO_1A	Emergency Medicine and Prehospital Emergency Care	2	1	2	semi-final	Internal Medicine V.
AOUROURO_1A	Urology	1	2.5	3	semi-final#	Pre-clinical module
AOCSACSA_1A	Family Medicine in Daily Practice	2	0	2	pract. mark	Internal Medicine V.
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 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

- 1 W.E. Hathaway-W.W. Hay (ed.): Current Pediatric Diagnosis and Treatment. 13th ed. Lange Medical Book. ISBN 08358-1442-1, ISSN 0093-8556.
- 2 Knight's Forensic Pathology. 3rd ed. 2004. Arnold.
- 3 Kaplan H.J.- Sadock B.J.-Grebbs J.A.: Kaplan and Sadock's Synopsis of Psychiatry. Behavioral Sciences Clinical 4. Psychiatry. 9th ed. Williams and Wilkins, 2003. ISBN 0-7817-3183-6
- 4 N.C.Andreasen-D.W.Black: Introductory textbook of Psychiatry. American Psychiatric Press, Washington.
- 5 Lang,G.K.:Ophthalmology. A Pocket Textbook Atlas. Thieme Flexibook. Stuttgart, 2000. ISBN 3-13-126161-7
- 6 Hacker N.F-Moore J.G-Gambone J.C.:Essentials of Obstetrics and Gynecology. 4th ed. W.B. Saunders Co. ISBN 0-721601790 Paperback
- 7 Peitzman B.A,Rhodes M, Schwab C.W, Yealy M.Y, Fabian C.T: The Trauma Manual: Trauma and Acute Care Surgery, Third edition, Publisher: Wolters Kluwer / Lippincott Williams & Wilkins
- 8 Smith's General Urology. E.A.Tanagho, J.W.McAninch (ed.) Appleton & Lange. 15th ed. McGraw-Hill Professional Publ. 2000. ISBN 0-83-858607-4
- 9 P. Nyirády, I. Romics (ed.): Textbook of Urology, Semmelweis Publisher, Budapest, 2009.
- 10 Arányi Zs., Kamondi A., Kovács T., Szirmai I.: Investigation of neurological patients.
- 11 Adams: Principles of Neurology. McGraw-Hill
- 12 Lindsay,Bone,Callender:Neurology and Neurosurgery Illustrated. Churchill Livingstone
- 13 Marini J.J.-Wheeler A.P.: Critical Care Medicine – The Essentials. Williams and Wilkins. Baltimore, 2nd ed. 1997. ISBN 0-683-05555-0

Recommended textbooks:

- 1 T.E.OH: Intensive Care Manual.
- 2 Basic Ophthalmology for Medical Students and Primary Care Residents. Ed.by: C.A.Bradford. 1999. 7th ed.
- 3 David Hull-Derek I.Johnson: Essential Paediatrics. 3rd ed. Churchill Livingstone, 1994. ISBN 0-443-04782-0
- 4 Silver, Kempe Bryn and Fulginiti's Handbook of Pediatrics. Appleton and Lange. ISSN 0440-192
- 5 Mecleod's: Clinical Examination. J.Munro. CRW Edards Churchill Livingstone Ed.
- 6 Papp Z.: Obstetric Genetics. Bp. Akadémiai K. 1990. ISBN 963-05-5689-8
- 7 Papp Z.: Atlas of Fetal Diagnosis. Elsevier, London, 1992. ISBN 0-444-98675-8
- 8 Knight B.: Simpson's Forensic Medicine. E.Arnold Co. London. 1991.
- 9 Marsden, Fowler: Clinical Neurology. Raven Press
- 10 Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers
- 11 Gilroy: Basic Neurology. Pergamon Press
- 12 Weiner- Lewitt: Neurology of House Officer. Williams and Wilkins
- 13 Bannister: Brain an Bannister's Clinical Neurology. Oxford University Press
- 14 Mumenthaler: Neurology. Georg Thieme Verlag.
- 15 Duus: Manual of Emergency Medicine. 5th ed. Jon L.Jenkins, G.R.Braen. 2004. Lippincott Williams and Wilkins. Prod.Nr. 479531-1019
- 16 Rakel,R.E: Essentials of Family Practice. W.B.Saunders Co. 1998.
- 17 Taylor,R.B.: Fundamentals of Family Medicine. Springer, 1996.

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, toxoplasmosis, 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 I. Initial evaluation of the patient with poisoning or drug overdose. The symptomatic patient. Diagnosis of poisoning. Other treatment.

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.

Geriatric 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. Kl.)**
(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

Tutors:

1st Dept. of Obstetrics and Gynecology: **Dr. Gyula Richárd Nagy**

Dr. József Gábor Joó

2nd Dept. of Obstetrics and Gynecology: **Dr. Nándor Ács**

First Semester

Lectures (2 hours/week) held at the 1st Department

Introduction. General information. The menstrual cycle. Conception. Normal pregnancy.
 Normal labor and delivery. Obstetrical examinations.
 Changes in maternal anatomy and physiology during pregnancy.
 Prenatal care. Symptoms and signs of pregnancy.
 Spontaneous abortion. Ectopic pregnancy. Basic knowledge of ultrasonography.
 Maternal diseases complicating pregnancy. Gestational diabetes.
 Abnormalities of pregnancy.
 Abnormalities of labor and delivery.
 Monitoring of the fetus.
 Hypertensive disorders in pregnancy.
 Premature delivery. Intrauterine growth retardation (IUGR).
 Neonatology.
 Twin pregnancy. Operative delivery.
 Normal and abnormal puerperium.
 Major issues in current obstetrics.

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
Intrauterine infections. Anaemia. Infant mortality.
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.
 Diarrhea

Follow up of Patients With Chronic Diseases
Pediatric Emergency (surgery)
Prevention (screening, vaccination, vitamins)
Neurological Examination of Newborn Infant
The Patient With Glycosuria, Proteinuria etc.
Anaemia
Outpatients' Clinic Practice
Pediatric Otorhinolaryngology (examination)
Endocrinology (puberty)
Pediatric Oral Health

Each lesson starts with physical examination of children (at least 3 children) and discussion of one of the subjects above, depending on the examined patients.

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.

Week	Practice
1	The psychiatric examination
2–5	Neurotic, stress-related and somatoform disorders
6	Eating disorders
7–10	Mood (affective) disorders (incl. suicide)
11–14	Organic mental disorders (incl. mental retardation)

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.

ANAESTHESIOLOGY AND INTENSIVE THERAPY

Tutor: **Dr. Andrés Lorz**

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

Lectures and Practice

- 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

TRAUMATOLOGY

Tutor: *Dr. Miklós Szébeny*

First Semester

Lectures (2 hours per week)

Practice (2 hours per week)

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, thoracic, 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 (thoracic, 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.
 Glaucoma. Clinical diagnosis. Classification. Treatment.
 Disturbances of ocular circulation.
 “Medical,, retina (vascular diseases, macular disorders) and “surgical” retina (retinal detachment).
 Ocular manifestations of systemic diseases. The vitreous and its disorders.
 Pediatric ophthalmology. Strabismus, amblyopia.
 Diseases of the optic nerve and optic pathways.
 Neuro-ophthalmology. Normal and abnormal eye movements.
 Pupillary reactions.
 Tumours of the eye.
 Modern diagnostic and imaging techniques in ophthalmology.
 Trauma of the eye and adnexa.
 The role of the general practitioner in the management of eye diseases.
 Multiple choice questions. Diagnostics (slides).
 Demonstration material: slides, handouts, videotapes, case studies.

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. Ophthalmoscopy III. Pediatric ophthalmology. The examination of concomitant squint and its treatment. Binocular vision. Differential diagnosis of paralytic strabismus.

Practice:

Ultrasonographic examination. Diseases of the retina and vitreous body, intraocular tumors, retinopathy of prematurity. Demonstration of the ultrasound diagnostics of the aforementioned diseases. Ophthalmoscopy IV. Ward round, examination of patients. Electrophysiology of vision (ERG, EOG, VEP). Emergency in ophthalmology. (Sudden and progressive loss of vision) First aid in ophthalmology. Forms of patching, treatment of eye injuries. Ophthalmological tasks of the family's physician. The most common eye complaints and disorders. Ward round, examination of patients. Consultation.

NEUROLOGY

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)

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:

1. Arányi Zs., Kamondi A., Kovács T., Szirmai I.: Investigation of neurological patients. 2.Adams: Principles of Neurology. McGraw-Hill
3. Lindsay,Bone,Callender:Neurology and Neurosurgery Illustrated. Churchill Livingstone

Other suggested books:

1. Marsden, Fowler: Clinical Neurology. Raven Press
2. Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers
3. Gilroy: Basic Neurology. Pergamon Press
4. Weiner- Lewitt: Neurology of House Officer. Williams and Wilkins
5. Bannister: Brain an Bannister's Clinical Neurology. Oxford University Press
6. Mumenthaler: Neurology. Georg Thieme Verlag.

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.
9.	The brainstem. The thalamus.
10.	The cerebellum
11.	Disturbed consciousness. Neurological emergency.
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.
4.	Motor functions of cranial nerves. Bulbar, pseudobulbar and suprabulbar paresis.
5.	Examination of the I. and II. Cranial nerve. The visual fields.
6.	Examination of the III., IV., VI. Cranial nerves. The eye movements. The nystalli reflexes. Gaze disorders.
7.	The V cranial nerve.
8.	The facial nerve palsy.
9.	The nystagmus. Dizziness and vertigo. The vestibular system.
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

Week	Lecture title
1.	Headache
2.	Aphasia
3.	Cerebrovascular diseases (part 1)
4.	Cerebrovascular diseases (part 2)
5.	Epilepsy
6.	Multiple sclerosis
7.	Movement disorders (part 1)
8.	Movement disorders (part 2)
9.	Aneurysm, subarachnoideal bleeding and vascular malformations
10.	Dementia
11.	Neuromuscular diseases. Encephalopathies
12.	Genetic abnormalities in neurologic disorders
13.	Written semifinal exam
14.	Questions and answers.

Week	Practice
1.	Diagnostic procedures I.: EEG, evoked potentials, EMG, Doppler, CSF
2.	Diagnostic procedures II.: Neuroradiology, X-ray, CT, MRI, etc.
3.	Movement disorders. Symptoms of Parkinson's disease.
4.	Hyperkinesia and dystonia.
5.	Hypnoid and non-hypnoid unconsciousness. The Glasgow coma scale.
6.	Metabolic encephalopathies.
7.	Memory dysfunction, dementia.
8.	Thecognitive functions
9.	Emergency in Neurology.
10.	Examination of muscle disorders.
11.	Examination of polyneuropathies.
12.	Differential diagnosis of headaches.
13.	Practical exam
14.	Consultation, questions and answers.

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
4. Pupillary reflex arcs. Disturbances of pupillary reflexes.
5. Trigeminal nerve
6. Facial nerve
7. The vestibular system

8. Hearing
9. Glossopharyngeal, vagus, accessory and hypoglossal nerves
10. Organization of motor control
11. Sensory systems
12. Gross anatomy of the hemispheres
13. Basal ganglia and the thalamus
14. The limbic system
15. The cerebellum
16. Blood supply of the hemispheres. Cerebral metabolism
17. Blood supply of the brainstem, cerebellum and the spinal cord
18. The cerebrospinal fluid

II. Basic Neurology

1. Classification of reflexes (stretch, superficial, abnormal and primitive reflexes)
2. Characteristics of upper and lower motoneuron lesion
3. Paresis syndromes according to the site of lesion
4. Symptoms of spinal cord damage
5. Medulla oblongata (bulbar) syndromes caused by circulatory disorders
6. Pontine syndromes caused by circulatory disorders
7. Mesencephalic syndromes caused by circulatory disorders
8. Muscle tone control
9. Nystagmus
10. Vertigo and dizziness; peripheral and central vestibular syndromes
11. Symptoms of cerebellar lesions
12. Symptoms of frontal lobe damage
13. Symptoms of temporal and occipital lobe damage
14. Symptoms of parietal lobe damage
15. Symptoms of occipital lobe damage
16. Thalamic syndromes
17. Clinical examination and types of aphasia
18. Structural basis and types of unconsciousness
19. Physical examination of the unconscious patient
20. Increased intracranial pressure, brain herniations, hydrocephalus
21. Hyperkinesia
22. Gait disturbances
23. Bladder and bowel dysfunction
24. Symptoms of intervertebral disc herniation
25. Lesions of the peripheral nerves of the upper extremity. Tunnel syndromes on the upper limb.
26. Lesions of the peripheral nerves of the lower extremity.

III. Neurological Disorders

1. Classification of ischaemic cerebrovascular disorders
2. Intracranial bleedings, subarachnoidal 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

2 credit

Content	Responsible speciality E/I = emergency/intensive P = prehospital care M-C-M = military and catastrophe medicine Time distribution (min)
Introduction: Definition and goals of emergency medicine. The chain of emergency patient care. Emergency medical systems in Hungary: connections, patient pathways and disposition on-the-scene and in-hospital. Decisions and priorities during emergency care according to dependency level. Role and tasks of the emergency department (ED) in hospital systems. Recommendations, protocols and algorithms during emergency care. Triage in the field and in the ED. Intrahospital emergency care (MET).	Together P:45 + E/I:45
Emergency patient evaluation – ABCDE approach and it's pathophysiological and clinical background.	E/I: 90
CPR I. The chain of survival. Pathophysiology of resuscitation. BLS-AED. Out-of-hospital CPR.	Together P:60 + E/I:30
CPR II. ALS. In-hospital CPR. Postresuscitation life support (PLS).	E/I: 90
A, B. Airway and Breathing problems. Acute respiratory failure. Acute exacerbation of chronic respiratory failure (COPD). Acute life-threatening bronchial asthma. Pneumonia.	E/I: 90
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.	Together P:30 + E/I:60

Content	Responsible speciality
C. Circulatory failure, hypotension, heart failure, hypertensive crisis. Pathophysiology, differential diagnosis, treatment in the field and in the ED. Peri-arrest arrhythmias.	E/I: 90
D. Differential diagnosis and management of altered mental state. Organic and metabolic causes. Management of convulsion. Management of meningitis. Process of stroke management from first responder to definitive treatment. Psychiatric emergencies.	Together P:30 + E/I:60
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.	Together E/I: 90
Content	Responsible speciality
Gastrointestinal symptoms (vomitus, diarrhoea, obstipation, 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.	E/I: 90
Prehospital and ED care of trauma and polytrauma.	Together P:45 + E/I:45
Military and disaster medicine I.	M-C-M
Military and disaster medicine II.	M-C-M
Toxicology I. General principles of toxicology. Recognition and treatment of common poisonings.	E/I: 90
Children in the field and in the ED. Emergency pediatrics.	Közös P:30' + E/I:60

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. Andrés Lorz**

Program and topics

2 credit

Content	Responsible speciality E/I = emergency/intensive P = prehospital care M-C-M = military and catastrophe medicine Time distribution (min) P:45+E/I:45
General principles of security and of acting on-the-scene. Group diagnosis, time factor. Algorithms. Cooperation with other health care and emergency care providers.	P
Military and disaster medicine III.	M-C-M
Military and disaster medicine IV.	M-C-M
Toxicology II. Recognition and management of concerning intoxications. Prehospital emergency care. Orientation and important measures in the field. Patient disposition.	P
CPR III. Resuscitation of newborns, infants and children.	E/I
CPR IV. Adult resuscitation in special situations (pregnancy, electrolyte disturbances, acute severe asthma, anaphylaxis, electric injuries, immersion, submersion, hypothermia, severe trauma, intoxication).	E/I
Recognition and management of acute metabolic crises. Recognition and management of hemato-oncological emergencies.	E/I
Acute dermatological signs. Acute disorders of the musculo-skeletal system. Emergency care in rheumatology.	E/I
Emergency care in ophthalmology and ENT.	E/I
Emergency care in urology and OB/GYN.	E/I
Psychological and social aspects of emergency medicine.	Together
Law and ethics during prehospital care and in the ED.	(P+E/I)
Case discussion: Chest pain.	Together (P+E/I)
Case discussion: Dyspnea.	Together (P+E/I)
Case discussion: Abdominal pain.	Together (P+E/I)
Case discussion: Altered mental state.	Together (P+E/I)

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 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 infectious diseases and antimicrobial treatment.

The first two lessons discuss the specific features of antimicrobial therapy, the basic principles of empiric treatment and the pharmacokinetic/pharmacodynamic concept that substantiates the application of antimicrobials in term of choice, dosage and combination. The following seven lectures deal with the specific features of the most important infections, such as respiratory tract

infections, urinary tract and intraabdominal infections, endocarditis, meningitis, sepsis. Obviously, the lecturers bring into focus the considerations concerning antibiotic therapy. In the second half of the course, some of the nosocomial infections, infections of immunocompromised hosts and zoonoses are discussed, followed by the problems of antibiotic prophylaxis and antibiotic policy. The course is organized only in the first semester

Course director: **Prof. Dr. Endre Ludwig.**

The venue of course: *Szent László Hospital*
1097 Budapest, Gyáli út 5-7. Building N. 19 Lecture Room

Textbooks:

1. E. Ludwig: Antibiotic therapy, Medintel, Budapest, 2003.
2. A. Szalka, L. Tímár, E. Ludwig, Zs. Mészner: Infectology, Medicina, Budapest, 2005.
3. Reese and Betts: A practical approach to infectious diseases. Lippincott Williams and Wilkins 2003.
4. Material of the lectures online availability

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, tonsillopharyngitis). Epidemiology, the influence of age. Theoretical considerations and practice. Community acquired pneumonia. Epidemiology, the difficulties of etiological diagnosis. The impact of emerging bacterial resistance on the clinical efficacy of antibiotics. The modern approach and practice based on it

The nosocomial infections. Nosocomial pneumonia, difficulties of etiological diagnosis.

Antimicrobial treatment. Iv catheter-associated infections.

Intraabdominal infections (primary and secondary peritonitis, cholecystitis). Urinary tract infections.

Central nervous system infections. Meningitis, etiological diagnosis, antimicrobial treatment.

Infections of the immunocompromised hosts. Diagnosis, and the principles of treatment. Invasive

fungal infections. Colonisation and infection. Treatment of Candida and aspergillus infections.

Tropical diseases. HIV and AIDS.

The modern concept of sepsis. The basis of antimicrobial therapy. Indication of antibiotic combinations. The toxic shock syndrome.

Important note: Attendance at 70% of the lectures is compulsory. The end semester grade is the result of the multiple choice test.

Recommended textbooks:

1. **Ludwig E.** (szerk): Antibiotikum terápia 2003
Medintel, Budapest, 2003.
2. Szalka A., Tímár L., **Ludwig E.**, Mészner Zs. (Szerk.): Infektológia.
Medicina, Budapest, 2005.
3. Reese and Betts: A practical approach to infectious diseases. Lippincott Williams and Wilkins 2003.
4. Figures of the lectures are available elctronically

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.
- 2: Chemical equations, stoichiometry, reaction types. Acids, bases, salts. Solutions. Concentrations.
- 3: Laws of diluted solutions. Electrolytes, ionization of electrolytes. Conductivity. Acid-base theories.
- 4: Chemical equilibria. Le Chatelier principle, law of mass action. Equilibria in aqueous solutions, principle of pH. Buffers. Carbon dioxide/hydrocarbonate buffer.
- 5: Consultation: preparation for the 1st midterm. Focused on calculations: ionization, pH, buffer, solubility product.
- 6: Chemical thermodynamics. Principles of enthalpy, entropy, free enthalpy. Hess' law. Basics of reaction kinetics. Activation energy and catalysis.
- 7: Electrochemistry. Oxidation and reduction, redox systems in the living cells.
- 8: A short summary of inorganic chemistry. Metals and non-metals. Complexes.
- 9: Calculations in electrochemistry and thermochemistry.
10. Basics of organic chemistry, hybrid states of carbon, organic reaction types. Isomerism, structural isomerism. IUPAC nomenclature.
11. Stereochemistry. Geometric and chiral isomerism, nomenclature. Prochirality.
12. The most important groups of organic compounds. Aliphatic and aromatic skeletons, their reactions. Repetitions of their structures. Consultation before the 2nd midterm – focused on organic chemistry.
13. The most important groups of organic compounds according their functional groups, their reactions. Repetitions of their structures.
- 14: Closing test. 30 multiple choice questions and 10 structures

Exam: closing test. 30 multiple choice questions and 10 structures

Note: Material of the lectures is available on the website of the Department.

Max. 3 absences are allowed.

VALUE OF ULTRASONOGRAPHY IN THE CLINICAL DIAGNOSTICS

(Lecturer: **Dr. Ágnes Szébeni** M.D., D. Sc.)

1. a) Basic physics of medical ultrasound
 - b) Demonstration of the ultrasound laboratory; technique of ultrasound scanning.
2. a) Sonography of the liver, the spleen, the gallbladder and the bile ducts.
 - b) Patient demonstrations and training
3. a) Sonography of the pancreas and the pancreas and the lymph nodes.

- b) Patient demonstrations and training
- 4. a) Invasive sonography (US guided biopsies and punctions, endosonography, intraoperative sonography).
 - b) Videodemonstrations.
- 5. a) Urogenital sonography.
 - b) Patient demonstrations and training
- 6. a) Small part scanning.
 - b) Patient demonstrations and training
- 7. a) Vascular sonography
 - b) Patient demonstrations and training

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

Credit-value

Minimum/maximum group-size

The aim of the subject:

Thematic

Application:

Application deadline:

Precondition

Practical mark

3 credit-points

8/30

Teaching students how to search in medical literature sources

Medical e-catalogues, e-books, e-libraries, databases (Ovid/PubMed/Web of Science), MD Encyclopaedia, Web (WHO),

Scientometry (IF, Citation)

Judit Batiz: Tel.: 459-1500/55263;

29th August – 2nd September, 2011

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 introduction of medical
 portals:-DrugFacts:<http://www.factsandcomparisons.com/> MedBioWorld
<http://www.medbioworld.com/>
 Medical
 Matrix:<http://www.medmatrix.org/reg/logjn.asp>
 Link collections: Health Web <http://healthweb.org/>; Hardin Meta Directory
<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

Pharmacopoeiais: European Pharmac. And US Pharmac.

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 rystalline 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:

11.

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

Alphafetoprotein (AFP)

Genetic amniocentesis

Pathology of multiple pregnancy

Genetic counseling

General aspects of decision making regarding the fate of pregnancy

Elements of phenotype analysis

Embryopathology and fetal pathology

Sphingolipidoses

Mucopolysaccharidoses and mucopolipidoses

Disorders of carbohydrate metabolism

Diseases of amino acid metabolism
 Haemophilia and other bleeding disorders. Congenital immunodeficiencies. Congenital hypothyroidism. Cystic fibrosis
 Hereditary muscular and neurological diseases
 Congenital disturbances of ossification
 Neural tube defects (NTDs). Hydrocephalus. Other craniospinal malformations
 Thoracic and abdominal malformations
 Cystic kidney disease. Obstructive uropathies
 Down syndrome. Further autosomal trisomies
 Duplication and deficiency (deletion) syndromes
 Fragile X mental retardation syndrome (MartinBell syndrome)
 Disturbances of sex differentiation.
 Intrauterine bacterial infections. Congenital rubella syndrome. Further viral and chlamydial infections. Congenital toxoplasmosis
 Prenatal screening for fetal malformations and trisomies

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

Course Director: **Prof. Dr. Tamás Machay**

Second Semester

Physiology of the Fetus and Newborn. Transition to Extrauterin Life.
Maternal and Fetal Problems in Neonatology. Prenatal Care.
Delivery Room Management of Newborns. Resuscitation. Infant Transport.
Respiratory Disorders of Newborns.
Ventilation of the Neonate.
Cardiac Diseases of Newborns.
Surgical Diseases of Newborns.
Metabolic Problems of Newborns.
Neonatal Hyperbilirubinaemia. Anaemia. Polycythaemia. Blood Products Used in the Newborns.
Parhophysiology of Body Fluids. Fluid and Electrolyte Management.
Neonatal Neurology.
Infections of the Newborns. Prevention and Treatment.
Neonatal Pharmacology. Surfactant replacement.
Neonatal Radiology.
Follow up of High-risk Newborns.

CLINICAL ENDOCRINOLOGY

2nd Department of Internal Medicine

Course Director: **Prof Dr. Károly Rácz**

Second Semester

Lectures

Introduction to clinical endocrinology. Case Presentations.
Use of hormone measurements in the diagnosis of endocrine diseases.
Molecular genetics of endocrine diseases.
Radiological imaging methods of endocrine organs.
New developments in surgical treatment of endocrine tumors.
Case presentations: pituitary gland disorders.
Case presentations: adrenal gland disorders.
Case presentations: thyroid gland disorders.
Case presentations: parathyroid gland disorders.
Sex determination and its disorders.
Hormone-replacement therapy
Inherited disorders presenting with endocrine tumors.
Osteoporosis.
Endocrine hypertension.

EMERGENCY IN SURGERY

Course Director: **Prof. Dr. Pál Ondrejka**

Second Semester

Purpose of the subject: In the practice of surgery is very important the early detection of emergency cases. For this reason the collaboration with the representatives of other medical professions is indispensable. The goal of our lectures is to present the appropriate procedures of physical examination, laboratory and radiological findings in order to recognize the correct diagnosis; to know what is necessary, **what is possible and what is enough** to do in a case of surgical emergency; when to ask for a consultation for adequate therapy. The inborn errors, injuries, inflammations and tumors of the organs are also presented. In order to make the lectures more interesting we are going to review the relevant episodes in history of medicine and final arts.

Main topics:

Introduction, life threatening disorders in surgery, emergency in gastrointestinal surgery, acut abdomen.
 Gastric, duodenal, small bowel emergencies.
 Peritonitis acuta.
 Abdominal trauma.
 Surgery of the wound, infections, anaerob infections in surgery (MRSA, Furnier, tetanus, anaerob)
 Small bowel obstruction, large bowel obstruction.
 Esophageal emergencies.
 Biliary emergencies.
 Complications of peptic ulcer.
 Gastrointestinal bleeding.
 Pancreatitis acuta.
 Pancreatitis chronica.
 Appendicitis, diverticulitis, sigmoiditis, typhlitis.
 Surgical intections.

Minimum 80% attendance rate for getting the signature is obligatory.

CLINICAL HEMATOLOGY

2nd Dept. of Internal Medicine

Course director: **Prof. Dr. Lídia 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.
8. Clinical picture and diagnosis of hemorrhagic diatheses.
Prophylaxis and treatment of venous thrombosis.
9. Gastroenterological complications of hematological diseases.
10. Dermatologic manifestations of hematological diseases and hematological symptoms of dermatologic diseases.
11. Immunocytopenias.
12. Hematological emergencies.
13. Stemcell transplantation.
14. Infectious complications of hematological diseases

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 on the 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 inTropics: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 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)
- 13-14 lectures**
1. Tropical worm diseases:schistosomiasis and food-born diseases.tape worms & fluke infections.Tape worms:Taenia saginata, Taenia solium, cysticercosis&Echinococcosis. Clinical course&treatment of mentioned diseases.(Agnes Axmann MD,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&H)
- 19-20 lectures**
1. Viral haemorrhagic fever: Denque, 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

1. Introduction. What is Medicine? Methods and sources of Medical History. The birth of paleomedicine (bones teeth, mummies). Prehistoric medicine. Far East.
2. Far East Medicine. Chinese civilization, Japan, India.
3. Medicine of ancient civilizations, rivers valley's culture: Mesopotamia, Egypt, and the medicine knowledge. Medicine - in the Bible time - Heritage of the empirical knowledge. Practitioners. Theories of diseases.
4. Greco-Roman Medicine. Homeric medicine. Asclepius, Hippocrates. Corpus Hippocraticum- the concept and doctrine of his theories about the nature and diseases (the four humors). The Oath. Hygiene and health education. Post-Hippocratic schools – the golden heritage in the school of Alexandria. The roman physicians, diseases. Advance of public health. Water supply and sanitation, climate, soil and health, diseases, endemics. The workers' health, provision of medical care. (Celsus, Galenus)
5. Medieval medicine. Byzantine Healers, Arabian Hakims, Monks, Crusaders and medieval „doctors.“ The Arabian medicine: chemistry, pharmacy, hospitals. Razes, Avicenna, Abulcasis. The medieval Monasteries (Monte Cassino). The growth of European cities, sanitary problems of urban life. The first religious medical school in Salerno. Medieval Universities, medical humanists, and Christian caritas.
6. Medicine in the Renaissance. The Arts and the humanism. The new mentality of medicine: Paracelsus. The revolution of anatomy: Vesalius and his contemporaries. The first step toward the specialization. Botany and mineralogy. The printing of book's role in medicine. Foundation of the administration of Public Health. Epidemic diseases: communicable and non-communicable diseases. Theories, therapies, and medical care, hospital. Quarantine.
7. Experimenters, Teachers and Theoreticians in the Sixteenth and Seventeenth Centuries. Body as machine -old schools: iatrochemical, iatrophysical theories. New schools: animism, tonus, vitalism, stimulation, homeopathy. The circulation of the blood. Harvey's methodology

- Malpighi. Microscopy. Birth of modern clinical medicine: Sydenham. Boerhaave and his pupils.
8. Industrialism in the Eighteenth Century. Clinical medicine- schools of clinical (French, English, German, and Habsburg). The first Vienna School: van Swieten. surgery (Hunter, Valsalva), pathology (Morgagni, Bichat). Public health and hygiene. Occupational health, prison reform, general health (death rate, statistics), Ramazzini, Frank. Smallpox. Infant mortality. Nursing, dispensaries and hospitals, development of obstetrics. Sanitary conditions – filthy towns.
 9. Clinical medicine in the second half of the nineteenth Century. Bacteriology a new science in medicine. Revolution, concepts and theories under the microscope. New discoveries Pasteur, Koch. Social revolution, industrialism, public health. National and international movements and health reforms, and medical care. Period of great epidemics. International health organization. The Red Cross.
 10. Development of surgery and gynaecology. The man-midwife (Smellie, Hunter), History of anaesthesia. General and local possibilities. Wells, Morton, Simpson, Jackson). Asepsis and antisepsis. Early efforts to develop aseptic techniques. Semmelweis, Lister. Progress in surgery, Billroth. Cholecystostomy, appendectomies.
 11. Emergence of specialism. Logical outgrowth of locality pathology, new instruments. Initially the medical professions: Paediatrics, Psychotherapy, Ophthalmology, Otology, Rhinology and Laryngologist, Dentistry, Neurology and Psychiatry, Dermatology and Venerology.
 12. From the black death to the AIDS. The history of epidemics. The theories and therapies. Tropical medicine. The development of epidemics, the bacteriology and immunology. The new medicaments. Ehrlich and the chemotherapy, sulphonamides, antibiotics. Virology. Salk and Sabin. New diseases and screenings methods.
 13. Consultation

Important: 3 absences are allowed. Doctor's certificate is required to certify absence from the exam.

Exam requirement: written test

Textbook:

Chrestomathy on the History of Medicine. Ed. Dr. Forrai J., Dr. Ballér P., Budapest, 1992. SOTE

CLINICAL CARDIOVASCULAR PHYSIOLOGY

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 hormones
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. Habil. László Dézsi*, Private Professor of Physiology, Semmelweis University
Invited lecturers:

Prof. Emer. Emil Monos, Professor of Physiology, Semmelweis University

Dr. Iván Fűzes, 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: dezi.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. Fűzes)
2. General metrology. Basics of measurement techniques and control theory (Dr. Fűzes)
3. Sampling of continuous signals. Digitizing analogue signals (Dr. Fűzes)
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. Fűzes)
6. Investigating the electrical activity of the heart. Principles of ECG amplifier design (Dr. Fűzes)
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. Fűzes)
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. Fűzes)
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 Fűrst**

Second semester

Code: AOFMKAB_1A

Credit: 2

Topics:

Introduction, general concepts. Non-medical use of drugs. Drugs of abuse. Classification of scheduled drugs under WHO control. Vulnerability. Tolerance, physical and psychological dependence. Molecular basis of drug addiction.

Opioids. Pharmacological action of opioid agonists and antagonists. Opioid receptors, endogenous ligands. Characteristics of opioid dependence.

Psychomotor stimulants. Pharmacological action of amphetamine, its derivatives (methamphetamine, MDMA-“Ecstasy”, etc.) and cocaine. Role of the dopaminergic transmission in the drug abuse.

Hallucinogens. Ethanol. Pharmacological action of hallucinogens, (LSD, mescaline, phencyclidine, etc.). Role of the serotonergic transmission in hallucination. Characteristics of ethanol dependence.

Marihuana (hasis, THC) Pharmacological action of cannabinoids. Cannabinoid receptors and their endogenous ligands.

Sedative-hypnotics. Pharmacological action of benzodiazepines, barbiturates, other sedative-hypnotics. Characteristics of prescription drug dependence. Polydrug-abuse.

Epidemiological data. Significance of epidemiological data collection. Forms of questionnaires. Tendency of drug abuse, national (Hungarian) and international data. High risk groups.

Pharmacological treatment. Traditional medicinal treatment and new methods. Medical treatment of withdrawal symptoms, replacement therapy. Treatment of overdose. Prevention of relapse.

Psychotherapy. Individual and group therapy. The problems of long-term rehabilitation. Counselling.

Drug abuse and society. Legal issues. Statutory rules and regulations. Human rights.

Role of public and civil rystalline. Role, task and potential of governmental and non-governmental rystalline in the prevention of drug abuse.

Detection of drug consumption. Laboratory analysis of blood and urinary samples. The role of objective laboratory control in prevention and reduction of drug abuse.

Prevention and harm-reduction. Primary, secondary and tertiary prevention. Demand-reduction and harm-reduction. Early recognition. Rehabilitation, social reintegration.

Psychosocial questions of drug abuse. Psychosocial aspects. Self-destructive attitudes. Psychological and social background. Role, task and possibilities of the medical doctor.

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

Absence justification: Medical certificate is accepted

There is no midterm

Requirement: Participation at the lectures

Evaluation: On the base of the scores of the written test

Exam: written test

The written test is on the last lecture, registration has to be done through the NEPTUN system

How to modify the exam date: Personal discussion for another appointment

Exam absence justification: Medical certificate is accepted

BASICS OF FAMILY MEDICINE

2011/2012

Department of Family Medicine

Director: **Prof. Dr. László Kalabay**

Location: *Kútvölgyi Hospital, first floor, library*

Family medicine as a speciality

Past and present of family medicine in Hungary

Daily routine of family doctor

Dr. Kalabay László

Doctor-patient relationship in family practices. Communication skills

Dr. Torzsa Péter

Emergency care in family practice

Dr. Szabó János

Cardiology and prevention in family practice

Dr. Simon Judit

Diabetes mellitus in family practice

Optimal treatment of diabetes mellitus

Dr. Dani Vilmos

Prevention program in family practice**Optimal treatment of hypertension**

Dr. Torzsa Péter

Primary care in cities

Dr. Torzsa Péter

Primary care in the countryside

Dr. Szabó János

Care of gipsy patients

Dr. Horváth Péter

Medical ethics and law

Dr. Vajer Péter

Continuing home care**Rehabilitation****Terminal illnesses****Summary**

Prof. Dr. László Kalabay

Dr. Péter Torzsa

History of the medical professionalism

Lecturer: **Dr. Péter Balázs**

Class Sessions: Medical professionalism as an ethical norm is an ancient behavioural pattern and theoretical construction alike based on sacral calling. Consequently, roots of the modern professional mythology may be traced back to the late Neolithic age, but the whole framework was systematized as soon as in the old Egyptian and Mesopotamian culture. Since the Hippocratic age, the medicine of craftsmen was based on teachings of natural sciences and the Middle Age supported the medicine with mythology of sciences, but only the Enlightenment provided the social environment for a de-sacralized professionalism, nevertheless it followed exactly the ancient religious patterns.

General part of the topic is concerning the onset of professionalism while discussing different manifestations and transitions related to ideologies, socio-economic circumstances and scientific teachings from the Neolithic age down to the latest market economies. Specific part demonstrates milestones and historic ages, which were decisive in this proceeding: Old Egypt, Mesopotamia, old age Judaism, early and consolidated Christianity, impact of Islam on Europe, Reformation of the Roman Catholic church, Enlightenment, the Communist ideology and the social market economy.

Attendance at lectures, options for additional lectures:

Basic requirement: attendance at 8 sessions. In case of justified non-attendance of more students at a specific session, additional lecture is available.

Justification for non-attendance at lectures

Up to 2 sessions no need for justification, in case of more than 3 sessions missed no confirming of the course.

Justification for non-attendance at the exam

Only certificates of administrative authorities.

Control of knowledge acquired within the time-frame of sessions

No control during the session period

Requirements for confirming the session attendance

Having attended less than 8 sessions no confirming of the course. Additional sessions, if organized, are parts of the 10 session contingent.

Preliminary and final marks

Type of marks: five degree evaluation (1-5). Preliminary mark on the written work, which becomes a final mark automatically except additional questions answered (see below).

Type of exam

Base of exam: homework written about the history of medical professionalism sent by e-mail to the lecturer (deadline: 7 days before the exam, 5-6 A4-pages, margins, fonts, space agreed at the first session) Type of exam: each student will get several questions based on his/her own homework to determine the final mark.

Entering for examination

Student Administration System (NEPTUN)

Modification of data entered for examination

When registered in NEPTUN only after consulting the lecturer

Justification for non-attendance at the exam

Only certificates of administrative authorities.

Note on readings

Handout of Power Point presentations at the beginning of each relevant session.

HEALTH INFORMATICS

Institute of Development and Higher Education in the field of Medical Informatics

Director : **Dr. Elek Dinya**

Tutor: **Dr. Mariann Szabó Dinya**

2 hours/week

T H E M E S

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

Recommended: Dr. Avraham Steinberg (Translated by Dr. Fred Rosner): *Encyclopedia of Jewish Medical Ethics*, Feldheim Publishers, Jerusalem-New York, 1988, ISBN: 1-58330-592-0

Fred Rosner: *Pioneers in Jewish Medical Ethics*, Jason Aronson, New Jersey, 1997

Fred Rosner: *Medicine in the Bible and the Talmud: Selections from Classical Jewish Sources*, Ktav Publishing House, New York 1977

Rabbi Moshe Tendler–Fred Rosner: *Practical Medical Halachah*, Association of Orthodox Jewish Scientists, New Jersey 1990

David J. Bleich: *Judaism and Healing: Halakhic Perspectives*, Ktav Publishing House, New York 1981

Faitel Levin: *Halacha, medical science, and technology: Perspectives on contemporary Halacha issues*, Maznaim Publishing Corporation, New York-Jerusalem, 1987

Fred Rosner: *Medicine and Jewish Law II*, Jason Aronson, New Jersey, 1993

Semester I.

- 1-2. Lecture: The religious orders and the duty 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:

1. Kryger MH, Roth T, Dement WC (eds): Principles and Practice of Sleep Medicine. 4th ed. Elsevier, 2007
2. Sheldon S, Kryger M: Principles and Practice of Pediatric Sleep Medicine. Elsevier, 2005

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. Lídia 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.

Colorectal cancer: molecular biology, screening, staging and prognosis, stage dependent treatment of colon cancer, combined modality treatment of rectal cancer.

Kidney cancer: molecular biology of cancer, histologic types, localized and metastatic kidney cancer.

Cancer of the breast: molecular biology, risk factors, diagnosis, prognostic and predictive factors, multimodality primary adjuvant treatment.

Cancer of unknown primary site: histologic types of CUPS, management of CUPS.

Immunosuppression related malignancies: AIDS, transplantation, chemotherapy.

The lecturers of the elective are the oncologists of Semmelweis University.

ORGAN TRANSPLANTATION

First Semester

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 Immunsuppression
4. Kidney Transplantation Indication, Operation, Results, Complications
5. Liver Transplantation
6. Pediatric Liver Transplantation, Hepatocyte Transplantation
7. Follow-up of the Transplant Patient
8. Small Bowel and Multiorgan Transplantation
9. Pancreas and Islet Cell Transplantation
10. Lung Transplantation
11. Heart Transplantation
12. Radiological Aspects of Transplantation
13. Ethics of Transplantation - Case reports
14. Terminal Examination

Sign up: through the Neptun system

Deadline of sign up: September 1

INFLAMMATION BIOLOGY

Department of Genetics, Cell and Immunobiology

Course director: **A. Kristóf Fülöp**, PhD

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.dgci.sote.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

EPIGENETICS

Department of Genetics, Cell and Immunobiology

Course directors: **Dr. Sára Tóth, Prof. Dr. András Falus**

Credits: 2

First Semester

Lectures (2 hours per week):

1. Timeline of epigenetics; levels of epigenetic changes; targets of epigenetics
2. DNA methylation; de novo and maintenance methylation; Dnmt interactions
3. Histone modifications; histone code; histone modifying enzymes
4. Polycomb and trithorax complexes; Methylated DNA binding proteins
5. Transposons, and non-coding RNAs in epigenetic regulation; RNAi
6. Genome imprinting; skewed X inactivation their connection to DNA methylation
7. Epigenetic changes during early development and gametogenesis; Epigenetic consequences of cloning and ART
8. Transgenerational epigenetics; epigenetics of endocrine disruptors; maternal behaviour and its epigenetic consequences
9. Paramutation, transvection and mitotic bookmarking
10. Role of epigenetics in carcinogenesis; epigenetic therapy in cancer
11. Epigenetics in aging and autoimmunity
12. Epigenetic changes in diseases of the central nervous system
13. Methods used for the detection and analysis of epigenetic alterations.

Important notes:

Only for third and upper year students. There are no midterm exams. Attendance of 75% of lectures is necessary for the end-term signature. Exam: Written or oral exam (depending on the number of students).

No possibility to make up of absences.

Core texts: CSHL Epigenetics textbook 2006. Downloadable from

http://www-nmr.cabm.rutgers.edu/academics/biochem694/reading/Allisetal_2006.pdf

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 Kóhidai****Credits: 2****Second Semester**

Lectures (2 hours per week):

Week	Lecture	Lecturer
1.	Migratory responses of cells – General significance of chemotaxis in biology	Kohidai László, MD, PhD
2.	Phylogeny of signaling molecules and their receptors with special respect to chemotaxis	Kohidai László, MD, PhD
3.	Chemotaxis in invertebrates and vertebrates	Kohidai László, MD, PhD
4.	Chemotaxis in Inflammatory cells I.: Antigen presenting cell, monocytes-macrophages, eosinophils and neutrophils	Kohidai László, MD, PhD
5.	Chemotaxis in bacteria - A well studied signaling pathway	Kohidai László, MD, PhD
6.	Genetical backgrounds of bacterial chemotaxis	Kohidai László, MD, PhD
7.	Inflammation and chemotaxis	Kohidai László, MD, PhD
8.	Immunological aspects and their clinical implications in general	Kohidai László, MD, PhD
9.	Phagocytosis: the target reaction of chemotaxis	Szabó Rita, PhD
10.	Chemotactic ligands – Characterization of their genomics and proteomics	Kohidai László, MD, PhD
11.	Chemokines	Kohidai László, MD, PhD
12.	The optimal chemotactic ligand	Kohidai László, MD, PhD
13.	Clinical approaches – Tumor biology	Láng Orsolya, MD, PhD
14.	Does persist 'Life' without 'Chemotaxis'?	Kohidai László, MD, PhD

Important notes:

Prerequisite: Medical Chemistry.

Max. allowed absences: 3. Attendance of 75% of lectures is necessary for the end-term signature.

One individual oral presentation (not for grade) is compulsory.

Exam: oral for practice mark

Possibility to make up of absences from the material on the website: www.chemotaxis.usn.hu and www.dgci.sote.hu

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 [NNS]
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 attendances 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 assisstant 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:

NICU Network Neurobehavioral Scale (NNS). Lester, B. M. and Tronick, E.Z. (2004). The neonatal network neurobehavioral scale. Pediatrics, (113).

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.

Assessment of Preterm Infant Behavior (APIB). Als, H., Lester, B.M., Tronick, E.Z. and Brazelton, T. B. (1982) Toward a research instrument for the assessment of preterm infants' behavior. In. H.E. Fitzgerald et al (Eds.) Theory and research in behavioral pediatrics, Vol.1, (pp.85-132) New York, Plenum.

Neonatal Behavioral Assessment Scale (NBAS). Brazelton, T.B. and Nugent, J. K. (1995). The neonatal behavioral assessment scale. London: MacKeith Press.

Neurological Assessment of the Preterm Infant (NAPI) [Korner, A.F. and Thoman, V. A. (1990) Neurobehavioral assessment of the preterm infant. New York: The Psychological Corporation.

Dubowitz, L. and Dubowitz, V. (1981). The neurological assessment of the preterm and fullterm infant. Clinics in Developmental Medicine: No.79. Philadelphia: Lippincott, Williams & Wilkins.

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.
2. Morphological and functional neuroimaging.
3. Diagnostics and surgical treatment of hydrocephalus and elevated intracranial pressure.
4. Diagnostics and surgical treatment of traumatic brain and spinal cord injuries.
5. Diagnostics and surgical treatment of benign brain tumors. Tumors of the spine.
6. Diagnostics and surgical treatment of malignant brain tumors. Introduction to radiosurgery.
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.
10. Pediatric neurosurgery.
11. Neurosurgical treatment of pain, spasticity and movement disorders.
12. Surgical treatment of epilepsy.
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						
Subject Code	Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOVSIF105_1A	Antibiotic therapy & infectology	2	–	2	pract. mark	Pre-clinical module
AOVANE104_1A	Anesthesia and Intensive Care	2	–	2	pract. mark	Anesthesiology and Intensive Therapy (AOANEANE_1A)
AOVFRM252_1A	Medicinal, Epidemiological, and Social Aspects of Drug Abuse	2	–	2	pract. mark	Pre-clinical module
AOVSB1132_1A	Family Surgery	2	–	2	pract. mark	Pre-clinical module
AOVBL2112_1A	Clinical Endocrinology	2	–	2	pract. mark	Pre-clinical module
AOVNO1245_1A	Clinical Genetics	2	–	3	pract. mark	Pre-clinical module
AOVBL2125_1A	Clinical Hematology	2	–	2	pract. mark	Pre-clinical module
AOVKLM157G1A	Clinical practice	–	1	1	pract. mark	Pre-clinical module
AOVBL2150_1A	Clinical Oncology	2	–	2	pract. mark	Pre-clinical module
AOVSBT214_1A	Organ Transplantation	2	–	2	pract. mark	Pre-clinical module
AOVSZL251_1A	Tropical Medicine	2	–	2	pract. mark	Pre-clinical module
AOVIN108_1A	Health Informatics	2	–	2	pract. mark	Pre-clinical module
AOVG1120_1A	Neonatology	2	–	2	pract. mark	Pre-clinical module
AOVKIK102_1A	Clinical cardiovascular physiology	2	–	2	pract. mark	Pre-clinical module
AOVKIK099_1A	Clinical Physiology of Respiration and Respiratory Diseases	2	–	2	pract. mark	Pre-clinical module
						Medical Physiology II.

ELECTIVE SUBJECTS

Subject Code	Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOSB2129_1A	Emergency Surgery	2	-	2	pract. mark	Surgery I.
AOSEMK250_1A	Ultrasonography	2	-	2	pract. mark	Pre-clinical module
AOSIMM146_1A	Clinical Immunology	2	-	2	pract. mark	Pre-clinical module
AOSMAG155_1A	Sleep Medicine	2	-	2	pract. mark	Pathophysiology and Clin. Lab. Diagnostics II.
AOSMMS174_1A	Traditional Chinese Medicine	2	-	2	pract. mark	For 3rd, 4th & 5th year students



*Faculty of Medicine
6th year*

COMPULSORY INTERNSHIPS AND RESPONSIBLE DEPARTMENTS

Internal Medicine

1st Department of Internal Medicine

Budapest VIII., Korányi S. u. 2/Aphone: 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. Kútvolgyi 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 Sárváry**

Tutor: **Dr. Miklós Szebeny**

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. Patrícia 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

Subject code	Internship	Required number of weeks	Credits	Examination
AOBEL1BEL6SA AOBEL2BEL6SA AOBEL3BEL6SA AOSZLIFEGSA	Internal Medicine 1 week Infectology	9	9 –	final # signature
AOSB1SEB6SA AOTRATRAGSA	Surgery (2 weeks Traumatology)	9	9	final #
AOGY1GYE6SA AOGY2GYE6SA AOSZLIFEGSA	Pediatrics Pediatrics 1 week Infectology	8	8 –	final # signature
AONO1SZN6SA	Obstetrics and Gynecology	5	5	final #
AONEUIDG6SA	Neurology	4	4	final #
AOPSIELM6SA	Psychiatry	4	4	final #
AOCSACSOGSA	Family Medicine in Daily Practice	2	–	practical course grade
AOBMSMENGSA	Prehospital Emergency Medicine	2	–	signature
Total:		43	39	
AOSZDSZ_SA	Thesis work		20	

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.

PEDIATRICS

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

Topic

1. Pediatric Oncology
2. Epilepsy
3. Pediatric Endocrinology
4. Hypertension Disturbances of the lipid metabolism
5. Nutrition and Feeding
6. Disturbance in Sexual Differentiation
7. X-ray Diagnosis
8. Diabetes Mellitus
9. Abdominal Pain (diff. dg.)
10. Asthma Bronchiale
11. Newborn Infant: Respiratory Disorders

Tutor

- Prof. Dr. Schuler
 Prof. Dr. Kálmánchey R.
 Dr. Halász. Z.
 Dr. Szamosi T.

 Dr. Tomsits E.
 Prof. Dr. Sólyom

 Dr. Rudas G.
 Dr. Hosszú É.
 Dr. Hajmássy Zs.
 Dr. Németh Á.
 Dr. Pataki M.

Topic	Tutor
12. Diseases of the Urinary Tract Obstructive Bronchitis	Dr. Visy M.
13. Genetic counselling	Prof. Dr. Fekete Gy.
14. Congenital Heart Diseases and the Treatment in Infanthood	Dr. Szabolcs J.

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 Vth 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.

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 Vth year practices the Department shall organize “early rotations” right after taking the Vth year semifinal exam.

Neurology rotation is 4 weeks long (3 weeks clinical practice+1 week preparation for the exam). Students must spend the whole rotation at the Department of Neurology, Semmelweis University. Students receive their schedule and assignments on the first day of practice. During the training students must write one neurological case report. It is also obligatory to spend one day at our Outpatient Clinic and to take part in one nightduty (no sleep in). Students’ activity in the wards, at the Outpatient Clinic and during duty, and also the case report is evaluated by the student’s tutor on an assessment sheet. The assessment form and the case report must be presented at the final exam. During the training period two days of absence are allowed.

Final examination

One can register for the exam only through the Neptun-system.

The final examination consists of:

1. practical part: neurological examination skills, decision making, tested at the bedside;
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
2. Adams: Principles of Neurology. McGraw-Hill
3. Lindsay,Bone,Callender:Neurology and Neurosurgery Illustrated. Churchill Livingstone

Other suggested books:

1. Marsden, Fowler: Clinical Neurology. Raven Press
2. Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers
3. Gilroy: Basic Neurology. Pergamon Press
4. Weiner- Lewitt: Neurology of House Officer. Williams and Wilkins
5. Bannister: Brain an Bannister's Clinical Neurology. Oxford University Press
6. Mumenthaler: Neurology. Georg Thieme Verlag.

6th year Medical Student Clinical Neurology Learning Objectives**Neurologic History and Examination**

1. Perform a competent history, noting the following factors:
 - A. Establish the onset, progression and character of the disorder identifying all related symptoms.
 - B. Perform a standard neurologic review of symptoms with regard to personality, memory, headaches, pain, seizures, impairments of consciousness, vision, hearing, language function, swallowing, coordination, gait, weakness, sensory alterations, sphincter disturbance, and involuntary movements.
2. Perform a neurologic examination
 - A. Perform a screening mental status examination to include: level of consciousness assessment, and aphasia assessment.
 - B. Examine for meningismus, straight leg raising maneuver.
 - C. Cranial nerve examination
 - D. Motor examination including: tone, strength and bulk, pronator drift, abnormal movements.
 - E. Perform a reflex examination (muscle stretch reflexes, superficial reflexes, pathologic reflexes)
 - F. Coordination examination including finger-to-nose- test, heel-to-shin test, rapid alternating movements.
 - G. Gait examination: stance and Romberg test, gait, tandem gait, ability to rise from sitting, toe walking and heel walking.
 - H. Perform sensory examination including primary modalities(pain, temperature, position, vibration)and secondary/cortical modalities (stereognosis, graphesthesia, double simultaneous stimulation).
- I. Acquire the following skills:
 - A. Anatomic and physiologic basis of the neurologic examination.
 - B. Competent history, physical and neurologic examination.
 - C. Localize the lesion using the clinical database.
 - D. Develop a differential diagnosis of the clinical problem.
 - E. Assess the acuteness of neurological diseases, recognize neurological emergencies.
 - F. Formulate a plan of investigation and management.
- II. Describe the indications, techniques, results, contraindications and risks of the followings:
 - A. Lumbar puncture (investigation of CSF)
 - B. EEG, EMG, ENG, 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. Define ataxia, dysmetria, wide-based gait, and discuss the localization.
 - D. Define and differentiate involuntary movement disorders:tremor, rigidity, spasticity, athetosis, chorea, dystonias, myoclonus, tics. Discuss the findings and treatment of: Parkinson's disease, essential tremor, tardive dyskinesia, Huntington's chorea, Wilson's disease.
- IV. Disorders of sensation
 - A. Differentiate central sensory disorders from peripheral sensory disorders.

- V. Disorders of vision
 - A. Localize the lesions causing vision disorders and visual field defects.
 - B. Differentiate papilledema from papillitis.
 - C. The innervation deficit of the ocular muscles.
 - D. Recognize gaze problems and nystagmus.
 - E. Assess rystalli abnormalities.

- VI. Episodic disorders
 - A. Seizure disorders: generalized and partial seizures, distinguish seizure from syncope.
 - B. Describe Todd's postictal phenomenon.
 - C. Evaluation of a patient for new-onset seizure.
 - D. The anticonvulsants, their indications and side effects.
 - E. Management of a patient in status epilepticus.
 - F. Narcolepsy and obstructive sleep apnea.

- VII. Cerebrovascular diseases
 - A. Define the following: asymptomatic carotid bruit, TIA, amaurosis fugax, ischemic infarct, lacunar infarct, hemorrhagic infarct, parenchymal hemorrhage, SAH.
 - B. The clinical features of various territorial infarcts.
 - C. Treatment options to prevent infarction in atrial fibrillation and carotid stenosis.
 - D. The clinical features for hypertensive parenchymal hemorrhage.
 - E. The clinical picture and diagnosis of SAH. Early medical/surgical management of a patient with a SAH.

- VIII. Multiple sclerosis (MS)
 - A. The criteria for the clinical diagnosis of MS.
 - B. The treatment of MS.

- IX. Head trauma
 - A. Define the temporal profile, symptoms and treatment of: commotion, concussion, anterograde and retrograde amnesia, subdural hematoma, epidural hematoma, contusion or hemorrhage, liquorrhea.

- X. Dizziness and disorders of hearing
 - A. Define vertigo, and contrast it with other type of dizziness.
 - B. Describe nystagmus, hanging head test (Hallpike maneuver), calorics.
 - C. 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, transection 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. Symptoms 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
11. Clinical manifestation of increased intracranial pressure. Herniations.
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.
18. Disturbance of cerebral venous circulation.
19. Intracerebral bleedings.
20. Diagnosis, treatment and prognosis of subarachnoid hemorrhage
21. Status epilepticus
22. Meningitis, encephalitis
23. Multiple sclerosis
24. Signs of brain tumors

- 25. Signs of tumors of the spine and spinal space
- 26. Brain edema
- 27. Diagnostic criteria of dementia
- 28. Diagnosis of Parkinson's disease
- 29. Wernicke-Korsakow syndrome
- 30. Guillain-Barre syndrome
- 31. Disturbance of micturition and defecation
- 32. Myasthenia gravis

2nd series

- 1. Neurological causes of impaired visual acuity. Visual field defects.
- 2. Ocular movement and gaze disorders
- 3. Disorders of the vestibular system.
- 4. Syndromes of lower cranial nerve dysfunctions.
- 5. Syndromes of pons and mesencephalon lesions
- 6. The muscle tone control
- 7. Neuroanatomical basis of sensory disturbances
- 8. Functional systems of cerebellum. Signs of cerebellar disorders.
- 9. Gait disorders
- 10. Symptoms of frontal lobe damage
- 11. Symptoms of temporal lobe damage
- 12. The limbic system
- 13. Symptoms of parietal lobe damage
- 14. Symptoms of occipital lobe damage
- 15. 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

4. Neurological consequences of AIDS
5. Clinical types and treatment of multiple sclerosis
6. Hystopathological classification of brain tumors
7. Brain tumors of childhood
8. Metastatic tumors of the brain
9. Paraneoplasias of the nervous system (PML, neuropathies, cerebellar deg., Lambert-Eaton sy.)
10. Disorders associated with parkinsonian syndrome
11. Treatment of Parkinson's disease
12. Hyperkinetic movement disorders
13. Differential diagnosis of tremor
14. Classification of encephalopathies
15. Primary degenerative dementias
16. Dementia in cerebrovascular disorders
17. Multisystem atrophy
18. Disturbed cerebrospinal fluid circulation (hydrocephalus)
19. Syndrome of brachial plexus damage
20. Syndrome of radial, ulnar and median nerve damage
21. Syndrome of lumbosacral plexus damage
22. Etiology of polyneuropathies
23. Neuropathies in diabetes mellitus
24. Inherited neuropathies (Charcot-Marie, Dejerine-Sottas, Refsum)
25. Low back pain, and cervical disk disease
26. Craniocervical developmental malformations
27. Malformation of the spine and spinal cord
28. Symptoms of the disorder of spinal cord
29. Motoneuron diseases (ALS, progr. Bulbar palsy)
30. Muscular dystrophies
31. Miositis and myopathies
32. Primary headache syndromes
33. The neuralgias
34. The physiological sleep and the sleep disorders
35. Genetic background of muscle disorders
36. Inborn metabolic disorders affecting the nervous system
37. Trinucleotid repeat diseases (Huntington chorea, fragile X, dystrophia myotonica)
38. Genetic background of dementias

PSYCHIATRY

Department of Psychiatry and Psychotherapy

Tutor: **Dr. Patrícia Polgár**

Teaching Psychiatry for the sixth year students at the Department of Psychiatry and Psychotherapy at Semmelweis University

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 Góbi**

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

Requirement of getting the semester signature: 70 practice hours

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 lose 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**



Faculty of Dentistry

Study Program 2011/12 academic year

BASIC MODUL

Faculty of Dentistry

1st semester				
	subjects	Creditcode	examination	
compulsory	Anatomy, Histology, Embryology I.	C8L3P5	semifinal	
compulsory	Physical Bases of Dental Materials	C2L2P0	semifinal	
compulsory	Medical Chemistry	C6L3P3,5	semifinal	
compulsory	Medical Biology (Cellbiology)	C3L2P1	final	
compulsory	Hungarian Medical Terminology I.	C4L0P4	pract. mark	
obligatory elective	Medical Terminology I.	C2L0P2	pract. mark	
compulsory	Physical Education I.	C0L0P1	signature	
Total Credit		25		

2nd semester				
	subjects	Creditcode	examination	prerequisites
compulsory	Anatomy, Histology, Embryology II.	C7L3P4	semifinal	Anatomy, Histology, Embryology I.
compulsory	Biophysics	C5L2,5P3	final#	Physical Bases of Dental Materials
compulsory	Biochemistry, Molecular and Cellbiology I.	C7L3P4	semifinal	Medical Chemistry
compulsory	Hungarian Medical Terminology II.	C2L0P4	pract. mark	Hungarian Medical Terminology I.
compulsory	General Dental Materials	C1L1P0	semifinal	Physical Bases of Dental Materials
obligatory elective	First aid	C0L0P1	pract. mark	
obligatory elective	Medical Informatics	C3L1P2	semifinal	
compulsory	Physical Education II	C0L0P1	signature	
obligatory elective	Dental Psychology	C2L2P0	semifinal	
obligatory elective	Mediacal Sociology	C2L1P1	semifinal	
compulsory	Dental Laboratory Practice (summer, 2 weeks)	C0L0P30	signature	1-2 semesters compulsory subjects
compulsory	Nursing Practice (summer, 2 weeks)	C0L0P30	signature	1-2 semesters compulsory subjects
Total Credit		29		

3rd semester

	subjects	Creditcode	examination	prerequisites
compulsory	Anatomy, Histology, Embryology III.	C7L3P4	semifinal	Anatomy, Histology, Embryology II.
compulsory	Biochemistry, Molecular and Cellbiology II.	C6L3P3	semifinal	Biochemistry, Molecular and Cellbiology I.
compulsory	Medical and Dental Physiology I.	C11L6P5	semifinal	Anatomy, Histology, Embryology II.
				Biochemistry I.
				Biophysics
compulsory	Odontotechnology and Prostodontics Preclinical I.	C3L1P2	pract. mark	General Dental Materials
compulsory	Hungarian Medical Terminology III.	C2L0P4	pract. mark	Hungarian Medical Terminology II.
compulsory	Physical Education III.	COL0P2	signature	
	Total Credit	30		

4th semester

	subjects	Creditcode	examination	prerequisites
compulsory	Anatomy (Maxillofacial Anatomy) IV.	C5L3P2	final#	Anatomy, Histology, Embryology III.
compulsory	Biochemistry, Molecular and Cellbiology III.	C6L3P3	final#	Biochemistry, Molecular and Cellbiology II.
compulsory	Medical and Dental Physiology II.	C10L6P5	final#	Medical and Dental Physiology I.
compulsory	Odontotechnology and Prostodontics Preclinical II.	C3L0P3	pract. mark	Odontotechnology and Prostodontics Preclinical I.
compulsory	Conservative Dentistry and Endodontics, Pre-clinical I.	C4L1P3	pract. mark	Odontotechnology and Prostodontics Preclinical I.
compulsory	Hungarian Medical Terminology IV.	C2L0P4	pract. mark	Hungarian Language III.
compulsory	General Dental Preclinical Practice	C4L1P3	semifinal	Anatomy, Histology, Embryology II.
compulsory	Physical Education IV.	COL0P2	signature	
	Total Credit	34		

PRE-CLINICAL MODUL

Faculty of Dentistry

5th semester				
	subjects	Creditcode	examination	prerequisites
compulsory	Conservative Dentistry and Endodontics, Pre-clinical II.	C4L1P3	semifinal	BASIC MODUL
compulsory	General and Oral Microbiology	C4L2P2	final#	BASIC MODUL
compulsory	General and Oral Pathophysiology	C4L2P2	final#	BASIC MODUL
compulsory	Basic Immunology	C3L1G2	semifinal	Biochemistry, Molecular and Cellbiology III.
compulsory	Hungarian Dental Terminology I.	C2LOP4	pract. mark	BASIC MODUL
compulsory	Oral and Maxillofacial Surgery, Pre-clinical course	C2LOP2	pract.mark	BASIC MODUL
compulsory	Pathology	C6L3P2	final#	BASIC MODUL
compulsory	Preventive Dentistry I.	C3L1G2	pract. mark	BASIC MODUL
compulsory	Odontotechnology and Prosthodontics Preclinical III.	C4L1P3	final#	BASIC MODUL
	Total Credit	32		

6th semester				
	subjects	Creditcode	examination	prerequisites
compulsory	Conservative Dentistry and Endodontics I.	C4L1P3	pract. mark	Conservative Dentistry and Endodontics, Pre-clinical Course II
compulsory	Internal Medicine I.	C4L2P2	pract. mark	General and Oral Pathophysiology
i0compulsory	Oral and Maxillofacial Surgery I.	C4L1P3	pract. mark	Oral and Maxillofacial Surgery, Pre-clinical course
compulsory	Oral Biology	C5L3P2	final#	General and Oral Pathophysiology General and Oral Microbiology
compulsory	Oral Pathology	C4L2P2	final#	Pathology
compulsory	Preventive Dentistry II.	C1L1P0	final#	Preventive Dentistry I.
compulsory	Prosthodontics I.	C4L1P3	pract. mark	Prosthodontics, Pre-clinical Course
compulsory	Radiation protection	C2L1.5P1	semifinal	BASIC MODUL
compulsory	Hungarian Dental Terminology II.	C2LOP4	final	Hungarian Dental Terminology I.
compulsory	Dento-Alveolar practice (summer, minimum 1 week)	COLOP30	signature	1-6 semesters compulsory subjects
	Total Credit	30		

Elective subjects:

CLINICAL MODUL

Faculty of Dentistry

7th semester				
	subjects	Creditcode	examination	prerequisites
compulsory	General and Dental Radiology	C4L2P2	final#	Radiation protection
compulsory	Conservative Dentistry and Endodontics II.	C4L1P3	pract. mark	Conservative Dentistry and Endodontics I.
compulsory	Internal Medicine II.	C3L2P1	semifinal	Internal Medicine I.
compulsory	Oral and Maxillofacial Surgery II.	C4L1P3	pract. mark	Oral and Maxillofacial Surgery I.
compulsory	Periodontology I.	C2L2P0	semifinal	Oral biology
compulsory	Pharmacology, Toxicology I.	C2L1P1	semifinal	Pathology I.
compulsory	Prosthodontics II.	C7L1P6	semifinal	Prosthodontics I.
compulsory	Oral Diagnostics I.	C2L1P1	pract.mak	PathologyII.
compulsory	Orthodontics Pre-Clinical	C1L0P1	pract. mark	Oral Biology
obligatory elective	Neurology	C1L1P0	semifinal	Internal Medicine I.
obligatory elective	Psychiatry	C1L1P0	semifinal	Internal Medicine I.
obligatory elective	Dental Ethics	C2L2P0	semifinal	Pathology
compulsory	Gnathology	C3L1P2	final#	Prosthodontics I.
obligatory elective	Public Health	C3L1,5P2	final#	General and Oral Microbiology
	Total Credit	39		

8th semester				
	subjects	Creditcode	examination	prerequisites
compulsory	Conservative Dentistry and Endodontics III.	C4L1P3	pract.mark	Conservative Dentistry and Endodontics II.
compulsory	Internal Medicine III.	C1L1P0	final#	Internal Medicine II.
compulsory	Oral and Maxillofacial Surgery III.	C4L1P3	pract.mark	Oral and Maxillofacial Surgery II.
compulsory	Oral Diagnostics II.	C1L0P1	semifinal	Oral Diagnostics I.
compulsory	Periodontology II.	C4L1P3	pract. mark	Periodontology I.
compulsory	Pharmacology, Toxicology II.	C3L1P2	final#	Pharmacology, Toxicology I.
compulsory	Prosthodontics III.	C4L1P3	pract.mark	Prosthodontics II.
obligatory elective	Surgery	C3L2P1	final#	Internal Medicine I.
compulsory	Implantology I.	C1L1G0	semifinal	Oral and Maxillofacial Surgery II.
compulsory	General Dentistry practice (summer, 4weeks)	C0L0P30	signature	1-8 semesters compulsory subjects
	Total Credit	25		

9th semester				
	subjects	Creditcode	examination	prerequisites
compulsory	Clinical Dentistry I. *	C4L0P6	pract.mark	Prosthodontics III
compulsory	Clinical Dentistry I. *	C4L0P6	pract.mark	Conservative Dentistry and Endodontics III.
compulsory	Conservative Dentistry and Endodontics IV	C3L0P3	pract.mark	Conservative Dentistry and Endodontics III.
obligatory elective	Forensic Dentistry	C1L1P0	semifinal	Pharmacology, Toxicology II.
obligatory elective	Ophthalmology	C1L1P0.5	final#	Pathology II.
compulsory	Oral and Maxillofacial Surgery IV.	C6L1P5	practice mark	Oral and Maxillofacial Surgery III.
compulsory	Implantology II.	C2L1G1	final#	Oral and Maxillofacial Surgery III.
compulsory	Orthodontics I	C6L1P5	practice mark	Conservative Dentistry and Endodontics III.
obligatory elective	Otorhinolaryngology	C1L1P0.5	final#	Pathology II.
obligatory elective	Pediatrics	C1L1P0.5	semifinal	Internal Medicine III.
compulsory	Pedodontics I	C6L1P5	practice mark	Conservative Dentistry and Endodontics III.
compulsory	Periodontology III.	C3L1P2	practice mark	Periodontology II.
obligatory elective	Prehospital Emergency Medicine	C1L1P0	semifinal	Internal Medicine III.
compulsory	Prosthodontics IV.	C3L0P3	practice mark	Prosthodontics III.
	Total Credit	38		

*in the Dept. of Prosthodontics or in the Dept. of Conservative Dentistry

10th semester				
subjects code	subjects	credit	prerequisites code	prerequisites
compulsory	Clinical Dentistry II. *	C4L0P6	practice mark	Clinical Dentistry I. * in the Dept. of Prosthodontics
compulsory	Clinical Dentistry II. *	C4L0P6	practice mark	Clinical Dentistry I. *in the Dept. of Conservative Dentistry
compulsory	Conservative Dentistry and Endodontics V	C3L0P3	final#	Conservative Dentistry and Endodontics IV
obligatory elective	Dermatology	C1L1P0.5	final#	Pharmacology, Toxicology II.
obligatory elective	Obstetrics and Family Planning	C1L1P0	semifinal	Internal Medicine III.
obligatory elective	Diploma Work	C20		9th semester's subjects
compulsory	Oral and Maxillofacial Surgery V.	C4L1P3	final#	Oral and Maxillofacial Surgery IV.
compulsory	Oral Medicine	C1L1P0	final#	Periodontology III.
compulsory	Orthodontics II	C5L1P4	final#	Orthodontics I
compulsory	Pedodontics II	C5L1P4	final#	Pedodontics I
compulsory	Periodontology IV.	C3L1.5P2	final#	Periodontology III.
compulsory	Prosthodontics V.	C3L0P3	final#	Prosthodontics IV.
	Total Credit	50		

BASIC MODULE



*Faculty of Dentistry
1st year*

STUDY PROGRAMME

1st semester				
	subjects	Creditcode	examination	prerequisites
compulsory	Anatomy, Histology, Embryology I.	C8L3P5	semifinal	
compulsory	Physical Bases of Dental Materials	C2L2P0	semifinal	
compulsory	Medical Chemistry	C6L3P3,5	semifinal	
compulsory	Medical Biology (Cellbiology)	C3L2P1	final	
compulsory	Hungarian Medical Terminology I.	C4L0P4	pract. mark	
obligatory elective	Medical Terminology I.	C2L0P2	pract. mark	
compulsory	Physical Education I.	C0L0P1	signature	
	Total Credit	25		

2nd semester				
compulsory	Anatomy, Histology, Embryology II.	C7L3P4	semifinal	Anatomy, Histology, Embryology I.
compulsory	Biophysics	C5L2,5P3	final#	Physical Bases of Dental Materials
compulsory	Biochemistry, Molecular and Cellbiology I.	C7L3P4	semifinal	Medical Chemistry
compulsory	Hungarian Medical Terminology II.	C2L0P4	pract.mark	Hungarian Medical Terminology I.
compulsory	General Dental Materials	C1L1P0	semifinal	Physical Bases of Dental Materials
obligatory elective	First aid	C0L0P1	pract.mark	
obligatory elective	Medical Informatics	C3L1P2	semifinal	
compulsory	Physical Education II	C0L0P1	signature	
obligatory elective	Dental Psychology	C2L2P0	semifinal	
obligatory elective	Mediacal Sociology	C2L1P1	semifinal	
compulsory	Dental Laboratory Practice (summer, 2 weeks)	C0L0P30	signature	1-2 semesters compulsory subjects
compulsory	Nursing Practice (summer, 2 weeks)	C0L0P30	signature	1-2 semesters compulsory subjects
	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

- 1 G.J.Romanes: Cunningham's Textbook of Anatomy. Oxford, 1981. ISBN 0-19-2631319
- 2 P.R.Wheater, -H.G.Burkitt, -V.G.Daniels: Functional Histology.Churchill Livingstone, 1987. ISBN 0-443-02341-7.
- 3 L.C.Junqueira et al.: Basic Histology. Prentice-Hall International Inc. 1989. ISBN 0-8385-05724
- 4 K.M.Moore: The Developing Human. Clinically Oriented Embriology. Saunders Company W.B. 1988. ISBN 0-7216-4662-X
- 5 Ebbing, DD-Grammon, SD: General Chemistry. 9th ed. 2009. Houghton Mifflin Co. Boston ISBN 10: 0-618-85478-6 / 13: 978-0-618-85478-7
- 6 Devlin,T.M: Textbook of Biochemistry with Clinical Correlations. 6th ed. J.Wiley and Sons. 2006. ISBN 0-470-03853-5(paper and online version)
- 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
- 11 Csermely P.-Hrabák A.: Principles of Organic Chemistry. Bp. 1999.
- 12 Wilson, Mansfield, Heath, Spence: Dental Technology and Materials for Students. Blackwell Scientific Publications. ISBN 0-632-01763-5
- 13 Primary Preventive Dentistry. Ed.by Norman O.Harris, F.Garcia-Godoy. 5th ed. Appleton and Lange, Stamford. 1999. ISBN 0-8385-8129-3
- 14 Damjanovich – Fidy – Szöllősi (eds) Medical Biophysics, Medicine, Budapest, 2009. ISBN 978 963 226 127 0
- 15 Laboratory Manual of Medical Physics and Statistics, Semmelweis University Institute of Biophysics and Radiation Biology Budapest, 2005. ISBN 963 9129 60 7

Recommended textbooks:

- 1 Stryer: Biochemistry. 4th ed. 1995. ISBN 0-7167-2009-4
- 2 Zumdahl: Chemical Principles. 3rd ed. 1998. Houghton-Mifflin Co. Boston. ISBN 0-395-83995-5
- 3 Sasvári-Müllner: Bioorganic Compounds 4 kötet. (Bp.)
- 4 McCabe J.F.: Applied Dental Materials. Blackwell Scientific Publications. ISBN 0-632—02826-2
- 5 First Aid manual. St Andrews' Ambulance Association and the British Red Cross St John Ambulance. Ed. Dorling Kindersley, 2002. ISBN: 0751337048.

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 Dissecting room

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, histological specimens. 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, hematopoiesis
14. Supporting tissue
15. Bone formation
16. Vertebrae, sacrum, vertebral column
17. Superficial and deep muscles of the back

Histology lab.

Behaviour in the dissecting room. Bones and joints of the shoulder girdle and the arm. Demonstration: shoulder joint

Bones of the shoulder girdle and the upper extremity. Rules of the dissection (prevention of accidents). Dissection of the shoulder and elbow joints. Dissection of the joints of th 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.

TEST. Upper extremity

Behaviour in the histology lab. Use of the microscope. Preparation of the

Stains. Study of a solid and a hollow organs: surfaces, homogenous structure, layered structure.

SIMPLE EPITHELIS: Simple sqamous (mesothel, pleura); simple cuboidal (kidney); 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 (endon); elastic fibers (vessel wall); Muscles, vessels and nerves reticular fibers (liver); differential staining of the fibers (skin); ground substance (umbilical cord) CONNECTIVE TISSUE, CELLS. Various types of cells

Lectures Dissecting room

Histology lab.

18. Thorax, pectoral and intercostal muscles	Vertebrae, ribs, sternum	(scar tissue); mast cells peri- (oneum); fat cells (tongue, skin). CONNECTIVE TISSUE, TYPES. Mesenchyme umbili- cal cord); dense connective tissue (tendon); reticular tissue (lymph node); cell rich tissue (uterus). BLOOD, BONE MARROW. Blood smear, bone marrow smear. SUPPORTING TISSUE. Hyaline cartilage (rib); fibrous cartilage (meniscus); elastic
19. Bones and ligaments of the pelvis 20. Abdominal muscles, rectus sheath 21. Diaphragm	Muscles of the trunk. Bones and ligaments of the pelvis.	BONE, BONE FORMATION. Bone, cross and longitudinal sections. Enchondral ossification the mesoderm (digit); intramembranous ossification (skull). REVIEW
22. Gametogenesis, fertilization 23. Implantation, germ layers, embryonic disc 24. Development and differentiation of	cartilage (epiglottis). Bones of the lower extremity. Hip joint. Dissection of the lower extremity: removal of the skin. Fascia lata, fascia cruris, plantar aponeurosis	BONE, BONE FORMATION. Bone, cross and longitudinal sections. Enchondral ossification the mesoderm (digit); intramembranous ossification (skull). REVIEW
25. Hip joint and the muscles acting upon it 26. Knee joint and the muscles acting upon it 27. Foot and calf, muscles of the sole. 28. Neurulation. Folding of the embryo. Fetal membranes	Knee joint, joints of the foot. Flexor muscles of the thigh	TEST. Epithelial, connective and supporting tissues.
29. Early embryonic and placental circulation. Structure of the placenta the motor system	Extensor muscles of the thigh and calf. Peroneal muscles.	PLACENTA. UMBILICAL CORD
31. Muscle tissue I. 32. Muscle tissue II. 33. Herniae	Completion of the dissection	MUSCLE TISSUE. Smooth muscles (gut); striated muscle (skeletal muscle); cardiac muscle (heart)
34. Neuronal tissue: neurons and supporting cells derived from the neural tube	TEST. Trunk, lower extremity.	NEURAL TISSUE. CELLS. Multipolar neurons (spinal cord, autonomic ganglion, cerebral cortex, cerebellar cortex); pseudounipolar neurons (spinal ganglion) NERVE FIBERS. GLIAL CELLS. Peripheral nerve, glial cells (spinal cord, cerebral cortex) EFFECTORS, RECEPTORS. Motor end plate, sensory nerve ending. Review
35. Neuronal tissue: neurons and supporting cells derived from the neural crest	Skull	NERVE FIBERS. GLIAL CELLS. Peripheral nerve, glial cells (spinal cord, cerebral cortex) EFFECTORS, RECEPTORS. Motor end plate, sensory nerve ending. Review
36. Neuronal tissue: synapses, effectoxrs, receptors	Skull	NERVE FIBERS. GLIAL CELLS. Peripheral nerve, glial cells (spinal cord, cerebral cortex) EFFECTORS, RECEPTORS. Motor end plate, sensory nerve ending. Review
37. Sphenoid and ethmoid bones 38. Temporal bone	Skull	EFFECTORS, RECEPTORS. Motor end plate, sensory nerve ending. Review
39. Calvaria, base and interior of the skull	Skull	EFFECTORS, RECEPTORS. Motor end plate, sensory nerve ending. Review
40. Facial skeleton, orbit	Skull	EFFECTORS, RECEPTORS. Motor end plate, sensory nerve ending. Review
41. Nasal cavity, paranasal sinuses	Skull	EFFECTORS, RECEPTORS. Motor end plate, sensory nerve ending. Review
42. Oral cavity, pterygopalatine and infratemporal fossae	Skull	EFFECTORS, RECEPTORS. Motor end plate, sensory nerve ending. Review
43. Mandible, temporomandibular joint	Skull	EFFECTORS, RECEPTORS. Motor end plate, sensory nerve ending. Review
44. Atlantooccipital and atlantoaxial joints. Suboccipital muscles	Skull	EFFECTORS, RECEPTORS. Motor end plate, sensory nerve ending. Review
45. Development of the skull. Fontanelles	TEST. Skull	EFFECTORS, RECEPTORS. Motor end plate, sensory nerve ending. Review

Faculty of Dentistry

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

1. Introduction. Significance of the vascular and lymphatic organs in the medical curriculum and in the medical practice
2. Histology of the vessel wall
3. Lymphatic organs: lymph node, spleen
4. Lymphatic organs: thymus, tonsils
5. Surface structures of the heart, anulus fibrosus, myocard
6. Chambers of the heart, valves
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. HEART. Wall structure, Malformations.
10. Viscera, introduction. Histological structure of the solid and hollow viscera
11. Suprahyoid muscles. Muscles of facial expression. Oral cavity.
12. Muscles of mastication. Tongue
13. Salivary glands. Anatomy of the teeth
14. Development and histology of the teeth
15. Development of the face, malformations
16. Pharynx, structure of the wall, soft palate
17. Infrahyoid muscles, cervical fascia, para- and retropharyngeal space
18. Esophagus, stomach: anatomy and histology
19. Development of the foregut
20. Small intestine: anatomy and histology
21. Colon, rectum: anatomy and histology
22. Liver and biliary apparatus: anatomy
23. Liver and biliary apparatus: histology
24. Pancreas: anatomy and histology. Portal vein and tributaries
25. Development of the middle and hindgut
26. Peritoneum
27. Cartilages, joints and muscles of the larynx
28. Skeleton of the larynx, laryngeal inlet, rima glottidis
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

Histology lab.

- | | |
|--|--|
| Heart: surface structure, vessels, myocard | VESSELS. Elastic artery (carotid artery); middle size artery and vein, arterioles, venules, capillaries (tongue) |
| Chambers of the heart, valves | LYMPHATIC ORGANS. Lymph node, spleen |
| Pericard. In situ heart dissection. Demonstration of unfixed heart. | LYMPHATIC ORGANS. Thymus, palatine tonsil, lingual tonsil. |
| TEST. Heart, anatomy and embryology | conducting system. DIGESTIVE SYSTEM. Lip, tongue, filiforme, fungiform and vallate papillae. Foliate papilla (demonstration) |
| Muscles of the face (demonstration) | DIGESTIVE SYSTEM. |
| Tongue, cervical organs on the visceral complex | Salivary glands (parotid, submandibular, sublingual); tooth (demonstration) |
| Esophagus, aorta | DIGESTIVE SYSTEM. Tooth development, esophagus |
| Abdominal organs, peritoneum. Hepatoduodenal ligament, mesentery | DIGESTIVE SYSTEM. Stomach, cardia, pylorus |
| Unpaired branches of the abdominal aorta, tributaries of the portal vein | DIGESTIVE SYSTEM. Duodenum, jejunum, ileum, colon, appendix |
| Demonstration of the abdominal visceral topography in the cadaver of the second year and in unfixed Pleura. Mediastinum. | DIGESTIVE SYSTEM. Liver, galbladder, pancreas cadaver. Larynx, trachea |
| TEST. Anatomy and embryology of the digestive and respiratory systems. | TEST. Lymphatic organs, vessels, heart, digestive system |
| | 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, spermiogenesis, epididymis
36. Ductus deferens, spermatic cord,
seminal vesicle, prostate, male urethra:
anatomy and histology
37. Penis: anatomy and histology.
Male perineum
38. Ovary and uterine tube: anatomy and
histology. Oogenesis.
39. Anatomy of the uterus, broad ligament
40. Histology of the uterus, menstrual cycle
41. Vagina, outer female genital organs.
Female perineum
41. Development of the genital organs
42. Malformation of the gender, bisexuality
43. Separation of the body cavities.
Development of the diaphragm
44. Development of the major arteries
and veins. Fetal circulation

Semester examination (semi-final)

Histology lab.

- | | |
|---|--|
| Capsules of the kidney,
components of the renal hilum. | lung |
| Aorta, inferior vena cava, ureter;
pelvic organs. | UROPOETIC SYSTEM.
Kidney, urinary bladder.
Demonstration: ureter |
| Retroperitoneum | |
| Pelvic organs. | MALE GENITAL SYSTEM. |
| Peritoneum in the pelvis. | 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.
Uterus, vagina,
mammary gland |
| TEST. Urogenital system | |

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- Oxidceramics
 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
2. Multiatomic systems. Gases. Interpretation of temperature. Boltzmann-distribution. Fluids. Interface phenomena. Liquid crystals.
3. Solid materials.
4. Methods for structure examination (diffraction, microscopic, spectroscopic methods)
5. Crystallisation. Metals, alloys.
6. Ceramics, polymers, composites.
7. Mechanical properties of materials 1. Elasticity.
8. Mechanical properties of materials 2. Plasticity, hardness.
9. Mechanical properties of materials 3. Rheological properties, viscoelasticity.
10. Other physical (optical, electrical, thermal) properties of materials
11. Comparison of the properties of dental materials
12. Bases of biomechanics. Structure, mechanical and other properties of tissues.
13. Physical bases of implantology.
14. Physical bases of orthodontics.

MEDICAL BIOLOGY (Cell Biology) – Department of Genetics, Cell- and Immunobiology

Lecturer: *Prof. Dr. András Falus*

First semester

Credit: 3

Topics:

1. Eukaryotic cell organization.
2. Structure and function of plasma membrane.
3. Structure and function of cell nucleus.
4. Nucleolus and ribosomes.
5. Structure and function of endoplasmic reticulum.
6. Golgi and secretion.
7. Endocytosis. Intracellular digestion
8. Protein and lipid transport mechanisms in eukaryotic cell.
9. Mitochondria and peroxisomes
10. Cytoskeleton and movement.
11. Cell communication. Regulation of cellular functions.
12. Cells in their social context.
13. Cell cycle and its regulation
14. Cellular aging and cell death.
15. Light microscope and light microscopic microtechnique, light microscopic preparations
16. Stainings and cytochemical reactions
17. Immunocytochemistry
18. Electronmicroscope and electronmicroscopic microtechnique, ultrastructure 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)

Core text: Alberts et al.: *Essential Cell Biology*. (second edition) Garland Publ. Inc. 2004.
 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

FIRST AID

Course director: **Dr. Gábor Góbi**

Tutor: **Dr. Imre Engelbrecht**

Second Semester

Topics

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

Note: Participation at 75% of practices is necessary. Compensation of absences is possible in subsequent practices.
 Development in learning skills will be controlled all the time during the practices in the semester.
 Mode of certifying absences: oral – referring to practices
 Requirements: The student should be able to recognize emergencies, and call for help
 start with BLS + AED
 provide airway management in unconscious patients
 provide first aid for patients complaining for chest-pain, shortness of breath, signs for hypoglycaemia and having suffered from fainting, shock condition, convulsion, injuries.
 The performance of the above mentioned requirements at the last practice will be evaluated with “accepted” or “not accepted”.

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		
1.	Health care and organizations. Data and information in health care. Types of clinical data (text, sound, image)	Lecture
2.	Data transmission and telecommunication. The internet	Lecture
3.	DBMS Database Management Systems. Electronic Patient Record	Lecture
4.	WEB 2.0 and the health care system. Mobile Communication	Lecture
5.	Security, Encryption and Digital Signature	Lecture
6.	Structuring and representing medical knowledge. Evidence and case bases.	Lecture
1.	Data manipulation in the computer. Working with text, image, sound and video	practice
2.	Getting Started With The Internet.	practice
3.	Database management programs, constructing a relational data base of students' lecture books using Microsoft access.	practice
4.	Extracting data from a food database using MS Access.	practice
5.	Data manipulation and visualizations with Microsoft Excel.	practice

6.	Compiling food recipes using Microsoft Word.	practice
7.	Compiling publication a food cookbook using Netscape.	practice
8.	Browsing In Dental Information Resources On The Internet	practice
9.	Diet planning using MS Excel.	practice
10.	Mobile Communication	practice
11.	JAVA, AJAX and RSS in WEB 2.0 applications	practice
12.	Presentation using Microsoft PowerPoint.	practice

Related reading:

J.H. van Bommel: 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 spittoons
 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*

STUDY PROGRAMME

3rd semester				
	subjects	Creditcode	examination	prerequisites
compulsory	Anatomy, Histology, Embryology III.	C7L3P4	semifinal	Anatomy, Histology, Embryology II.
compulsory	Biochemistry, Molecular and Cellbiology II.	C6L3P3	semifinal	Biochemistry, Molecular and Cellbiology I.
compulsory	Medical and Dental Physiology I.	C11L6P5	semifinal	Anatomy, Histology, Embryology II.
				Biochemistry I.
				Biophysics
compulsory	Odontotechnology I.	C3L1P2	pract.mark	General Dental Materials
compulsory	Hungarian Medical Terminology III.	C2L0P4	signature	Hungarian Medical Terminology II.
compulsory	Physical Education III.	C0L0P2	signature	
	Total Credit	30		

4th semester				
	subjects	Creditcode	examination	prerequisites
compulsory	Anatomy (Maxillofacial Anatomy) IV.	C5L3P2	final#	Anatomy, Histology, Embryology III.
compulsory	Biochemistry, Molecular and Cellbiology III.	C6L3P3	final#	Biochemistry, Molecular and Cellbiology II.
compulsory	Medical and Dental Physiology II.	C10L6P5	final#	Medical and Dental Physiology I.
compulsory	Odontotechnology II.	C5L0P5	pract.mark	Odontotechnology I.
compulsory	Conservative Dentistry and Endodontics, Pre-clinical I.	C4L1P3	pract.mark	Odontotechnology I.
compulsory	Hungarian Medical Terminology IV.	C2L0P4	pract.mark	Hungarian Language III.
compulsory	Physical Education IV.	C0L0P2	signature	
	Total Credit	32		

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 third year.

C= Credit point

L= Lecture (hours/week)

P= Practice (hours/week)

LIST OF TEXTBOOKS

- 1 Textbook: Berne & Levy: Principles of Physiology (4th edition).
- 2 Practice book: Practices in Medical Physiology (Edited by: Péter Enyedi and Péter Vármai, 2010)
- 3 Devlin: Textbook of Biochemistry with clinical correlations. 6th ed. J.Wiley and Sons, 2006. ISBN 0-470-03853-5 (paper and online version)
- 4 Wilson, Mansfield, Heath, Spence: Dental Technology and Materials for Students. Backwell Scientific Publications. ISBN 0-632-01763-5
- 5 A.Newbrun: Cariology Quintessence. ISBN 0867152052
- 6 C.M.Sturdevant: Operative Dentistry. Mosby ISBN 0-80166366-0
- 7 Walton-Torabinejad: Principle and Practice of Endodontics. W.B.Saunders Co. 2nd ed. 1996. ISBN 0-7216-4924-6

Recommended textbooks:

- 1 Principles of Medical Physiology. Ed. Fonyo A. Bp. Medicina Publ.House, 2001.
- 2 Ganong: Review of Medical Physiology. Lange
- 3 Berne-Levy-Koeppen-Stanton: Physiology. 4th ed. Mosby.
- 4 Monos E.: Physiology of the Venous systems. Bp. 1999.
- 5 Monos E: Hemodynamics: Biomechanics of the Blood Circulation. Semmelweis Univ. KODK. Bp. 2002.
- 6 Lodish et al.: Molecular Cell Biology. 3rd ed. Scientific American Books Inc. 1995.
- 7 Murray,Robert K.-Granner,Daryl K-Mayes,Peter A.-Rodwell,Victor W: Harper's Illustrated Biochemistry. 26th Ed. McGraw-Hill. ISBN 0-07-138901-6 (Online version: www.lib.sote.hu)
- 8 G.Nikiforuk: Understanding Dental Caries (1-2) Karger. ISBN 3-8055-3906-1(set)
- 9 Biochemistry Laboratory Manual. Ed.Gy.Szabados. Bp. Semmelweis Univ.

ANATOMY, HISTOLOGY AND EMBRYOLOGY

Department of Anatomy, Histology & Embryology

Tutor: **Dr. Andrea Székely**

First Semester

Lectures: 3 hours per week

Laboratory: 4 hours per week

Lectures	Dissecting room	Histology lab.
1. The significance of the nervous system in the medical curriculum and practice.	Divisions of the brain meninges, – arteries and veins of the brain,	
2. Development of the telecephalon, Meninges anatomy of the hemispheres, lateral ventricles	surface structure of the hemispheres basis cerebri.	
3. Development and anatomy of the diencephalon.	Demonstration: dura maters, sinuses	
4. Development and anatomy of the brain stem and cerebellum. Fourth ventricle	Lateral ventricles, third ventricle	
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	Brain stem, fourth ventricle, cerebellum	Spinal cord, brain stem.
8. Neuronal architecture of the spinal cord: proprioceptive and withdrawal reflex arches		Spinal cord, spinal ganglion, medulla oblongata, mesecephalon
9. Neuronal architecture of the spinal cord: autonomous reflex arch, spinal pathways		
10. Nuclei and pathways in the brain stem I.	Cross sections of the brain stem.	
11. Nuclei and pathways in the brain stem II.	Demonstration: spinal cord	
12. Nuclei and pathways in the brain stem III.		
13. Microscopic structure and connections of the thalamic nuclei	Coronal and horizontal sections	Cerebellum, cerebral cortex
14. Sensory pathways		
15. Neural correlates of the pain sensation		
16. Cerebellar cortex	Test. Anatomy of the brain and the spinal cord; nuclei, pathways (tracts), embryology. Regio (r.) frontalis, r. infraorbitalis et buccalis, r. supraclavicularis, r. Axillaris	
17. Cerebellar pathways		
18. Structure and connections of the basal nuclei (extrapyramidal system)	R. frontalis, r. infraorbitalis et buccalis, r. supraclavicularis, r. axillaris	
19. Motor pathways	R. parotideomasseterica, r. mediana colli, r. infraclavicularis, r. deltoidea	
20. Patient demonstration		
21. Cerebral cortex		
22. Trigeminal nerve		
23. Facial nerve		
24. Glossopharyngeal, vagus, accessory and hypoglossal nerves		
25. Olfactory and gustatory systems	R. parotideomasseterica, r. mediana colli, r. infraclavicularis, r. deltoidea.	
26. Outer and middle coats of the eyeball	Dissection of the eye	
27. Lens, chambers of the eye, vitreous body, accommodation		

Lectures	Dissecting room	Histology lab.
28. Inner coat of the eyeball, retina	R. submandibularis, trigonum caroticum,	
29. Outer eye muscles, movement of the eye	fossa scalenotrachealis. Demonstration:	
30. Protective and lacrimal apparatus of the eye	middle and inner ear	
31. Optic nerve, visual pathway, visual cortex. Development of the eye	R. submandibularis, trigonum caroticum, fossa scalenotrachealis.	
32. Outer ear, tympanic cavity, auditory ossicles	Demonstration: middle and inner ear	
33. Bony and membranous labyrinth		
34. Vestibular system	Finishing the dissection of the regions	
35. Organ of Corti		
36. Auditory pathway, auditory cortex. Development of the auditory and vestibular systems	Test. Organs of special senses, regions of the head and the neck, cranial nerves	
37. Limbic system	In situ dissection of the brain	Endocrine organs. Pituitary, pineal gland, thyroid gland, parathyroid gland
38. Hypothalamo-hypophyseal systems		
39. Endocrine organs: pituitary, pineal gland		In situ dissection of the brain.
40. Endocrine organs: thyroid gland, parathyroid, Endocrine organs. Adrenal gland	Tympanic cavity, inner ear	gland, pancreas, testis, ovary, placenta
41. Parasympathetic nervous system		
42. Sympathetic nervous system		
43. Enteral nervous system	In situ dissection of the brain	Skin. Palmar (non-hairy) skin, hairy skin. Demonstration: axillary skin
44. Skin and appendages I.		
45. Skin and appendages II., mammary gland		

ANATOMY, HISTOLOGY AND EMBRYOLOGY

Second Semester

Lectures: 3 hour per week

Laboratory: 2 hours per week

Week

Lectures	Dissecting room	Histology lab.
1 Topography of the upper extremity, clinical correlations	Regio (r.) nuchae. r. dorsalis scapulae, r. glutea, r. cubiti post., r. carpi dors., r. poplitea, r. Plantaris. Dissection of the back	
2 Topography of the lower extremity (clinical correlates), mechanism of walking	R. nuchae, r. dorsalis scapulae, r. glutea, r. cubiti post., r. carpi dors., r. poplitea, r. plantaris. Dissection of the back	
3 Surface- and sectional anatomy I. Head	R. brachii post., r. antebrachii post., r. dorsalis manus, r. femoris post., r. cruris post., retromalleolar regions	Review I.
4 Surface- and sectional anatomy II. Head	R. brachii post., r. antebrachii post., r. dorsalis manus, r. femoris post., r. cruris post., retromalleolar regions	

Lectures	Dissecting room	Histology lab.
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, r. femoris ant., r. cruris ant. Projection of the thoracic organs into the anterior thoracic wall	Review II.
8 Surface- and sectional anatomy VI. Abdominal cavity II.	R. brachii ant., r. antebrachii ant., r. subinguinalis, r. femoris ant., r. cruris ant. Dissection of the organs in the thoracic cavity	
9 Surface- and sectional anatomy VII. 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, superior and inferior mesenteric arteries portal vein	Review III.
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

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

Practices

- Blood cell counting, determination of hemoglobin concentration and hematocrit, measurement of erythrocyte sedimentation rate
- Leukocyte differential count on peripheral blood smear
- Typing of Blood Groups, Blood Coagulation Test
- Measurement of transport rate on red blood cells. Hemolysis
- 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

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

Practices

- 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. Krisztina 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 I. Facial Pit Cavity preparation for amalgam. Class I. Occlusal Cavity Preparation for Amalgam. Class VI. Cavity preparation for Amalgam.

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-Incisor 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 Composite resin and porcelain inlay restorations.

Pin-retained restorations (type of pins, Indications and contraindications).

Preparation for Porcelain Veneers.

Note: The maximum number of absences in a semester is 3.
During the semester 3 midterm examinations should be passed.
Practical course grade.

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.

ODONTOTECHNOLOGY

Dental Technology

Lecturer: **Dr. Péter Kívovics 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)

Topics: Wax pattern of crowns and bridges. Construction of veneered and acrylic crown. Wax pattern of metal based partial denture.

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

PRE-CLINICAL MODULE



*Faculty of Dentistry
3rd year*

5th semester				
	subjects	Creditcode	examination	prerequisites
compulsory	Conservative Dentistry and Endodontics, Pre-clinical II.	C4L1P3	semifinal	BASIC MODUL
compulsory	General and Oral Microbiology	C4L2P2	final#	BASIC MODUL
compulsory	General and Oral Pathophysiology	C4L2P2	final#	BASIC MODUL
compulsory	Basic Immunology	C3L1G2	semifinal	Biochemistry, Molecular and Cellbiology III.
compulsory	Hungarian Dental Terminology I.	C2L0P4	pract.mark	BASIC MODUL
compulsory	Oral and Maxillofacial Surgery, Pre-clinical course	C2L0P2	pract.mark	BASIC MODUL
compulsory	Oral Pathology I.	C2L2P0	semifinal	BASIC MODUL
compulsory	Pathology I.	C5L3P2	semifinal	BASIC MODUL
compulsory	Preventive Dentistry II.	C3L1G2	pract.mark	BASIC MODUL
compulsory	Prosthodontics (Pre-clinical course)	C4L1P3	final#	BASIC MODUL
	Total Credit	33		

6th semester				
	subjects	Creditcode	examination	prerequisites
compulsory	Conservative Dentistry and Endodontics I.	C4L1P3	pract.mark	Conservative Dentistry and Endodontics, Pre-clinical Course II
compulsory	Internal Medicine I.	C4L2P2	pract.mark	General and Oral Pathophysiology
compulsory	Oral and Maxillofacial Surgery I.	C4L1P3	pract.mark	Oral and Maxillofacial Surgery, Pre-clinical course
compulsory	Oral Biology	C5L3P2	final#	General and Oral Pathophysiology
compulsory	Oral Pathology II.	C3L2P1	final#	Oral Pathology I.
compulsory	Pathology II.	C3L1P2	final#	Pathology I.
compulsory	Preventive Dentistry III.	C1L1P0	final#	Preventive Dentistry II.
compulsory	Prosthodontics I.	C4L1P3	pract.mark	Prosthodontics, Pre-clinical Course
compulsory	Radiation protection	C2L1.5P1	semifinal	BASIC MODUL
compulsory	Hungarian Dental Terminology II.	C2L0P4	final	Hungarian Dental Terminology I.
compulsory	Dento-Alveolar practice (summer, minimum 1 week)	COLOP30	signature	1-6 semesters compulsory subjects
	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

Semester	Subjects	Credit code	Examination	Prerequisites
3	Developmental Biology I.	C2L2P0	pract. mark	
4	Developmental Biology II.	C2L2P0	pract. mark	Developmental Biology I.
5	Traditional Chinese Medicine	C2L2P0	pract. mark	for 3rd, 4th and 5th year students
1	TDK Work within the Union of Research Students	C1L1P0	pract. mark	
7	Anesthesiology and Intensive Therapy	C2L2P0	pract. mark	4th and 5th year students
7	Antibiotic Therapy and Infectology	C2L2P0	pract. mark	for 4th and 5th year students
8	Clinical Endocrinology	C2L2P0	pract. mark	for 3rd, 4th and 5th year students
8	Tropical Medicine	C2L2P0	pract. mark	4th and 5th year students
8	Ultrasonography	C2L2P0	pract. mark	4th and 5th year students
8	Medical, Epidemiological and Social Aspect of Drug Abuse	C2L2P0	pract. mark	for 4th and 5th year students
1	Library Informatics	C3L2P0	pract. mark	for all students
1	History of Medicine	C2L2P0	pract. mark	for all years
8	Clinical Hematology	C2L2P0	pract. mark	for 4th and 5th year students
1	Jewish Medical Ethics I-II.	C2L2P0	pract. mark	For all students
4	Anatomy of Diagnostic Imaging	C2L2P0	pract. mark	Anatomy, Histology, Embryology III.
5	Psychosomatic Dentistry	C1L1P0	semi-final	Basic Module
6	Hypnotherapy for Dentists	C1L1P0	semi-final	Basic Module
8	Screening of Oral Cancer I.	C1L1P0	semi-final	Pathology II.

LIST OF TEXTBOOKS

- 1 McCracken's Removable Partial Prosthodontics (10/e) Glen P. McGivney-Alan B. Carr. Hardback Mosby, 1999. ISBN 0323006787
- 2 Schillenburg et al.: Fundamentals of Fixed Prosthodontics. Quintessence 3rd ed. 1997. ISBN 93 13 86 500
- 3 Craig, R.G.: Restorative dental material. Mosby, 10th ed.
- 4 R.M. Basker-J.C. Davenport: Prosthetic Treatment of the Edentulous Patient. 4th ed. McMillan Press Ltd. ISBN 0-333-56704-8 ISBN 0-333-56705-6
- 5 Neil-Nairne: Complete Denture Prosthetics. Wright. ISBN 72 36 20 636
- 6 Neil-Walter: Partial Dentures. ISBN 06 32 08 025 8
- 7 C.M. Sturdevant: Operative Dentistry. Mosby. ISBN 0-80166366-0
- 8 A. Newbrun: Cariology Quintessence. ISBN 0-867152052
- 9 Walton, Torabinejad: Principles and Practice of Endodontics. W.B. Saunders Co. 2nd ed. 1996. ISBN 0-7216-4924-6
- 10 Primary Preventive Dentistry. Ed. by: Norman O. Harris, F. Garcia-Godoy. 5th ed. Appleton and Lange, Stamford. 1999. ISBN 0-8385-8129-3
- 11 Samaranyake et al.: Essential Microbiology for Dentistry. Edinburgh, Churchill Livingstone. ISBN: 0443049890
- 12 Sibernagl S.-Lang F.: Color Atlas of Pathophysiology. Thieme, Stuttgart, 2000. ISBN 0-86577-866-3 (TNY) ISBN 3-13-116551-0 (GTV)
- 13 Ferguson D.B.: Oral Bioscience. Churchill Livingstone, 1999. (Harcourt Publ. Ltd.) ISBN 0-443-05373-1
- 14 Heckner F: Practical Microscopic Hematology. 4th ed. Williams and Wilkins Trada Bldh. 1993. ISBN 0-8121-1711-5
- 15 Robbins: Basic Pathology, 2008. V. Kumar, A. K. Abbas, N. Fausto, R. Mitchell Saunders; 8 edition
- 16 Szende B.-Suba Zs: Introduction to histopathology. Bp. Medicina. 1999.
- 17 Szabó Gy: Oral and Maxillofacial Surgery. Bp. Semmelweis Publ. 2001.
- 18 Koesner K.R.: Manual of Minor Oral Surgery for the General Dentist. Blackwell Munsgaard, 2006.
- 19 Worthington-Lang-LaVelle: Osseointegration in Dentistry. An Introduction. Quintessence, Chicago, 1994.
- 20 Sethi, A.-Kaus, Th: Practical implant dentistry. Quintessence, London. 2005.
- 21 Andreoli, T.E.-Bennett, J.C.-Carpenter, C.C.J.-Plum, F.: Cecil Essentials of Medicine. 4th ed. W.B. Saunders Co. 2000.
- 22 Textbook: Falus A. Immunology, Semmelweis PH, 2001.
- 23 Hand-out: on www.dgci.sote.hu

Recommended textbooks:

- 1 Nikiforuk: Understanding Dental Caries. (1-2) Karger.
- 2 Murray, J.J.: The Prevention of Oral Disease. 3rd ed. Oxford Univ. Press 1996. ISBN 0 19 2624563 (Hbk) ISBN 0 19 2624571 (Pbk)
- 3 Fluoride in Dentistry. 2nd Ed.: Fejerskov, O.-Ekstrand, J.-Burt, B.A. Munksgaard, 1996. ISBN 87-16-11282-2
- 4 Preventív fogászat. Szerk. Bánóczy J.-Nyárasdy I. Bp. Medicina. 1999. ISBN 963-242-003-9
- 5 Pathophysiology and Disease. An Introduction to Clinical Medicine. Lange Medical Book. Prentice-Hall International Inc. ISBN 0-8385-8095-5
- 6 Jansen van Rensburg B.G: Oral Biology. Quintessence Publishing Co. Inc. 1995. ISBN 0-86715-271-0
- 7 Goldschlager N.: Principles of Clinical Electrocardiography. 3rd ed. Appleton and Lange, 1989. ISBN 0-8385-7951-5
- 8 Marsh, Ph.-Martin, M.V: Oral Microbiology. Oxford, Wright. ISBN: 0723610517
- 9 D.Tóth F.: Microbiology for Dentistry. Vol.I-II. University of Debrecen, 2002.

- 10 E.C.Combe: Notes on dental materials. Univ.Manchester, 1986.
- 11 J.F.McCabe: Applied dental materials. Univ. Newcastle, 1990.
- 12 Howe: A Minor Oral Surgery. Wright. 1987. ISBN 723608237.
- 13 Howe: The Extraction of Teeth. Wright. 1990. ISBN 723622310.
- 14 Seward et al.: An Outline of Oral Surgery. Wright. 1998. ISBN 0-7236-0735-4 és -0407-x
- 15 Peterson: Contemporary Oral and Maxillofacial Surgery. Mosby, 2003.
- 16 Peterson: Principles of Oral and Maxillofacial Surgery. Decker, 2004.
- 17 Robinson, Howe: Tooth Extraction. A Practical Guide. Oxford, 2000.
- 18 Harrison's Principles of Internal Medicine, Petersdorf, Adams, Braunwald, Isselbacher, Martin, Wilson, McGraw-Hill Book Company. 15th ed.

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)

Pathophysiology of gastric disorders. GERD. Peptic - and duodenal ulcer. Intestinal digestion and absorption.

Diseases and regulation of exocrine pancreas.

Acute and chronic pancreatitis

Pathophysiology of liver. Processes leading to the lysis of liver cells. Viral hepatitis Development of jaundice. Fatty liver. Pathophysiology of cirrhosis

Cardiac insufficiency. Forward and backward heart failure.

Cardiomyopathies. Hypo- and hyperventilation.

Obstructive and restrictive respiratory disorders.

Emphysema. Respiratory insufficiency

Shock. Circulatory failure in shock. Various mediators in shock. Depressed functions in various tissue in shock.

Regulation of blood pressure in hypertension. Risk factors and definitions in hypertension. Processes leading to elevation in blood volume and total peripheral resistancy.

Consequences of hypertension

Defects in water intake. Hypovolemia, exsiccosis. Hyperhydrosis. Changes in sodium intake: hypo- and hypernatremia

Pathophysiology of kidney functions. Acute renal failure.

Chronic renal failure. Uremia syndrome. Nephrosis.

Protein metabolism. Development of hypoproteinemia.

Low protein and amino acid intake and absorption.

Complete and incomplete proteins Kwashiorkor and marasmus.

Energy balance. Low and high energy intake.

Regulation of metabolic rate. Anorexia nervosa.

Various types of obesities. Control of appetite and energy balance.

Lipid metabolism. Absorption and metabolism of lipids.

Regulatory and endocrine effect of WAT.

Practices (2 hours per week)

Gastric function

Liver

ECG-1 (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)

Atherosclerosis. Risk factors and epidemiological aspects. Various theories for the development of atherosclerosis (lipid theory, connective tissue theory, immune theory, thrombogenic theory, response to injury etc)

Endocrin disorders. Regulation of hormone activities: hypothalamus hormones. Hormone receptor in the brain. Pituitary- hormones. Panhypopituitarism.

Changes in the release and activity of thyroid hormones and glucocorticoids. Short and long feedbacks

Impaired carbohydrate metabolism. Hypo- and Hyperglycemic states. Etiology and pathogenesis of primary and secondary diabetes.

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.

Metabolic acidosis, alkalosis. Mechanisms in compensation.

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

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

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.

Dental caries. Etiology and epidemiology. Contributing factors in dental caries.

Clinical aspects of dental caries. Histopathology of dental caries.

Microbiology and immunobiology of caries. Attrition. Abrasion. Erosion.

Hypercementosis. Resorption of the teeth.
Diseases of the pulp. Periapical lesions.
Periodontal diseases Implantation. Reimplantation. Transplantation.
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 hemihypoplasia.
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.
Metastatic tumors of the jaws. Biopsy technique. Healing of oral wounds.
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)

Lecture

Laboratory

Introduction. Historical backgrounds.	
Cell and tissue injury. Adaptive responses. Necrosis.	AUTOPSY
Acute inflammation. Vascular and cellular events. Schemical meditors.	
Acute inflammation Morphological patterns.	
Chronic inflammation.	AUTOPSY
Extracellular matrix. Repair. Wound healing.	HISTOLOGY
Immunopathology. Cellular components. Immunologically mediate tissue injury.	
Transplantation. Immunodeficiency. Autoimmune diseases.	
Neoplasia. Classification. Histological diagnosis. Invasion and metastasis.	AUTOPSY
Growth patterns.	
Carcinogenesis.	
Epidemiology of malignancies. Preblastomatosis. Screening.	AUTOPSY
Tumor therapy. Tumor immunology.	
Benign and malignant tumors of epithelial and mesenchymal origin.	HISTOLOGY
Developmental and genetic diseases.	
Environmental and nutritional pathology	
Hemodynamic diseases. Water and electrolyte disturbances.	AUTOPSY
Edema. Shock.	
Hyperaemia. Haemorrhage. Thrombosis.	AUTOPSY
Embolism. Infarct.	
Infectious and parasitic diseases. Viral and bacterial diseases.	HISTOLOGY
Tuberculosis. Syphilis. Leprosy. Diseases caused by fungi, nematodes, cestodes.	
Blood vessels. Atherosclerosis. Hypertension. Inflammatory diseases.	
Aneurysms. Tumors.	AUTOPSY
Heart diseases. Congenital, ischemic, hypertensive heart diseases.	
Rheumatic heart disease. Inflammatory diseases. Cardiomyopathy.	
Respiratory system. Pathology of larynx and trachea. Lung cancer.	AUTOPSY
Lesions affecting lung parenchyma.	
Bronchitis. Asthma. Emphysema. Pneumoconiosis. Diseases of the pleura.	HISTOLOGY
Gastrointestinal tract. Esophagus. Stomach.	
Small and large intestine. Peritoneum.	
Liver and biliary system. Mechanism of jaundice. Hepatic failure.	AUTOPSY
Acute and chronic hepatitis.	
Liver cirrhosis. Toxic injury. Tumors	AUTOPSY
Kidney. Non-inflammatory lesions. Inflammatory glomerular lesions.	
Tubulointerstitial diseases. Renal diseases associated with systemic conditions. Vascular diseases. Tumors.	HISTOLOGY Consultation.

PATHOLOGY

Second Semester

Lectures

(1 hour per week)

Practices

(2 hours per week)

Lecture

Laboratory

Urinary tract and male reproductive system	
Gynecologic pathology. Vulva. Cervix. Body of uterus and endometrium.	AUTOPSY
Fallopian tube. Ovary. Placenta and neonatal pathology.	AUTOPSY
Gestational throphoblastic disease.	
Pathology of the breast.	AUTOPSY
Blood and lymphoid organs. Benign and malignant disorders of lymphoid cells. Hodgkin's disease. Disorders of the spleen.	AUTOPSY
Disorders of the mononuclear phagocyte system. Acute and chronic myeloproliferative syndromes.	AUTOPSY
Endocrine system.	AUTOPSY
Gallbladder and extrahepatic bile ducts. Pancreas. Diabetes.	HISTOLOGY
Head and neck pathology.	AUTOPSY
Bones and joints, skeletal muscles.	AUTOPSY
Pediatric oncology.	HISTOLOGY
Nervous system. Trauma. Circulatory and inflammatory diseases.	AUTOPSY
Demyelinating and metabolic diseases.	
Tumors of the nervous system. Peripheral nervous system.	AUTOPSY
Pathology of the skin.	AUTOPSY
Clinicopathological conference	HISTOLOGY

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 coccobacilli.

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).

General properties of viruses. Antiviral chemotherapy. Adeno- and Poxviruses.

Important respiratory pathogen viruses. Important enterally transmitted viruses.

Hepatitis viruses.

Retroviruses (AIDS).

Viruses and cancer.

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)

Mycobacteria. Spirochetes. Rickettsiae.

Chlamydiae.

Mycoplasma.

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)

Arbo- and robovirus infection. Rabies. Slow viruses. Viral infections involving the oral, perioral tissues and salivary glands.

Normal oral flora. Oral ecosystem and dental plaque. Microbiology of dental caries, periodontal diseases. Dentoalveolar infections.

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

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

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:

Textbook: Falus A. Immunology, Semmelweis PH, 2001.

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 hygien, silicate cement, acrylic resin, composite resin).

Amalgam restorations (indications; contraindications; inserting cement bases; mixing amalgam; mercury hygiene, finishing and polishing restauration).

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 restauration (inlay).

Indirect inlay-onlay restauration.

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.

Note: The maximum number of absences in a semester is 3. During the semester three midterm examinations should be passed. Practical course grade

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

CONSERVATIVE DENTISTRY AND ENDODONTICS

Second Semester

Lectures (1 hour/week)

Rules of clinical practice. Registrations of case history and dental status. Clinical diagnostics of dental caries
Treatment of the patients in lying position "four-handed" method
Morphology, histology and physiology of dental pulp
Treatment plan Clinical practice
Isolation in Operative Dentistry and Endodontics
Aetiology of dental caries. Current concept of dental caries
Systemic factors in development of dental caries
Equipment and instruments of cavity preparation
Caries therapy (I): amalgams
Caries therapy (II): composite restorations
Caries therapy (III): glass ionomers
Adhesive filling-technique and materials
Preventive stand points in modern therapy of restorations
The anatomy of teeth and pulp tissues
Pathological alterations of pulp and periapical tissue

Practices

(3 hours/week)

Clinical practice
Clinical practice
Clinical practice
Clinical practice
Clinical practice
Clinical practice
Clinical practice
Clinical practice
Clinical practice
Clinical practice
Clinical practice
Clinical practice
Clinical practice

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

Week	Lectures (1 hour/week)	Practices (2 hours/week)
1.	Primary, secondary and tertiary prevention. Health-protection, health-education: collective, group and individual prophylaxe. Oral-prophylaxe	Clinical workplace
2.	Caries. Caries-indicis and epidemiological relations. Characteristics of Hungarian epidemiology	Clinical caries-diagnostic 1. Status, caries- indices.
3.	Caries-etiology. Plaque. Risk-factors	Clinical oral-hygiene examination. Oralhygienic-indices. Plaque-determination
4.	Gingivitis and periodontal disease. Epidemiological Characteristics. Pathomechanism and diagnosis.	Periodontal indices
5.	Strategy for prevention of periodontal diseases.	Toothbrushing
6.	Possibilities in prevention of orthodontic anomalies.	Possibilities of prevention in orthodontic anomalies /HPK Orthodontic and Dental Department/
7.	Oralhygiene	Effect of alimentionation in baby-and childhood on development of mandibula and maxilla and on the formation of parafunction
8.	Fluorides	Demonstration of oral hygiene /HPK Orthodontic and Dental Department/
9.	Collective and individual fluoride-prevention	Clinical infection control
10.	Other possibilities in caries prevention /sugar-substitutes, rysta-possibilities/	The role of trace elements and vitamins in maintaining oral health
11.	Fissure-sealant	The role of certain nutrient – groups in maintaining oral health
12.	Caries incipient and remineralisation	Caries diagnostic 2.
13.	Prevention of iatrogen traumas; infection control	Possibilities of caries-risk, CRT-test, definition of saliva – secretion, pH measurement
14.	Organization and realization of prophylaxe for children at kindergarten and at school. Prophylaxe of pregnant mothers, the elderly and other handicapped patients. Realization of complex prevention, unity of preventive and curative supply. Recall-system. Dental care	Plaque-removal; scaling. Polishing, finishing

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

Removable partial dentures
 Stages of constructing complex dentures
 Temporary dentures, repair of dentures
 Special dentures. Fundamentals of
 of maxillofacial prosthetics
 Fundamentals of implant prosthodontics
 Consultation

Bite registration on phantom head
 Mounting casts on Földvári articulator
 Setting up teeth I.
 Setting up teeth II.

Setting up teeth III.
 Denture repair, temporary prosthodontic
 appliances

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

PROSTHODONTICS

Second Semester

Lectures (1 hour per week)

The reasons and the consequences
 of the tooth loss
 Complaints, medical history, extra-oral
 and intra-oral examination, treatment
 plans, and prognosis at edentulous 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. Practical course grade.

INTERNAL MEDICINE

3rd Department of Internal Medicine

Tutor: **Dr. László Jakab**

Second Semester

Lectures (2 hours per week)

Introduction to internal medicine.
History taking.
Physical examination

Respiratory diseases. Physical examination and respiratory diagnostic procedures. Bronchitis. 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 arrhythmias. Conduction disturbances. Hypertension. Atherosclerosis. Thromboangiitis obliterans. Raynaud's phenomenon. Headache. Dental relation of the heart diseases

Practices (2 hours per week)

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 rate 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
 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. (Inflamed tissues, trismus)
 Summerising 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 anaesthesia
 Oral and maxillofacial surgical instruments
 Clinical diagnosis, medical examination of the patients
 Midterm demonstration
 Practicing simple tooth extraction
 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

Midterm Demonstration
Minor oral surgery
Minor oral surgery
Midterm Demonstration

Note: Lectures will be held in the lecture hall of the Department of Maxillofacial Surgery and Dentistry. The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester.
During the semester three midterm examinations should be passed.

Practical course grade (five-scale).

ORAL BIOLOGY

Lecturer: **Prof. Dr. Gábor Varga**
Tutor: **Dr. Beáta Kerémi D.M.D.**

Second Semester

Lectures (3 hours per week)

The oral mineralized tissues –
Amelogenesis-dentinogenesis – cementogenesis

dentin and cementum. Microanatomy and structures of enamel, physiology and innervation of the pulp.– Chemistry of formation and solubilization of the various calcium phosphate salts. Crystallography of bio-apatite 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 enamel, 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

Neurological and pharmacological control of salivary gland secretion – Chemical composition and physical properties of saliva – Influences

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
Plaque associated diseases – Structures adhering to dental pellicle
– Formation, composition and metabolism of dental plaque.
– Plaque and the demineralization-remineralization phenomena
– Dynamism and control of the oral microbial ecosystems
– Pathogenesis of caries – Pocket formation Plaque and dental calculus formation – Gingivitis and periodontitis and alveolar bone resorption.
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
Folate- 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

pathomechanism, oral symptoms, differential diagnosis
Inflammation – cardinal signs – fever – changes in RES
– vascular permeability – cellular reactions – chemical
mediators – inflammation and repair

Analyses of oral hard tissues

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

Measurement of plaque and salivary pH

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				
	subjects	Creditcode	examination	prerequisites
compulsory	General and Dental Radiology	C4L2P2	final#	Radiation protection
compulsory	Conservative Dentistry and Endodontics II.	C4L1P3	pract.mark	Conservative Dentistry and Endodontics I.
compulsory	Internal Medicine II.	C3L2P1	semifinal	Internal Medicine I.
compulsory	Oral and Maxillofacial Surgery II.	C4L1P3	pract. mark	Oral and Maxillofacial Surgery I.
compulsory	Periodontology I.	C2L2P0	semifinal	Oral biology
compulsory	Pharmacology, Toxicology I.	C2L1P1	semifinal	Pathology I.
compulsory	Prosthodontics II.	C7L1P6	semifinal	Prosthodontics I.
compulsory	Oral Diagnostics I.	C2L1P1	pract. mark	PathologyII.
compulsory	Orthodontics Pre-Clinical	C1L0P1	pract. mark	Oral Biology
obligatory elective	Neurology	C1L1P0	semifinal	Internal Medicine I.
obligatory elective	Psychiatry	C1L1P0	semifinal	Internal Medicine I.
obligatory elective	Dental Ethics	C2L2P0	semifinal	
compulsory	Gnathology	C3L1P2	final#	Prosthodontics I.I.
obligatory elective	Public Health	C3L1,5P2	final#	General and Oral Microbiology
	Total Credit	39		

8th semester				
	subjects	Creditcode	examination	prerequisites
compulsory	Conservative Dentistry and Endodontics III.	C4L1P3	pract.mark	Conservative Dentistry and Endodontics II.
compulsory	Internal Medicine III.	C1L1P0	final#	Internal Medicine II.
compulsory	Oral and Maxillofacial Surgery III.	C4L1P3	pract. mark	Oral and Maxillofacial Surgery II.
compulsory	Oral Diagnostics II.	C1L0P1	semifinal	Oral Diagnostics I.
compulsory	Periodontology II.	C4L1P3	pract. mark	Periodontology I.
compulsory	Pharmacology, Toxicology II.	C3L1P2	final#	Pharmacology, Toxicology I.
compulsory	Prosthodontics III.	C4L1P3	pract. mark	Prosthodontics II.
obligatory elective	Surgery	C3L2P1	final#	Internal Medicine I.
compulsory	Implantology I.	C1L1G0	semifinal	Oral and Maxillofacial Surgery II.
compulsory	General Dentistry practice (summer,4weeks)	C0L0P30	signature	1-8 semesters compulsory subjects
	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

- 1 Katzung, B.: Basic and Clinical Pharmacology. 8th ed. Lange Medical Books/McGraw-Hill, 2001.
 - 2 Peter, E.S., Freund-Meredith B., McGuire.: Health, Illness and the Social Body. (A Critical Sociology.) Prentice Hall, Upper Saddle River, New Jersey.
 - 3 Conrad Fischer—Caterina Oneto (2009): USMLE Medical Ethics: The 100 cases you are most likely to see on the exam (Second edition) New York: Kaplan Publishing ISBN: 9781419553141
 - 4 Mumenthaler: Neurology. Georg Thieme Verlag 1990. ISBN 3 13 523 909 3
 - 5 Kaplan-Sadock: Pocket Handbook of Clinical Psychiatry. Wilkins, Baltimore 1990.
 - 6 Fuller G.: Neurological Examination Made Easy. 3rd ed. Churchill Livingstone. 2004. ISBN 0443074208
 - 7 Rajna Péter: Ideg- és elmegyógyászati szakkifejezések
 - 8 Hoag, Pawlak: Essentials of Periodontics. Mosby. ISBN 80162228x.
 - 9 Goaz, White: Oral Radiology. Mosby. ISBN 801618738.
 - 10 T.G.Wilson-K.S.Kornman: Fundamentals of Periodontics Quintessence. 1996. ISBN 0-86715-303-2
 - 11 The Washington Manual of Surgery. 3rd ed. 2002. Lippincott Williams & Wilkins. ISBN 0-7817-3389-8
 - 12 Worthington-Lang-LaVelle: Osseointegration in Dentistry. An Introduction. Quintessence, Chicago, 1994.
 - 13 Sethi, A.-Kaus, Th: Practical implant dentistry. Quintessence, London, 2005.
 - 14 Bricker, S.L.-Langlais, R.P.-Miller, C: Oral Diagnosis, Oral Medicine and Treatment planning. 2nd ed. 2002. B.C.Decker Inc. Hamilton London
 - 15 Andreoli, T.E.-Bennett, J.C.-Carpenter, C.C.J.-Plum, F.: Cecil Essentials of Medicine. 4th ed. W.B. Saunders Co. 2000.
 - 16 The New Public Health: An Introduction for the 21st Century. By: T.Tulchinsky, E.A.Varavikova. 2000. ISBN 0-12-703350-5
 - 17 Gerry Humphris, Margaret S. Ling: Behavioural Sciences for Dentistry. Churchill Livingstone, London, 2005
- Handouts for the lectures in Dentsoc will be accessible on the homepage of the Institute of behavioural Sciences: www.magtud.sote.hu.

Recommended textbooks:

- 1 Bengel, Veltman, Loevy, Taschini: Differential Diagnosis of Diseases of the Oral Mucosa. Quintessence Publishing Co. Inc. Chicago, Illinois 1989.
- 2 Manfred Strassburg/Gerdt Knolle: Diseases of the Oral Mucosa A Color Atlas 2nd ed. Quintessence Publ. Co. Inc. Carol Stream Illinois 1994.
- 3 Coleman, G.C.-Nelson, J.F.: Principles of Oral Diagnosis. Mosby-Year Book, Inc. St. Louis, Missouri, USA 1993. "hand-outs" will be prepared and presented for the students by the lecturers
- 4 Forrai J.-Ballér P.: Chrestomathy on the History of Medicine. Bp. SOTE. 1992.
- 5 Behavioral dentistry. Mostofsky DI, Forgione AG, Giddon DB (eds.), Blackwell Munksgaard, 2006.
- 6 Behavior & Medicine. 4th Edition, Danny Wedding, Hogrefe & Huber Publishers, Seattle, 2006.
- 7 Fadem B: Behavioral Science, Lippincott Williams & Wilkins, 5th ed., 2008.
- 8 Sarafino E.P.: Health Psychology. Biopsychosocial interactions. 6th ed., New York, Wiley, 2008.
- 9 Kopp M. - Skrabski Á.: Behavioral Sciences Applied in a Changing Society, Corvina, 1996.
- 10 Alan Stoudemire: Human Behaviour: An Introduction for Medical Students. Lippincott Company, 1994. ISBN 0-397-51337-2.
- 11 Gatchel R.J., Baum A., Krantz D.S.: An Introduction of Health Psychology. McGraw-Hill 1989. ISBN 0-07-100729-6
- 12 Lindhe, J. (ed.): Clinical Periodontology and Implant Dentistry. Munksgaard. 1998. ISBN 87-16-12060-4.

- 13 Principles of Oral Diagnosis. Ed.: Coleman,G.C.-Nelson, J.F. Mosby-Year Book, Inc. St.Louis, Missouri. 1993. ISBN 0-8016-1005-2
- 14 Rose,L.F.-Kaye,D.:Internal Medicine for Dentistry. 2nd ed. Mosby. 1990.
- 15 Surgery – Basic Science and Clinical Evidence. Ed. Norton, J.A. 1st ed. 2000. Springer. ISBN 0-387-9844-X
- 16 Baehr,M.M.D- Frotscher,M.M.D:Duus's Topical Diagnosis in Neurology: Anatomy, Physiology, Signs, Symptoms. Thieme. Medical Publ. 2005. ISBN 3136128044
- 17 Lindsay K.-Bone I.-Callender R.: Neurology and Neurosurgery. Illustrated. 4th ed. Churchill Livingstone, 2004. ISBN 0443070563
- 18 Szirmai I.-Kamondi A.-Arányi Zs.-Kovács T: Neurological examination. Bp. Semmelweis Publ. 2006. ISBN 963 9656062

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

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)

Diuretic agents
Antiarrhythmic drugs
Agents used in hyperlipid
Agents used in anemia
Bronchodilators
Prescription writing
Drugs of abuse
Psychomimetic drugs

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.
Hodgkin's disease and non-Hodgkin's lymphoma.
Introduction to anemia and approach to patients
with anemia. Iron deficiency anemia. Megaloblastic
anemia. Aplastic anemia. Hemolytic anemias.
Plasma cell disorders. Multiple myeloma.
Waldenström's macroglobulinemia.
Heavy-chain disease. Amyloidosis.

Hemostatic disorders. Thrombocytopenia.
Thrombocytosis. Vascular purpuras. Disorders of the coagulation mechanism.
Autoimmunity. Systemic lupus erythematosus.
Sjögren's syndrome.
Atopic diseases. Allergic rhinitis. Asthma of allergic etiology. Urticaria and angioedema. Serum sickness.
Drug allergy. Contact dermatitis.
Immunodeficiency diseases.
Rheumatoid arthritis. Juvenile rheumatoid arthritis.
Reiter's syndrome. Bechet's syndrome.

Systemic sclerosis. Polymyositis and dermatomyositis. Wegener's granulomatosis.
Hypothalamic and pituitary disorders. Hyperpituitary syndromes. Anterior pituitary insufficiency.
Diabetes insipidus. The adrenal cortex.
Cushing's syndrome. Addison's disease.
Diabetes mellitus. Diagnosis and classification of diabetes mellitus. Complication and treatment of diabetes mellitus. Gout.

Lectures (2 hours per week)

Diabetes mellitus. Diagnosis and classification of diabetes mellitus. Complication and treatment of diabetes mellitus. Gout.
The thyroid gland. Hypothyroidism. Hyperthyroidism.
Thyroiditis. Hypoparathyroidism. Hyperparathyroidism.
Viral diseases. Herpes simplex. Varicella-zoster virus. Cytomegalovirus. Epstein-Barr virus. Influenza. AIDS.
Bacterial disorders. Tuberculosis. Diseases caused by fungi. Salmonellosis. Shigellosis.

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)

Diseases of the kidney. Physical examination.
Urine analysis.

Primary glomerular disorders. Nephritic syndrome.

Interstitial nephritis. Tubular disorders.
Acute and chronic pyelonephritis. Nephrolithiasis.
Acute and chronic renal failure.
Disorders of the digestive system. History
taking and physical examination. Special techniques
for diagnosing disorders of the digestive system.
Disorders of the esophagus. Peptic ulcer disease.

Tumors of the stomach.

Crohn's disease. Chronic ulcerative colitis.

The malabsorption syndrome.

Colonic and rectal neoplasms.

Acute abdomen. Mechanical obstruction and ileus.

Lectures (2 hours per week)

Disorders of the liver. Physical examination.
Diagnostic procedures.
Jaundice. Cirrhosis of the liver.
Acute and chronic hepatitis.
Disorders of the gall bladder and the biliary tract.
Disorders of the pancreas.

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

Practices (1 hour per week)

The medical examination of
patients with diseases of the kidney
and urinary tract.

The medical examination of patients
with diseases of the kidney and urinary
tract.

The medical examination of 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

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

Practices (2 hours per week)

The medical examination of patients
with diseases of the pancreas

Consultation

Consultation

The medical examination of patients

Consultation

CONSERVATIVE DENTISTRY AND ENDODONTICS

Tutor: *Dr. Krisztina Márton*

First Semester

Lectures (1 hour per week)

Infection control
 Root canal treatment: preparation of access cavity: determination of working length, importance of X-ray in Endodontics
 Root canal treatment: cleaning and shaping
 Root canal treatment: making preparation of the root-canal for filling. Obturation of the root canal
 Reconstruction of root-canal treated teeth: post & core
 Indications and methods of endodontics surgery
 Emergency treatment in Endodontics
 Complications and failures in the course of root canal treatment
 Endodontic microbiology
 Endodontic Periodontic Interrelationship

New instruments in endodontics (The Endo-Endodontic System)
 Caries therapy. Cast metal restoration
 Caries therapy: ceramic and composite inlays
 Preparation for Crown

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester
 Practical course grade

Practices

(3 hours per week)

Clinical practice
 Clinical practice

Clinical practice
 Clinical practice

Clinical practice
 Clinical practice
 Clinical practice
 Clinical practice
 Clinical practice
 Clinical practice
 Clinical practice

Clinical practice
 Clinical practice
 Clinical practice

During the first semester students have to make:
 4 amalgam fillings
 4 esthetic restorations
 1 root-canal filling
 15 hours assistance

CONSERVATIVE DENTISTRY AND ENDODONTICS

Second Semester

Lectures/Seminars (1 hour per week)

Preventive Endodontics: protecting the pulp
 Evaluation of success and failure in Endodontics
 Esthetic dentistry: Bleaching discolored teeth.
 Internal and External
 Direct fillings of molars: amalgam or composite
 Local anesthesia in Conservative Dentistry and its complications

Practices (3 hours per week)

Clinical practice
 Clinical practice
 Clinical practice

Clinical practice
 Clinical practice

Treatment of cervical lesion	Clinical practice
New equipment and methods in Conservative Dentistry	Clinical practice
Indications and techniques of veneer	Clinical practice
Discussion of thesis of diploma work	Clinical practice
Discussion of thesis of diploma work	Clinical practice
Special dental treatment of some general diseases (AIDS, hepatitis, diabetes, epilepsy, etc.).	Clinical practice
Principles of the Oral Health Insurance System.	Clinical practice
“Anatomie” of dental praxeses.	Clinical practice
Management of Traumatized Teeth	Clinical practice
Special cavity preparation. (Tunnel, slot, mini cavities)	Clinical practice
Note: The maximum number of absences students in a semester is 3. More than 3 absences invalidate the semester. Practical course grade.	During the second semester have to make: 3 amalgam fillings 3 esthetic restorations 1 root canal filling 1 inlay 15 hours assistance

PROSTHODONTICS

First Semester

Lectures (1 hour per week)	Practices (6 hours per week)
The reasons and the consequences of tooth loss	Partially dentate patients
Partially dentate patients	
Infection control in prosthodontics	Partially dentate patients
Psychology and psychopathology of denture intolerance	Partially dentate patients
Fix appliances, types of crown and bridges	Partially dentate patients
Lectures (1 hour per week)	Practices (6 hours per week)
Tooth preparation I.	Partially dentate patients
Tooth preparation II.	Partially dentate patients
The adhesive bridges	Partially dentate patients
Impression for fix restorations	Partially dentate patients
Fixed partial dentures	Partially dentate patients
Dowel restorations	Partially dentate patients
Removable partial denture	Partially dentate patients
Major connectors of upper and lower RPD	Partially dentate patients
Indirect and direct retainers of RPD	Partially dentate patients
Clinical and laboratorial steps of fixed partials dentures	Partially dentate patients
Consultation	
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

Topics	Lectures	Practices
	Diagnosis and treatment planning	Partially dentate patients
	Oral health for the partially edentulous patient	Partially dentate patients
	Principles of partial denture design	Partially dentate patients
	Construction of removable partial dentures	Partially dentate patients
	Classification of the partially edentulous dental arches	Partially dentate patients
	Treatment planning for the class 0., 1A. and 1B. dental arches	Partially dentate patients
	Treatment planning for the class 2A. dental arches	Partially dentate patients
	Treatment planning for the class 2B. dental arches	Partially dentate patients
	Treatment planning for the class 2A/1. and 3. dental arches	Partially dentate patients
	Maxillo-facial prosthetics	
	Partially dentate patients	
	Implants in prosthodontics	
	Partially dentate patients	
	Orthodontic aspects of prosthodontics	Partially dentate patients
	Consultation	Partially dentate patients

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

Lectures (2 hours per week)	Practices (1 hour per week)
Surgery of the neck. Thyroid and parathyroid	Visiting patients' ward
Surgical treatment of the chest wall, breast, pleura, lung and mediastinum	Visiting operating theater
Oesophageal surgery (injuries, diverticula, malignant diseases)	Visiting patients' ward
Gastric and duodenal surgery (benign diseases)	Visiting patients' ward
Gastric and duodenal surgery (malignant diseases)	Visiting operating theater
Surgery of gall-bladder and extrahepatic biliary system	Visiting operating theater

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: K1EOG1

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.
3. Additional methods of examination. Referrals and consultations. Clinical evaluation by laboratory methods.
4. Molecular oral Diagnostics
5. Physical assessment. Risk factors. Modification of the dental treatment planning for patients with compromised health.
6. New imaging methods in dentistry. Making decisions in dental radiology.
7. Up-to-date diagnosis of the periodontal tissues.
8. Documentation. The use of computers in the dental office. Special softwares in dentistry. Internet
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
12. Diagnosis and differential diagnosis of maxillo-facial soft tissues. Part I.: White and red lesions.
13. Diagnosis and differential diagnosis of maxillo-facial soft tissues. Part II.: Ulcers and proliferations.
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:

- 1 Bricker, Langlais, Miller: Oral Diagnosis, Oral Medicine and Treatment Planning (second edition)
- 2 BC Decker Inc Hamilton London 2002

Recommended books

- 1 Bengel, Veltman, Loevy, Taschini: Differential Diagnosis of Diseases of the Oral Mucosa Quintessence Publishing Co. Inc. Chicago, Illinois 1989
- 2 Manfred Strassburg/Gerdt Knolle : Diseases of the Oral Mucosa A Color Atlas (Second Edition) Quintessence Publishing Co. Inc. Carol Stream Illinois 1994
- 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)

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Non-performance of the minimal expectations invalidate the semester!

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- 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
1st midterm
 Periodontal disease
2nd midterm
 Cysts of the jaws
3rd midterm

 Hypercementosis
 Excessivebone formation
 Injuries to teeth
 Osteomyelitis
 Tumors, apicoectomy
 Anomalies

 Review

 Review

 Viewing of the examination radiographs I.
 Viewing 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

Textbook: Kaplan-Sadock: Pocket Handbook of Clinical Psychiatry. Fourth Edition, Lippincott Williams & Wilkins, Philadelphia 2005.

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. Hidas)

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 Illiczky**

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:

- 1 Fuller G. Neurological Examination Made Easy (3rd edition) Churchill Livingstone, Published April 2004. ISBN 0443074208

Suggested reading:

- 1 Lindsay K., Bone I., Callender R.: Neurology and Neurosurgery Illustrated., 4th edition Churchill Livingstone – Published February 2004. ISBN 0443070563

PERIODONTOLOGY I, II

Department of Periodontology

First Semester

Lectures (1,5 hours per week)

Second Semester

Lectures (1 hour per week)

Introduction to Periodontology
 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 gingivitis, Periodontal diseases with endocrine background.

Practices (3 hours per week)

Clinical practice
 Clinical practice
 Clinical practice
 Clinical practice
 Midterm Demonstration
 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

 Clinical practice
 Clinical practice

Midterm Demonstration

 Clinical practice

 Clinical practice

 Clinical practice

Note: The maximum number of absences in a semester is 3.
 More than 3 absences invalidate the semester.
 During the semester two midterm demonstrations should be passed.
 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: FOKMAGO19_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. Piroška 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:

- 1 Behavioral dentistry. Mostofsky DI, Forgione AG, Giddon DB (eds.), Blackwell Munksgaard, 2006.
- 2 Behavior & Medicine. 4th Edition, Danny Wedding, Hogrefe & Huber Publishers, Seattle, 2006.

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

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-maleficence.

The principle of beneficence.

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?

The practice of active euthanasia in the Netherlands. The Rammelink Report.

Refusal of life sustaining treatment by competent and incompetent patients.

Possibilities to extend the autonomy of patients: living will, durable power of attorney, substituted judgement, etc.

The concept of medically futile treatment.

Ethical problems of the treatment of handicapped newborns. (The debate about the treatment of spina bifida babies, the Baby Doe case, the legal situation, etc.)

12. week (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 prandomization.

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

1089. Budapest, Nagyvárud tér 4.

Tel: 210-2953

Secretary: NET Building, 20th floor, Room-2005

List of questions

1. Deontological theories of ethics.
2. Utilitarian theories of ethics.
3. The principles of dental ethics
4. Justice and dental ethics: the allocation of scarce medical resources.
5. Paternalism in dental practice
6. Informed consent
7. Information disclosure for terminally ill patients
8. Advance Directives
9. Experimentation on human subjects
10. Objection to Transplantation of Organs and Counterarguments
11. Ethical problems of live organ donation
12. Organ donation from brain-dead donors: the system of donor cards.
13. Organ donation 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

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.

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:

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

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:

- 1 Gerry Humphris, Margaret S. Ling: Behavioural Sciences for Dentistry. Churchill Livingstone, London, 2005
- 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. Centric occlusion.
3.	Movements of the mandible. Occlusal concepts. Role of occlusion in the clinical practice.
4.	Types of articulators. Mounting of the articulators.
5.	Mounting of the adjustable articulator: Arcus Digma Complete denture fabrication in the articulator.
6.	Diagnosis and management of the problems related to the temporomandibular joint.
7.	Traumatic occlusion – Occlusal trauma Periodontological aspect of gnathology
8.	Examination of patients. Occlusal diagnostics.
9.	Facebow transfer. Mounting of semiadjustable articulators.
10.	Occlusal analysis in the articulator.
11.	Occlusal adjustment.
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:

History of oral implantology. Different types of implants. Indications, contraindications of implant rehabilitations. Preoperative diagnosis. Surgical placement of implants. The biology and morphology of osseointegration and mucosal seal. Implant biomechanics. Treatment plans, bone grafting methods. Parodontological and esthetic aspects of implant rehabilitation. Implant prosthodontics. Different dental implant systems. Case presentations, planning and completing implant treatments in different edentulous situations. Failures and complications.

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*

STUDY PROGRAMME

9th semester				
	subjects	Creditcode	examination	prerequisites
compulsory	Clinical Dentistry I. *	C4LOP6	pract.mark	Prosthodontics III
compulsory	Clinical Dentistry I. *	C4LOP6	pract.mark	Conservative Dentistry and Endodontics III.
compulsory	Conservative Dentistry and Endodontics IV	C3LOP3	pract.mark	Conservative Dentistry and Endodontics III.
obligatory elective	Forensic Dentistry	C1L1P0	semifinal	Pharmacology, Toxicology II.
obligatory elective	Ophthalmology	C1L1P0.5	final#	Pathology II.
compulsory	Oral and Maxillofacial Surgery IV.	C6L1P5	practice mark	Oral and Maxillofacial Surgery III.
compulsory	Implantology II.	C2L1G1	final#	Oral and Maxillofacial Surgery III.
compulsory	Orthodontics I	C6L1P5	practice mark	Conservative Dentistry and Endodontics III.
obligatory elective	Otorhinolaryngology	C1L1P0.5	final#	Pathology II.
obligatory elective	Pediatrics	C1L1P0.5	semifinal	Internal Medicine III.
compulsory	Pedodontics I	C6L1P5	practice mark	Conservative Dentistry and Endodontics III.
compulsory	Periodontology III.	C3L1P2	practice mark	Periodontology II.
obligatory elective	Prehospital Emergency Medicine	C1L1P0	semifinal	Internal Medicine III.
compulsory	Prosthodontics IV.	C3LOP3	practice mark	Prosthodontics III.
		38		

*in the Dept. of Prosthodontics or in the Dept. of Conservative Dentistry

10th semester				
subjects code	subjects	credit	prerequisites code	prerequisites
compulsory	Clinical Dentistry II. *	C4LOP6	practice mark	Clinical Dentistry I. * in the Dept. of Prosthodontics
compulsory	Clinical Dentistry II. *	C4LOP6	practice mark	Clinical Dentistry I. * in the Dept. of Conservative Dentistry
compulsory	Conservative Dentistry and Endodontics V	C3LOP3	final#	Conservative Dentistry and Endodontics IV
obligatory elective	Dermatology	C1L1PO.5	final#	Pharmacology, Toxicology II.
obligatory elective	Obstetrics and Family Planning	C1L1PO	semifinal	Internal Medicine III.
obligatory elective	Diploma Work	C2O		9th semester's subjects
compulsory	Oral and Maxillofacial Surgery V.	C4L1P3	final#	Oral and Maxillofacial Surgery IV.
compulsory	Oral Medicine	C1L1PO	final#	Periodontology III.
compulsory	Orthodontics II	C5L1P4	final#	Orthodontics I
compulsory	Pedodontics II	C5L1P4	final#	Pedodontics I
compulsory	Periodontology IV.	C3L1.5P2	final#	Periodontology III.
compulsory	Prosthodontics V.	C3LOP3	final#	Prosthodontics IV.
		50		

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

- 1 Becker W.-Naumann H.- Pfaltz R.: Ear, Nose and Throat Diseases. Thieme. Stuttgart, 1994. ISBN 3-13671202-1.
- 2 Répássy,G.: Otolaryngology. Eger, Radó Ny. 2000.
- 3 Current Pediatric Diagnosis and Treatment. 13th ed. W.E.Hathaway, W.W.Hay. Appleton and Lange Medical Book. ISBN 0838514006, ISSN 0093-8556
- 4 Lecture Notes of Forensic Medicine (Bp.) 1994.
- 5 Gerhard K. Lang: Ophthalmology / a Pocket Textbook Atlas. Thieme / 2000. ISBN 3-13-126161-7 (GTV) ISBN 0-86577-936-8 (TNY) 1 2 3 4 5
- 6 Dénes J.-Gábris K.-Hidasi Gy.-Tarján I.: Pedodontics. Bp. SOTE 1995.
- 7 Andlaw, R.J.-Rock,W.P.: A Manual of Pediatric Dentistry. 1998. ISBN 0443053723
- 8 T.G.Wilson-K.S.Kornman: Fundamentals of Periodontics Quintessence. 1996. ISBN 0-86715-303-2
- 9 R.A.Cawson-E.W.Odell: Essentials of Oral Pathology and Oral Medicine. Churchill Livingstone, 1998. ISBN 0-443-06121-1
- 10 Szabó Gy.: Oral and Maxillofacial Surgery. Bp. Semmelweis Publ. 2001.
- 11 Bricker,S.L.-Langlais,R.P.-Miller,C: Oral Diagnosis, Oral Medicine and Treatment planning. 2nd ed. 2002. B.C.Decker Inc. Hamilton London 2002.

Recommended textbooks:

- 1 J Hunter, J Savin, M Dahl: Clinical Dermatology, 4th ed. Blackwell Publishing, 2007, Paperback, ISBN 9781405146630
- 2 J Bologna, J Jorizzo, R Rapini: Dermatology, 2nd ed. Elsevier, 2007. Hardback, ISBN 9781416029991
- 3 DJ Gawkrödger: Dermatology. An illustrated colour text, 4th ed. Churchill Livingstone Elsevier, 2007, Paperback, ISBN 9780443104213
- 4 JE Fitzpatrick et al: Dermatology Secrets in Color with Student Consult Access. 3rd ed. Hanley & Belfus, 2006. ISBN 1560536160
- 5 R. Graham-Brown, J Bourke: Mosby's Color Atlas and Text of Dermatology. 2nd ed. Elsevier Mosby, 2006. ISBN 072343364X
- 6 M Lebwohl et al: Treatment of Skin Disease, 2nd ed. Elsevier Mosby, 2005, ISBN 0-32-3036031
- 7 M Lebwohl, W Heymann, J Berth-Jones, I Coulson: Treatment of Skin Disease. Comprehensive Therapeutic Strategies, Expert Consult – Online and Print Hardbound, 2009, ISBN: 0702031216
- 8 Online: www.lib.sote.hu – Adatbázisok, adattárak – OVID – Books@OVID – Dermatology – Fitzpatrick's Dermatology in General Medicine
- 9 Burkit's Oral Medicine: Lynch,A.M.& Malcom,A. Lippincott. 1996. ISBN 0-397-51242-2
- 10 Lindhe, J. (ed.): Clinical Periodontology and Implant Dentistry. Munksgaard. 1998. ISBN 87-16-12060-4.
- 11 McDonald, F.-Ireland, A.J.: Diagnosis of the Orthodontic Patient. Oxford Univ. Press. 1998. ISBN 0-19-262889-5
- 12 Graber,T.M.-Vanarsdall,R.L.: Orthodontics. Current Principles and Technics. Mosby Year Book, Inc. 1994. 2nd ed. ISBN 0-8016-6590-6
- 13 D.Hull-D.I.Johnston: Essential Paediatrics. 3rd ed. Churchill Livingstone. 1994. ISBN 0-443-04782-0.
- 14 Hollwich, F: Pocket Atlas of Ophthalmology. Thieme Verl. 2nd Rev. Ed. Stuttgart, 1986. ISBN 0-86577 244 4
- 15 Knight's Forensic Pathology. 3rd ed. 2004. Arnold.
- 16 Manual of Emergency Medicine. 5th ed. By Jon L.Jenkins, G.R.Braen. 2004 Lippincott Williams and Wilkins. Product nr. 479531-1019

OTORHINOLARYNGOLOGY AND HEAD AND NECK SURGERY

Lecturer: **Prof. Dr. Gábor Répássy**

Tutor: **Dr. László Noszek**

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.

Clinical anatomy and physiology of the nose and paranasal sinuses. Nasal obstruction. Epistaxis.

Infections and tumors of the nose and paranasal sinuses. Therapeutical possibilities. Borderlines and related aspects between the oral surgery and ENT. Fundamental aspects of maxillofacial traumatology.

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.

Diseases of the salivary glands. Emergency management of suffocation. Conicotomy and tracheotomy. Foreign bodies in the trachea and oesophagus.

Practices (0,5 hour per every 2nd week)

Routine clinical examinations in practice.

Evaluation of different types of perforations of the tympanic membrane. Cadaver bona practice. Paracentesis on moulage.

Routine audiology. Operating theater. Video demonstration.

Anterior and posterior rhinoscopy. X-ray photos of the paranasal sinuses. Clinical management of epistaxis.

Operating theatre. Luc. Caldwell operation. Functional endonasal surgery. Endoscopic examination of the paranasal sinuses.

Peritonsillar abscess. Indications and dangers of the tonsillectomy. Adenotomy. Basis of conservative of the mouth and pharynx treatment of disease.

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)

Precanceroses.
Benign tumors of the soft tissues in the head and neck region.
Benign tumors of the bone 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. Orthognathic Surgery
Biomaterials.
Esthetical consideration in maxillofacial surgery
Risk patient treatment in oral surgery I.
(internal diseases, fainting, antifebrile and painkiller
treatment)
Ambulatory narcosis in head and neck surgery,
coagulopathies, anticoagulant treatment.

Practices (5 hours / 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
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 fluorideprophylaxe.
 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.
 Secondary disease of caries of permanent teeth, endodontic treatment.
 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

Week Lectures (1 hour/week)

- 1 Radiology in pedodontics.
- 2 Minor oral surgery in pedodontics, local anaesthesia.
- 3 General anesthesia.
- 4 Prothesis in pedodontics.
- 5 Traumatic injuries of primary and permanent teeth.
- 6 Complex therapy of traumatic injuries of permanent teeth.
- 7 Parodontology and oral diseases in childhood.
- 9 Administration of medicine in pedodontics.

Week Lectures (1 hour/week)

- 10 Diagnostic competition.
- 11 Organizing of pedodontic treatment and nursing.
Administration and documentation.
- 12 Significance of agegroup in pedodontics.
- 13 Consultation.

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).

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.
- 8 Extraction in orthodontics.
- 9 Ambulant surgical interventions in orthodontics.
- 10 Surgical and orthodontic treatment of mandibular and maxillary prognathism.
- 11 Adult treatment in orthodontics.
- 12 Early 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)

Introduction: What is the clinical periodontology is?
 The rational of periodontal cause related therapy
 Clinical and radiological periodontal diagnostics
 Oral hygienic, Gingival and Periodontal indices
 The treatment of periodontal emergency cases
 The stages of the comprehensive periodontal treatment I.
 The stages of the comprehensive periodontal treatment II.
 Professional oral hygiene I. Supragingival scaling
 Professional oral hygiene II. Supragingival scaling
 Professional oral hygiene III. Correcting plaque retention factors
 Oral hygienic education, tooth brushing

Practices (2 hours/week)

Clinical practice
 Clinical practice
 Clinical practice
 Clinical practice
 Clinical practice
Midterm Demonstration
 Clinical practice
 Clinical practice
 Clinical practice
 Clinical practice

Lectures (1 hour/week)

The instruments of the individual oral hygiene
 Reevaluation of the patients. Antibiotics.
 Rational of periodontal surgery
 Cause related periodontal surgery I. Gingivectomy
 Cause related periodontal surgery II. Modified Widman
 Flap operations

Practices (2 hours/week)

Clinical practice
Midterm Demonstration
 Clinical practice
 Clinical practice

Note: The maximum number of absences in a semester is 3.
 More than 3 absences invalidate the semester.
 During the semester two midterm demonstrations should be passed.
 Practical course grade

PERIODONTOLOGY

Second Semester

Lectures (1 hour / week)

Week Lectures (Part One)

- 1 Reevaluation II. Correcting phase in periodontal surgery
- 2 Correcting periodontal Surgery -Mucogingival surgery I.
- 3 Mucogingival Surgery Gingival esthetics II.
- 4 Periodontal regeneration
- 5 Periodontal regenerative processes - biological barrier membranes
- 6 Periodontal regenerative processes – growths factors and other biochemical means
- 7 Prosthodontic rehabilitation I.
- 8 Prosthodontic rehabilitation II. The white esthetics
- 9 Periodontal follow-up – periodontal maintenance
- 10 Perio – endodontic relationship
- 11 The evaluation of the success of the comprehensive periodontal treatment
- 12 The occlusion and the periodontium
- 13 Consultation
- 14 Written final exam – periodontal diagnostics

Seminar (2 hours/week)

Literature review
 Clinical case conference
 Literature review
 Clinical case conference
 Literature review

Midterm Demonstration

Clinical case conference
 Clinical case conference
 Literature review
 Literature review
 Differential diagnosis
 Consultation

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 neuro endocrine 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 Góbi**

Tutor: **Dr. László Gorove**

First Semester

Topics

The principles of emergency medicine.

The field assessment.

Patient assessment.

Transportation trauma

BLS – AED, ACLS

Prehospital care of the injured patient

Analgesia, anesthesia in the emergency care

Unconsciousness, confused states

Acute chest syndromes. ACS

Acute cardiac failure. Arrhythmias in the emergency care

The shock process. Evaluation and in field management of shock conditions.

Stroke syndromes. Hypertensive emergencies.

Acute dyspnea. Artificial ventilation on the spot

Acute abdominal syndromes

Toxicology in the emergency care

Pediatric oxyology

Obstetrical first aid

CPR revision

Note: participation at 75% of lessons is necessary. Compensation is possible using the notes of the lectures and the recommended book.
Mode of certifying absences: Oral in case of absence from lectures, written in case of absence from semi-final examination within 3 working days.
Requirement of the semester signature in the lecture book: Participation at the lectures in 75% of cases.
Type of the examination: semi-final
It will be tested, whether the student is able to recognize and manage emergencies.

DERMATOLOGY

Lecturer: **Dr. Márta Marschalkó**

Tutor: **Dr. Nóra Erős**

Department of Dermatology, Venerology and Dermatoooncology

Second Semester

Lecture

Introduction to Dermatology.

Diagnostic procedures, anatomy, functions of skin comparing to oral mucosa.

Elementary lesions. Autoimmune bullous diseases.

Sexually transmitted diseases (syphilis, gonorrhoea, NGU, HPV).

AIDS, herpes virus infections.

Skin tumors. Malignant melanoma, basal cell carcinoma, squamous cell carcinoma.

Benign tumors, paraneoplastic syndromes.

Allergic skin diseases, drug allergy.

Dermatitis, eczema, implication for dentists.

Atopic dermatitis, urticaria, psoriasis.

Bacterial skin diseases.

Cutaneous and mucosal diseases caused by fungi. Treatment modalities.

Dermatological treatment.

Seborrheic dermatitis, acne.

Cutaneous and oral manifestations of internal diseases.

Lecturer

Dr. Márta Marschalkó
(Deputy: Dr. Norbert Wikonkál)

Dr. Márta Marschalkó
(Deputy: Dr. Péter Holló)

Dr. Péter Holló
(Deputy: Dr. Márta Marschalkó)

Dr. Norbert Wikonkál
(Deputy: Dr. Péter Holló)

Dr. Márta Marschalkó
(Deputy: Dr. Nóra Erős)

Dr. Péter Holló
(Deputy: Dr. Márta Marschalkó)

Dr. Norbert Wikonkál
(Deputy: Dr. Márta Marschalkó)

Dr. Nóra Erős
(Deputy: Dr. Norbert Wikonkál)

Dr. Gyöngyvér Soós
(Deputy: Dr. Péter Holló)

Dr. Nóra Erős
(Deputy: Dr. Márta Marschalkó)

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 Hargítai**

First Semester

Lectures (1 hour/week)

Introduction. History of ophthalmology.

Conjunctivitis ("red eye").

Keratitis ("red eye").

Uveitis ("red eye"). Differential diagnostic approach of the "red eye".

Basics of optics.

Diseases of the crystalline lens. Cataract surgery. Diseases of the retina. Intraocular tumours.

Glaucoma (pathomechanismus).

Glaucoma (conservative and surgical treatment).

Diseases of the eyelids. Ocular injuries. Sudden visual loss. First aid in ophthalmology.

Practical guide (0,5 hour/week)

Anatomy of the eye. Patient's history.
 Objective and subjective symptoms of eye-diseases.
 Eyelids and lacrimal system.
 Examination of the anterior segment of the eye (focal light, slit lamp).
 Refractive errors. Checking of visual acuity.
 Basics of orthoptics.
 Examination of the refractive media and retina. (Ophthalmoscope)
 Diagnosis of glaucoma (perimetry, checking of intraocular pressure, gonioscopy).
 Treatment of glaucoma.
 First aid in cases of ocular injuries.
 First aid in sudden visual loss.
 Differential diagnostic approach of the "red eye".
 Differential diagnostic approach of the "painful" eye.
 Consultation.

FORENSIC DENTISTRY

Department of Forensic Medicine

Tutor: **Dr. Márta 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 Fábíán**

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 Fábíán**

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

8. Dehypnosis, posthypnotic evaluation of experience, posthypnotic suggestions
9. Dental treatment under hypnosis
10. Initial hypnotherapy in psychosomatic dentistry
11. Hypnotherapy combined with photo-acoustic stimulation, and their use in dentistry
12. Hypnotherapy combined with bio-feedback methods, and their use in dentistry
13. Group-hypnosis, self-hypnosis, meditation. Their utilization in dentistry
14. Consultation, written exam (test)

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 Proshetic 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. *Oppurtunistic screening*
This mean the comprehensive dental examination of a particular patient attending a dental service. This screening is not only concentrating on detection of oral premalignancies oral malignancies, but also other developmental and inflammatory lesions.

Basic investegative methods of head and neck region

- detailed case history (with special aspects on tumors, life syle, persistant, non-healing lesions)
- Precise extra- and intraoral physical examination
- Novel visual examination procedures (e.g. Velscope)

Conclusion

Screening for oral malignancies is a very important part of dental examination. Lesions, persisting two weeks after eliminating any irritating factor a special clinical examination including histology is needed. In this way the survival possibilities of oral cancer patienst could be inhanced largely. This shows the extreme importance of this subject in dental and medical education as well.

THEMATICS

Contemporary diagnostics of oral premalignancies and cancers

1. Importance of oral malignancies
Epidemiology, morbidites and mortality data
2. Etiological factor and pathomechanismus of oral tumors
3. Rate and efficacy of different screening methods (screen or not to screen)
4. Basic clinical signs and symptoms of oral malignancies and premalignancies I.
5. Basic clinical signs and symptoms of oral malignancies and premalignancies II.
6. Consultation
7. Possibilities of early detection and prevention
8. Diagnostic process of oral malignancies I. Traditional physical examination
9. Diagnostic process of oral malignancies II. Traditional physical examination
10. Diagnostic process of oral malignancies novel Procedures (e.g. lightningdevices)
11. Contemporary diagnostical possibilities and a multidisciplinary cooperation
12. Social and dental rehabilitation after the treatment of oral cancer
13. Consultation /Examination

FACULTY OF PHARMACY



Faculty of Pharmacy
1st year

STUDY PROGRAMME**First Year**

1st semester						
Subjects	Lectures	Practices	Credit Points	Prerequisites	Examination	
General and Inorganic Chemistry I. Practice GYASKASG1A	–	5	5	–	practical course grade	
General and Inorganic Chemistry I. GYASKASKE1A	4+1	–	5	–	semi-final	
Introduction to Health Informatics I. Practice GYINFBEIG1A	–	1	–	–	signature	
Introduction to Health Informatics I. GYINFBEIE1A	1	–	2	–	semi-final	
Biophysics I. Practice GYFZBIFG1A	–	3	2	–	practical course grade	
Biophysics I. GYFZBIFE1A	2	–	3	–	semi-final	
Biology I. Practice GYGENBIOG1A	–	2	2	–	practical course grade	
Biology I. GYGENBIOE1A	2	–	2	–	semi-final	
Medical Terminology** GYLEKOTRG1A	–	2	2	–	practical course grade	
Mathematics I. Practice GYEGYMATG1A	–	2	2	–	practical course grade	
Mathematics I. GYEGYMATE1A	2	–	2	–	semi-final	
Physical Education I. GYTSITSNGL1A	–	1	0	–	signature	
History of Sciences, Propedeutics GYEGYTTPE1A	2	–	2	–	semi-final	
Hungarian Language I. * GYLEKMSZG1A	–	4	4	–	practical course grade	
			33			

2nd semester

Subjects	Lectures	Practices	Credit Points	Prerequisites	Examination
General and Inorganic Chemistry II. GYASKASKE2A	3	-	3	GYASKASKE1A General and Inorganic Chemistry I.	final #
Analytical Chemistry (qualitative) GYASKANKG1A	2	5	5	GYASKASKE1A General and Inorganic Chemistry I.	practical course grade
Anatomy GYHUMANAE1A	2	-	4	GYENBIOE1A Biology I.	semi-final
Anatomy Practice GYHUMANAG1A	-	2	-	GYENBIOE1A Biology I.	signature
Introduction to Health Informatics II. Practice GYINFBEIG2A	-	1	-	GYINFBEIE1A Introduction to Health Informatics I.	signature
Introduction to Health Informatics II. GYINFBEIE2A	1	-	2	GYINFBEIE1A Introduction to Health Informatics I.	semi-final
Biophysics II. Practice GYFIZBIFG2A	-	3	2	GYFIZBIFE1A Biophysics I.	practical course grade
Biophysics II. GYFIZBIFE2A	2	-	3	GYFIZBIFE1A Biophysics I.	final #
Biology II. Practice GYGENBIOG2A	-	1,5	1	GYENBIOE1A Biology I.	practical course grade
Biology II. GYGENBIOE2A	1,5	-	2	GYENBIOE1A Biology I.	final #
Pharmaceutical Botany I. GYNOVGYNG1A	1	2	3	GYENBIOE1A Biology I.	practical course grade
Mathematics II. Practice GYEGYMATG2A	-	1	1	GYEGYMAE1A Mathematics I. Introduction to Health Informatics I. GYINFBEIE1A Health Informatics I.	practical course grade
Mathematics II. GYEGYMAE2A	2	-	2	GYEGYMAE1A Mathematics I. Introduction to Health Informatics I. GYINFBEIE1A Health Informatics I.	semi-final
Physical Education II. GYTSITNG2A	-	1	0	GYTSITNG1A Physical Education I.	signature
First Aid GYTRAE1SE1A	1	1	0		signature
Hungarian Language II. * GYLEKMSZG2A	-	4	2	GYLEKMSZG1A Hungarian Language I.	practical course grade
			30		

The grade influences the qualification of the diploma

* Obligatory courses

** Obligatory elective courses; (2 credit points).

List of textbooks

- 1 Alberts et al.: Essential Cell Biology. Garland Pub. 2004.
- 2 Thompson & Thompson: Genetics in Medicine. 6th ed. Saunders. ISBN 0721602444
- 3 Vigh B: The Construction of the Human Being. Short anatomy. (Bp.) 1999. Magánkiad.
- 4 Damjanovich – Fidy – Szöllösi (eds) Medical Biophysics, Medicine, Budapest, 2009. ISBN 978 963 226 127 0
- 5 Laboratory Manual of Medical Physics and Statistics, Semmelweis University Institute of Biophysics and Radiation Biology Budapest, 2005. ISBN 963 9129 60 7
- 6 Rost et al.: Botany, a brief introduction to plant biology. Wiley.
- 7 Mihalik: Botany for Students of Pharmacy. (Szeged)
- 8 Lásztity-Noszál: Practical Inorganic and General Chemistry. Bp. (SOTE)
- 9 Lásztity-Gyimesi: Qualitative Inorganic Analysis. Bp. (SOTE)
- 10 Kőrös: General Chemistry. Bp. (SOTE)
- 11 Kőrös: Inorganic Chemistry. (Szeged)
- 12 Masterton-Hurley: Chemistry. Principles and Reactions. Saunders College Publishing, 1998.

Recommended textbooks:

- 1 Bland M.: An Introduction to Medical Statistics. (Oxford medical publication)
- 2 Batschelet, E.: Introduction to Mathematics for Life Scientists
- 3 Maróti-Berkes-Tölgyesi: Biophysics Problems. A Textbook with Answers. Bp. Akadémiai K. 1998. ISBN 963 05 7526 4
- 4 Csaba Gy.-Madarász B.: A sejt szerkezete. The structure of the cell. Bp. Semmelweis K. 1999. ISBN 963-8154-950
- 5 Alberts et al: Molecular Biology of the Cell. 4th ed. Garland Publ. Inc.

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.

Derivation of composite and inverse functions. Differentiability of the elementary functions. Higher order derivatives.

Application of differentiation for calculation of limits of fractions.

An iterative method to solve equations (Newton-method).

Expansion of differentiable functions to power series. The Taylor series of $\exp x$, $\sin x$, $\cos x$, $\ln x$ and other functions.

Qualitative examination of functions. Roots, extremes and inflexion points.

The multiplicity of a root.

The complete discussion of elementary functions.
 Integration as the inverse operation of derivation. The indefinite integral.
 Integration of power functions. Integration of simple elementary functions.
 Integration of products (the rule of "partial integration"). Integration of composite functions. Integration of rational fractions.
 Area under a curve: the definite integral. Improper integrals.
 The concept of a differential equation. Differential equations arising in physics, chemistry, biology, botanics and other fields. The homogeneous linear differential equation with constant coefficients: solution and proof of unicity.
 Separation of variables as the method of solution. General and particular solutions. Introduction of new variables.
 Nonlinear differential equations of the first order.
 Differential equations of the chemical reactions of 0th, 1st and 2nd order.
 Functions of several variables. Partial derivatives of first and second order.
 Differentiability and exact differential. Application of exact differential in error calculations. Maxima and minima of two-variable functions.
 Different kinds of integration of functions of several variables. Integration along a line. Point functions and independence of the integral of the path.
 Calculation of the integral along different curves.

MATHEMATICS

University Pharmacy, Department of Pharmacy Administration

Tutor: **Dr. Andrea Meskó**

Second Semester

Lectures: 2 hours per week

Practicals: 1 hour per week

Introduction and information. The most common calculations in laboratory.
 Some hints for numerical calculations.
 Biometrics and/or biostatistics. Statistical inference. Frequency distributions.
 Theoretical distribution and probability. The normal distribution.
 Measures of central tendency (mode, median, mean etc.) Applications of the weighted mean. Measures of dispersion.
 Standard deviation and variance. The coefficient of variation. Error bounds.
 The standard error of the mean.
 The concept of "regression line". The linear regression: coefficients, interpretation, application.
 The correlation coefficient: formula and interpretation. Uses and misuses of correlation coefficient. Lack of correlation vs. independence.
 Spurious correlations. Coefficient of determination.
 Sampling distributions. Important distributions derived from the normal one: t F, and chis-squared distributions. The use of statistical tables.
 Theoretical background of statistical inference. Qualitative and quantitative conclusions. Estimation; confidence interval for the expected value.
 Testing hypotheses. The concept of "significance". Errors of the first and of the second kind. The t-tests.

Analysis of variance. The 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.
 Sequences and series. Series of functions. Power series.
 Radius of convergency.

BIOLOGY I.

Tutor: **Dr. Valéria László**

1st Semester

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

BIOLOGY II.

Second Semester

Week	Lectures	Practices
1.	Meiosis	Typical and atypical mitosis
2.	Introduction to human genetics; human genom	Meiosis and gametogenesis
3.	Mutations and polymorphisms I.	Cytogenetics I
4.	Mutations and polymorphisms II.	Cytogenetics II
5.	Epigenetics	Introduction to humangenetics; special methods of humangenetics
6.	Cytogenetics I	Molecular genetics I
7.	Cytogenetics II	Midterm I (written)
8.	Autosomal (monogenic) inheritance	Molecular genetics II
9.	Role of sex in inheritance	Gene expression analysis on protein level
10.	Genetics of sex	Medical applications of genetic methods : monogenic inheritance
11.	Genetics and genomics of complex traits (disorders)	Medical application of genetic methods: complex traits (disorders)
12.	Genetic aspects of development and cancer	Medical applications of genetic methods: practice
13.	Gene and genome manipulations	Midterm II (written)
14.	Theoretical background of reparative medicine	Consultation

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

Dosimetry

Sound, ultrasound, hearing

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

GENERAL AND INORGANIC CHEMISTRY

Lecturers: *Dr. Béla Noszál, Dr. István Szalai*

Tutor: *Dr. Krisztina Kurin-Csörgei*

First Semester

Lectures (3 hours per week)

Elementary particles: quarks, leptons, gauge particles, electron, proton, neutron.

The Bohr model of the atom.

Properties of the electron. Heisenberg's uncertainty principle. Schrödinger's equation and the quantum numbers. Pauli's exclusion principle and Hund's rule.

Periodic table and periodic properties. Ionic bond and the types of ions.

Covalent bond and its representation in Lewis structures. Hybridization of orbitals. The valence bond theory.

Molecular geometry, the VSEPR theory. The formation of molecular orbitals.

Bond polarity and moleculer polarity. 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. K_p and K_c . The Le Chatelier principle. The temperature and pressure dependence of the equilibrium constant.

Acid/base equilibria. Conjugated acid-base pairs and their strengths.

The acid/base equilibria of water. The pH and its calculation. Strength of acids and bases. Hydrolysis. Buffer systems.

Complex formation equilibria. Types of ligands. Mass balance equations, calculation of complex equilibria. Heterogeneous equilibria, the solubility product constant, solubility.

Chemical kinetics. Reaction order and molecularity. First order reactions.

Age determinations based upon radioactive decompositions. Second order, pseudofirst order and zero order reactions. Reaction mechanisms.

The temperature dependence of the reaction rate, collision theory.

Catalysis. catalysts. Autocatalytic reactions. Enzyme catalysed, induced and oscillatory reactions.

Thermochemistry. Hess's law. Internal energy and enthalpy changes of reactions.

Entropy. Spontaneity of chemical reactions, the free energy. Coupled reactions and their spontaneity.

Photochemistry and radiation chemistry. States of matter. Properties and kinetic theory of gases. Properties of liquids. The surface tension. Freezing, boiling.

The phase diagram of water. Crystal structures, unit cell. The rate of crystallization. Sublimation.

The mechanism of dissolution. Types of concentrations. Rules of dilute solutions.

Determination of MM by colligative properties.

PRACTICAL GENERAL AND INORGANIC CHEMISTRY

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). magnesium metal sample. Oxidation-reduction reactions. Balancing redox equations. 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 $\text{KA1(SO4)2} \cdot 12 \text{H}_2\text{O}$. Sublimation of iodine.

Chemical purification of sodium chloride. Water purification using ion exchange resins.

Distillation of hydrochloric acid. Preparation of $\text{CuSO}_4 \cdot 5 \text{H}_2\text{O}$

Preparation of $(\text{NH}_4)_2\text{SO}_4$, H_3BO_3 from borax ($\text{Na}_2\text{B}_4\text{O}_7$)
Preparation of CaHPO_4 . 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. Reactions of metals. Preparation of Cu_2O and FeSO_4

Preparation of precipitated sulfur. Experimental observation of direction of redox reactions (standard potentials). Preparation of a double salt (Mohr salt, $(\text{NH}_4)_2 \text{Fe(SO}_4)_2 \cdot 6 \text{H}_2\text{O}$)
Preparation of a buffer solutions. Preparation of $\text{Cu(NH}_3)_4 \text{SO}_4$ 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.

GENERAL AND INORGANIC CHEMISTRY

Lecturer: **Dr. Zsuzsanna Nagy-Ungvárai**

Second Semester

3 hours per week (lecture)

Weeks *Introduction*

- 1 The elemental composition of the Universe. Origins of the elements. The composition of the lithosphere, hydrosphere and atmosphere. The evolution of the atmosphere. The classification of the elements: metals, nonmetals and metalloids. Trends in metallic and nonmetallic character.
 - 2 **Chemistry of hydrogen, oxygen, nitrogen and carbon.** Hydrogen: occurrence, preparation, chemical properties, uses. Binary hydrogen compounds (hydrides). Oxygen: occurrence, preparation, chemical properties, uses. Ozone. Peroxides, superoxides.
 - 3 Nitrogen: occurrence, chemical properties. Hydrogen compounds of nitrogen. Oxides and oxyacids of nitrogen. The nitrogen cycle in nature. Carbon: elemental forms of carbon. Inorganic compounds of carbon. The carbon-oxygen cycle in nature.
 - 4 **Chemistry of other nonmetallic elements** The noble gases. (He, Ne, Ar, Kr, Xe, Rn) and their compounds. The halogens (F, Cl, Br, I, At): occurrences, preparation, properties and uses. Oxyacids and oxyanions. The biological role of halogens.
 - 5 The group 6A elements (S, Se, Te). General characteristics, occurrences, preparation, properties. Oxides, oxyacids and oxyanions of sulfur and selenium. Sulfur and selenium in biology.
 - 6 The group 5A elements (P, As, Sb, Bi). General characteristics, occurrences, preparation, properties. The oxycompounds of phosphorus. – The biological significance of the P–O bond. Silicon. The major element of the geosphere. Silicates. Clay minerals. Glass. – A comparison of the properties of carbon and silicon. Boron and its compounds.
- Metals**
- 7 Occurrence and distribution of metals. Metallurgy. The physical and chemical properties of metals and alloys. The alkali metals (Li, Na, K, Rb, Cs). General characteristics. Some important compounds of sodium and potassium.
 - 8 The alkaline earth metals (Be, Mg, Ca, Sr, Ba). General characteristics. Some important 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**
- 10 The structure of complexes. Types of ligands.
Chelates. Isomerisms. Bonding in complexes.
The magnetic and optical properties of complexes.
- 11 The dynamics of coordination compounds:
Complex equilibria, ligand exchange rates.
The coordination chemistry of alkali metal ions.
(Hostguest complexation.)
- Metals in biology**
- 12 Life essential metals and ligands in biosystems.
Metals in enzymatic and trigger processes.
Metals in oxygen and nitrogen biochemistry.
- 13 Metals in biomineralization. Metal-induced toxicity.
The biomedical use of metal complexes and metal complexation.
- The chemistry of the environment**
- 14 A brief overview of the chemistry of the lithosphere, hydrosphere and atmosphere.

ANALYTICAL CHEMISTRY I.

Qualitative Chemical Analysis

Lecturer: **Dr. István Szalai**Practical: **Dr. István Szalai**Tutor: **Dr. Krisztina Kurin-Csörgei****Second Semester****Lectures** (2 hours per week)

Subject and aims of analytical chemistry.
Analytical chemistry and other sciences.
Qualitative and quantitative chemical analysis.
Chemical and physical methods of analysis.
The characterization of analytical reactions.
Specificity, selectivity and sensitivity of analytical reactions. Requirements for qualitative chemical reactions. Separation and identification of ions.
Analytical classification of cations. Group reactions of cations. Analytical groups and periodic table of the element. Summary of properties of elements and reactions of Group I cations.
Ion reactions in aqueous solution. Acidbase reactions. Thioamphoterism. Summary of properties of elements and reactions of Group II cations.
Complex formation reactions. Complex equilibria. Pearson classification of acids and bases.

Practicals (5 hours per week)

General rules of work in the laboratory of analytical chemistry. Study of reactions of Group I cations.
Part I: Bi³⁺, Pb²⁺, Cd²⁺.
Study of reactions of Group I cations.
Part II: Hg₂²⁺, Hg²⁺, Ag⁺, Cu²⁺.
Identification of cations in mixture of Group I cations.
Study of ion reactions of Group II cations: As/III/, V/, Sb/III/, V/, Sn/II/, V/.

Analysis of Group I cation in unknown samples. Identification of the second group of cations in mixtures.

Study of ion reactions of Group III cations.
Part I: Co²⁺, Ni²⁺, Fe²⁺, Fe³⁺, Cr³⁺.

Lectures (2 hours per week)

Precipitation reactions. Equilibria in cations. precipitation reactions. Solubility and pH. Precipitation and solubilities of metalsulfides.

Summary of properties of elements and reactions of Group III cations. Solubility and complex ion equilibria and application in qualitative analysis of ions.

Summary of properties of elements and reactions of Groups IV–V cations. Flame tests. Atomic spectroscopic methods of qualitative analysis.

Classification of anions into analytical groups. Group reagents for qualitative analysis of anions.

Oxidation-reduction.

Oxidation-reduction reactions in qualitative chemical analysis.

Summary of reactions of common anions.

Analysis of cation-anion solution sample. Preliminary and specific tests.

Analysis of cation-anion unknown solid sample. General procedure for chemical analysis.

Physical methods of qualitative analysis.

Practicals (5 hours per week)

Study of ion reactions of Group III Part II: Al^{3+} , Mn^{2+} , Zn^{2+} . Analysis of unknown mixture of the third analytical group of cations.

Study of ion reactions of Groups IV–V cations.

Analysis of Group III cations in unknown samples. Detection of cations in the mixture of the fourth and fifth analytical groups of cations.

Analysis of unknown samples containing cations of the Groups I–V. Study of reactions of the first analytical group anions.

Study of reactions of the second and third analytical groups of anions.

Study of reactions of the fourth group of anions.

Identification of anions in the mixture of Groups I–IV anions.

Special tests for mixture of anions.

Analysis of cation anion unknown solution sample (3–5 ions).

Analysis of cation anion unknown solid samples (3–5 ions).

Analysis of unknown simple substances.

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.
- 4 Synthesis of cell wall polysaccharides. Cell wall formation and architecture. Plasmodesmata. Mucilage synthesis and the dynamics of hydrophilic secretion.
- 5 Mitochondrion and respiration.

Practicals (Tutor: **Dr. Gyöngyi Szedlay**)

Fundamentals in Botany. The use of the light microscope. Knowledge of the medicinal plants

Plant cells (plasmolysis, cycloses).

Plastids, reserve polysaccharides, protein bodies.

Cell wall, structural polysaccharides and other wall substances.

Vacuole, crystals, lipid bodies.

6	Lipid metabolism. Fatty acid polymers: cutin, suberin. Wax. Terpenoids. The lipophilic secretion.	1 st Test Work. Stem morphology (buds). Monocots: analysis of a living plant.
7	Amino acid and protein metabolism. The N cycle. Protein bodies, protein mobilization. Protein secretion.	Analysis of dicots representing ancestral type (Ranunculaceae).
8	Formation of alkaloids and phenolics. Lignification. Vacuole, cell sap, osmoregulation, crystal formation, autophagy, autolysis.	Simple tissues, meristems.
9	Nucleic acid metabolism. The nucleus. Plant specificities of mitosis and meiosis.	Dermal tissue system, trichomes.
10	Organizational types of plants. The cormophyte plant body. Tissues, tissue system. Meristems.	2 nd Test Examination Analysis of living plants (Rosaceae, Apocynaceae), medicinal plants. Conductive tissue system.
11	Dermal tissue system.	Ground tissue system.
12	Conductive tissue system.	Analysis of living plants (Papaveraceae, Primulaceae).
13	Ground tissue system.	3 Test Work Knowledge of the medicinal plants. Pteridophyta.
14	Secretory structures.	

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 system
- 10 Development of lung and intestines

Practice

Microscopy: stratified epithelium, connective tissue, cartilage, bone
 Macroscopy: bones and joints of the shoulder girdle and upper limb

Microscopy: artery and vein, blood, lymph node spleen, palatine, tonsil
 Macroscopy: bones and joints of the pelvis girdle and lower limb
 Microscopy: lung, submandibular gland, liver, pancreas

Lecture

- 11 Intestinal tract.
- 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, mesecephalon
- 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

Practice

- Macroscopy: vertebral column and skull
- Microscopy: stomach ileum, kidney, ureter
- Macroscopy: muscles, vessels and nerves of the upper limb.
- Microscopy: ovary, uterus, placenta, testis, penis
- Macroscopy: muscles, vessels and nerves of the lower limb.
- Microscopy: hypophysis, thyroid, adrenal gland, cerebellum, spinal cord.
- Macroscopy: intestinal complex
- Microscopy: eye, organ of Corti
- Macroscopy: brain and spinal cord.

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.
- 3 Knowledge of medicine and pharmacy in Greece. Hippocratic medical writing. Knowledge of medicine and pharmacy in Rome. Galen.
- 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.
- 8 Pharmaceutical education in Europe. Development of education.
- 9 Definition of drugs. Aspects of classification. Classification of drugs according to their origin and on the basis of strength.

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?
Drug abuse. Prevention of drug abuse.
Narcotic controls.
- 12 International professional trends. F.I.P., I.P.S.F.. Unification of drug standards.
Pharmaceutical literature: treatises, pharmacopeias, formularies, journals, periodicals.
- 13 Ordering of drug preparation. Pharmacy, galenic 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 Szébeny****Second Semester**

Week	Lecture
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.
9–10	Shock. Management of hypovolemic shock. 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!



*Faculty of Pharmacy
2nd year*

STUDY PROGRAMME**Second Year**

3rd semester						
Subjects	Lectures	Practices	Credit Points	Prerequisites	Examination	
Analytical Chemistry (quantitative) I. GYASKAKKG1A	2	5	7	GYASKANKG1A GYEGYMATE2A	Analytical Chemistry (qualitative) Mathematics II.	practical course grade
Physical Chemistry I. GYFKTFIKE1A	4	-	4	GYASKASKE2A GYEGYMATE2A GYFIZBIFE2A	General and Inorganic Chemistry II. Mathematics II. Biophysics II.	semi-final
Pharmaceutical Botany II. Practice GYNOVGYNG2A	-	3	2	GYGENBIOE2A GYNOVGYNG1A	Biology II. Pharmaceutical Botany I.	practical course grade
Pharmaceutical Botany II. GYNOVGYNE2A	1	-	2	GYGENBIOE2A GYNOVGYNG1A	Biology II. Pharmaceutical Botany I.	final #
Organic Chemistry I. Practice GYSKSZKKG1A	-	5,5	5	GYASKASKE2A GYASKANKG1A GYINFBEIE2A	General and Inorganic Chemistry II. Analytical Chemistry (qualitative) Introduction to Health Informatics II.	practical course grade
Organic Chemistry I. GYSZKSZKE1A	4	-	5	GYASKASKE2A GYASKANKG1A GYINFBEIE2A	General and Inorganic Chemistry II. Analytical Chemistry (qualitative) Introduction to Health Informatics II.	semi-final
Physical Education III. GYTSITNSG3A	-	1	0	GYTSITNSG2A	Physical Education II.	signature
Hungarian Language III. * GYLEKMSZG3A	-	4	2	GYLEKMSZG1A	Hungarian Language II.	practical course grade
			27			

4th semester

Subjects	Lectures	Practices	Credit Points	Prerequisites	Examination
Analytical Chemistry (quantitative) II. Practice GYASKAKKG2A	-	5	3	GYSKSZKE1A GYASKAKKG1A	Organic Chemistry I. Analytical Chemistry (quantitative) I. practical course grade
Analytical Chemistry (quantitative) II. GYASKAKKE2A	2	-	6	GYSKSZKE1A GYASKAKKG1A	Organic Chemistry I. Analytical Chemistry (quantitative) I. final #
Biochemistry I. Practice GYOBIBIKMG1A	-	1	0	GYENBIOE2A GYSKSZKE1A GYFZBIFE2A GYHUMANAE1A	Biology II. Organic Chemistry I. Biophysics II. Anatomy practice mark
Biochemistry I. GYOBIBIKME1A	3	-	3	GYENBIOE2A GYSKSZKE1A GYFZBIFE2A GYHUMANAE1A	Biology II. Organic Chemistry I. Biophysics II. Anatomy semi-final
Physical Chemistry II. GYFKTFIKG2A	1	4	5	GYFKTFIKE1A	Physical Chemistry I practical course grade
Colloid Chemistry I. GYKOLKOLE1A	2	-	2	GYFKTFIKE1A	Physical Chemistry I. semi-final
Organic Chemistry II. Practice GYSZKSZKG2A	-	5,5	4	GYSZKSZKE1A	Organic Chemistry I practical course grade
Organic Chemistry II. GYSZKSZKE2A	4	-	5	GYSZKSZKE1A	Organic Chemistry I final #
Hungarian Language IV. * GYLEKMSZG4A	-	4	2	GYLEKMSZG1A	Hungarian Language III. practical course grade
Physical Education IV. GYTSITNSG4A	-	1	0	GYTSITNSG3A	Physical Education III. signature
Summer Practice I. ** GYSZGYAKG1A	-	35	4		signature
			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

- 1 Everett,D.H.: Basic Principles of Colloid Science. Royal Society of Chemistry, London, 1988. ISBN 0-85186-443-0
- 2 Atkins,P.W.: Physical Chemistry. 6th ed. Oxford Univ. Press ISBN 0-190850101-3 Paperback.
Or: Atkins, P.W., de Paula J: Atkins' Physical Chemistry. 7th ed. Oxford Univ. Press. ISBN 0-19-897285-9
- 3 Buvári-Barcza: Quantitative Analytical Chemistry. Bp. (SOTE)
- 4 Murray (et al.): Harper's Biochemistry. Stanford. Appleton-Lange 2000. ISBN 0-8385-3684-0.

Recommended textbooks:

- 1 Shaw,D.J.: Introduction to Colloid and Surface Chemistry. Butterworth-Heinemann Ltd. Oxford, 1992. ISBN 0-7506-1182-0
- 2 Csempesz,F.: Experimental Colloid Chemistry. Bp. SOTE. 1996.
- 3 Skoog, West, Holler: Fundamentals of Analytical Chemistry. Saunders College Publishing Co.
- 4 Carey,F.A.: Organic Chemistry. McGraw-Hill Book Co. New York 1992 ISBN 0-07-009831-X
- 5 M.Jones,Jr.: Organic Chemistry. W.W.Norton and Co. New York, London. 1997. ISBN 0-393-10210-6.
- 6 Harwood L.M., Claridge T.D.W.: Introduction to Organic Spectroscopy. Oxford Univ. Press
- 7 Laidler,K.J.-Meiser,J.H.: Physical Chemistry. 1999. 3rd ed. Houghton Mifflin Co. Boston, ISBN 0-395-91848-0
- 8 Steiner E.: The Chemistry Maths Book. Oxford Univ. Press. ISBN 0-19-855913-5
- 9 Nelson,Fox,Lehninger,A.L.: Principles of Biochemistry. 3rd ed. 2000. Worth Publ. New York, ISBN 1-57259-153-6

QUANTITATIVE ANALYTICAL CHEMISTRY

Tutor: *Dr. Krisztina Kurin-Csörgei*

First Semester

Lectures (2 hours per week)

Introduction. Review of some elementary concepts. Titrimetric methods of analysis.

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.

Acid-base titrations in non-aqueous solutions. Determination of organic bases in glacial acetic acid.

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)

Topic

Introduction.

Calibration

Acidi-Alkalimetry

Acidi-Alkalimetry

Acidi-Alkalimetry

Acidi-Alkalimetry
(Instrumental)

Acidi-Alkalimetry

Acidi-alkalim.;
Chelatometry
Chelatometry

Chelatometry

aceticum

Gravimetry

Gravimetry;
Argentometry

Argentometry

Komplexometry

Supplements

Supplements

Closing

Task

Laboratory introduction; Safety and order in the laboratory; The schedule of the semester; Practical and theoretical requirements in the semester
Calibration of burette (3-6-9-12 ml);
Calibration of pipettes (10, 20 ml)

Practicing the use of the laboratory tools;
Determination of sulfuric acid

Standardization of » 0.1N hydrochloric

Test I.
Determinations of hydroxide and carbonate ions in the presence of each other

Potentiometric titration of acetic acid;
Conductometric determination of Betaine hydrochloride

Indirect determination of sodium thiosulfate
Determination of "Lidocain" in nonaqueous solution

Determination of lactic acid;
Chelatometric determination of lead.
Test II.

Determination of calcium and magnesium ions in mineral water
Determination of copper and zinc in the presence of each other; Determination of aluminium in "Aluminium tartaricum solum"

Gravimetric determination of sulfate ions in the form of BaSO₄;
(precipitation, preparation of filter) filtration, washing, weighing of BaSO₄ precipitate; Determination of chloride ions by Mohr's method

Test III.
Determination of bromide ions by Volhard's and Fajans' methods

Determination of cyanides by Liebig-Denigees' Method;

Supplements

Supplements;

Closing

QUANTITATIVE ANALYTICAL CHEMISTRY

Second Semester

Lectures (2 hours per week)	Practicals (5 hours per week)	
	Topic	Task
Titration curves in oxidimetry. Titrations with permanganate solution.	Introduction	Safety and order in the laboratory Practical and theoretical requirements in the semester The schedule during the semester Redox titrations (permanganometry)
	Permanganometry Permanganometry	Standardization of » 0.1N potassium permanganate solution Determination of the total iron content by Zimmermann-Reinhardt method Permanganometric determination of bromide ions (Winkler's method)
Titrations with chromate and cerium (IV). Bromatometry I.	Chromatometry	Determination of Mohr salt with chromatometric titration
	Bromatometry	Bromatometric determination of arsenic (III) (from As ₂ O ₃) or antimony (III) compounds (in form of "tartar emetic": antimony tartarate) Determination of azophene
Bromatometry II. Reactions with periodate and their analytical use.	Bromatometry	TEST I. Bromatometric determination of ascorbic acid (Vitamin C) in tablets (e.g. Vit C, Rutascorbin, Béres C)
	Cerimetry	Cerimetric determination of amidazophene
Iodometric titrations and other reductometric methods.	Iodometry	Standardization of » 0.01N sodium thiosulfate solution Determination of phenol in water / acetyl salicylic acid content in tablets (e.g. Aspirin, Kalmopyrin, Istopyrin,...) by Koppeschaar's method
	Iodometry	Iodometric determination of copper (II)-ions Determination of mannitol by Malaprade's reaction with periodate
Sampling and preparatory processes in analytical chemistry.	Iodometry	Determination of iodide by Winkler's method
	Iodometry	
Interactions between electromagnetic radiations and materials. Emission spectroscopy.	Optional measurements*	TEST II. One selection from "Other determinations"
	Instrumental analysis	Computer aided learning of modern instrumental analytical methods (HPLC; GC; UV-Vis Spectrophotometry)
Flame emission photometry, atomic absorption spectrophotometry. ICP-ES and ICP-MS possibilities.	Optional measurements*	From "Potentiometric determinations"
	Spectrophotometry	From "Other determinations" Spectrophotometric determination of iron content in multivitamin tablets
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.		

Lectures (2 hours per week)**Practicals** (5 hours per week)

	Topic	Task
Different planar chromatographic methods and their use in pharmaceutical analyses. Gas chromatographic methods. High performance liquid chromatography. Supercritical fluid extraction and chromatography. HPCE and its future application. Survey on analytical chemistry.	Semi-quantitativ" analysis	Spectrophotometric determination of phosphate content in egg shell Semi-quantitative analysis using "Merkoquant" testpapers (Public) Holiday
	Optional measurements*	From "Potentiometric determinations" From "Other determinations"
	Final test	TEST III. (Qualitative and quantitative analysis of complex samples)
	+ Determination	Quantitative determination of the sample
Summary.	Supplements Closing	Supplements Closing

Potentiometric determinations:

1. Direct potentiometric determination of fluoride content in tooth paste
2. Potentiometric titration of bromide content of "Elixirium thymi composita"
3. Potentiometric titrations of iodide and chloride ions in presence of each other
4. 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 solum"
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 CHEMISTRYLecturer: **Prof. Dr. Péter Mátyus**Tutor: **Dr. Péter Tétényi****First Semester**

Week	Lectures (4+1*** hours per week)	No. of practices	Practicals (seminars: 2 hours biweekly, practices: 8 hours biweekly)
1	Qualitative molecular orbital theory of organic compounds		
2-3	Saturated acyclic and cyclic hydrocarbons. Constitution, conformation	1-2	Basic laboratory processes.
4	Stereochemistry of organic compounds. Configuration. Compounds having one center of chirality. Principles of the IUPAC nomenclature.		
5	Isomerism. Steric and electronic effects in organic compounds and reactions.	2-6	Nomenclature of organic compounds without C=O bond
6-7	Alkenes, alkynes, and their cyclic analogs. Cis-trans isomerism. Elimination. Addition to carbon-carbon double bond.	3-6	Basic methods for preparations of organic compounds (5 preparations)
8	delocalized systems. Aromaticity and?Linear and cyclic antiaromaticity. Interpretation of concerted reactions.		
9	Aromatic hydrocarbons. Electrophilic aromatic substitution		
10	Spectroscopy of organic compounds.		
11-12	Organic halogen compounds. Nucleophilic substitution in aliphatic and aromatic compounds.	5-6	Spectroscopic analysis of organic compounds
13	Organic compounds containing C-O single bonds (alcohols, phenols and their derivatives). Acidity of organic compounds.		
14	Amines and other nitrogen containing compounds. Basicity of organic compounds. Organic sulfur compounds.		

*** number of hour (1) for introductory lecture

ORGANIC CHEMISTRY

Second Semester

Week	Lectures (4+1*** hours per week)	No. of practices	Practicals (seminars: 2 hours biweekly, practices: 8 hours biweekly)
1-2	Oxocompounds. Addition to carbon-oxygen double bond. Aliphatic electrophilic substitution. C-H acids	1-6	Basic methods for preparations of organic compounds (10 preparations).
3-4	Carboxylic acids and their derivatives.	1-6	Nomenclature of organic compounds with C=O bond, of heterocyclic and of bioactive compounds
5	Carbonic acids and their derivatives. Polyfunctional organic compounds.	1-6	Spectroscopic analysis of organic compounds
6	Carbohydrates. Stereochemistry of organic compounds having more than one center of chirality.		
7	Amino acids, peptide, proteins.		
8-9	electron excessive heteroaromatic compounds.?		
10-11	electron deficient heteroaromatic compounds.?		
12	Terpenoids, carotenoids, steroids.		
13	Nucleic acids. Alkaloids.	6	Electronic literature searching
14	Organic chemistry in the periodic system. Organic synthesis.		

*** 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).

PHYSICAL CHEMISTRY

Lecturers: *Prof. Dr. Tamás Turányi, Dr. Mihály Takács*

First Semester

Week Lectures (4 hours per week)

- 1 Selection rules and intensity. Anharmonicity. The vibrations of polyatomic molecules. Normal modes. Vibrational Raman spectra.
- 2 Chromophores. The fate of electronically excited states: Fluorescence, Phosphorescence, laser action.
Photoelectron spectroscopy: UPS, XPS, ESCA
- 3 Nuclear magnetic resonance: The technique, the chemical shift.
Electron spin resonance. Mass spectroscopy.
- 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 C_v and C_p .
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.
- 9 Vapour pressure diagrams. The representation of distillation. Azeotropes.
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.
- 12 Catalysis. Fast reactions. Collision theory. Activated complex theory.
Thermodynamic aspects. Adsorption at surfaces. Catalytic activity at surfaces.

Week Lectures (4 hours per week)

- 13 Mean activity coefficients. Debye–Hückel theory. The ionic strength. The mobilities of ions. The measurement of transport numbers. Conductivities and ion-ion interactions. Diffusion and transport. The metal ion/metal electrode. The ion (insoluble salt) metal electrode. Oxidation-reduction electrodes. Liquid junctions and membrane potentials.
- 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.

COLLOID CHEMISTRY

Lecturer: **Dr. Ferenc Csempesz**

Second Semester

Week **Lectures** (2 hours per week)

- 1 What are colloids? Definitions, nomenclature, historical perspective.
- 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 Deryagin–Landau–Verwey–Overbeek (DLVO) theory. Reversible flocculation,
bridging 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

Weeks Lectures (1 hour per week)

- 1 Embryo development. The root apex, primary structure of roots. Root modifications
- 2 The shoot apex. The primary structure of stems. Stemroot connection.
- 3 Secondary growth of roots and stems.
- 4 Development and anatomy of leaves. Adaptations to the environment. Shoot modifications.
- 5 The movement of water in plants. Mineral nutrition. Transport of assimilates.
- 6 Initiation and anatomy of flowers. Sporopollenium and gametogenesis in angiosperms. Fruits and seed.
- 7 Control of growth and development.
- 8 Mycophyta, Bryophyta, Pteridophyta, Gymnospermatophyta
- 9 Angiospermatophyta: Magnoliidae
- 10 Angiospermatophyta: Hamamelididae, Caryophyllidae
- 11 Angiospermatophyta: Rosidae
- 12 Angiospermatophyta: Dilleniidae
- 13 Angiospermatophyta: Asteridae
- 14 Angiospermatophyta: Monocotyledoneae

Practicals (3 hours per week)

- Germination, seedlings. Plants representing fam.: Fabaceae, Brassicaceae
- Roots. Plants representing fam.: Apiaceae, Euphorbiaceae.
- Stems I. Plants representing fam.: Solanaceae, Lamiaceae
- Stems II. Plants representing fam.: Asteraceae
1. Test Work:
Plants representing fam.: Cannabaceae
Woody stems (Gymnosperms, Angiosperms.)
The fungi (introduction). I. Test
Work on the knowledge of medicinal plants
- The Fungi I.
The Fungi II.
2. Test Work: Fungi
Preparing a cleared specimen
Leaf and flower anatomy
- Morphology and anatomy of the seed
- 2. Test Work on the knowledge of medicinal plants.**
- Morphology and anatomy of the fruit.
3. Test Work: woody stems, leaf, flower, seed, fruit.
- Consultation, questioning, finishing the practicals.

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)

Proteins. The amino acids building blocks of proteins.

Determination of amino acid composition and primary structure of proteins.

Ordered conformations of polypeptide chains. Four levels of protein structure. Determination of secondary and tertiary structure. 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.

Enzyme inhibition. Regulatory enzymes: allosteric enzymes, covalently modulated regulatory enzymes.

Fine mechanism of enzyme action. Three-dimensional structure of chymotrypsin, a serine protease.

Mechanism of acetylcholinesterase catalysis.

Bioenergetics. Introductory remarks. High energy compounds. Glycolysis.

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.

Carbohydrate metabolism. Cellular uptake and production of glucose. Gluconeogenesis. Regulation of glycolysis and gluconeogenesis.

Glycogen metabolism. Blood glucose and regulation of glycogenolysis and glycogenesis. Hexose interconversions.

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 demunt.
- 8 Labour safety in a pharmacy. (Inflammable, explosive goods, acids, corrosive chemicals etc.)

Important note: Document certifying the completion of the practice must be handed in at registration! Registration to the next year is not allowed without it!



Faculty of Pharmacy
3rd year

STUDY PROGRAMME**Third Year****5th semester**

Subjects	Lectures	Practices	Credit Points	Prerequisites		Examination
Biochemistry II. Practice GYOBIBIKMG2A	-	1	0	GSZKSZKEZA GYOBIBIKME1A	Organic Chemistry II. Biochemistry I.	signature
Biochemistry II. GYOBIBIKMEZA	2	-	3	GSZKSZKEZA GYOBIBIKME1A	Organic Chemistry II. Biochemistry I.	final #
Physiology I. Practice GYKIKELTG1A	-	1	2	GYOBIBIKME1A GYNYELATG1A	Biochemistry I. Medical Terminology	practical course grade
Physiology I. GYKIKELTE1A	5	-	4	GYOBIBIKME1A GYNYELATG1A	Biochemistry I. Medical Terminology	semi-final
Pharmaceutical Chemistry I. GYGYKGYKG1A	4	5	8	GYASKAKKEZA GSZKSZKEZA GYFKTFIKG2A GYNYELATG1A	Analytical Chemistry (quantitative) II. Organic Chemistry II. Analytical Chemistry (quantitative) II. Medical Terminology	practical course grade
Pharmaceutical Technology I. GYGYGYTG1A	2	3	5	GSZKSZKEZA GYKOLKOLE1A GYFKTFIKG2A GYNYELATG1A	Organic Chemistry II. Colloid Chemistry I. Analytical Chemistry (quantitative) II. Medical Terminology	practical course grade
Basic Immunology GYGENIMME1A	1,5	-	2	GYGENBIOE2A GYNYELATG1A GYHUNANAET1A	Biology II. Medical Terminology Anatomy	semi-final
Colloid Chemistry I. GYKOLKOLG2A	-	2	2	GYKOLKOLE1A GYFKTFIKG2A GSZKSZKEZA	Colloid Chemistry I. Analytical Chemistry (quantitative) II. Organic Chemistry II.	practical course grade
Hungarian Language V. GYLEKMSZG5A	-	4	2	GYLEKMSZG1A	Hungarian Language IV.	final
			28			

6th semester

Subjects	Lectures	Practices	Credit Points	Prerequisites	Examination
Physiology II. Practice GYKIKELTG2A	-	1	2	GYOBIBIKME2A GYKIKELTE1A	Biochemistry II. Physiology I. practical course grade
Physiology II. GYKIKELTE2A	5	-	4	GYOBIBIKME2A GYKIKELTE1A	Biochemistry II. Physiology I. final #
Pharmacognosy I. Practice GYFMGGNDG1A	-	4	3	GYNOVGYNE2A GYOBIBIKME2A GYGYKGYKG1A	Pharmaceutical Botany II. Biochemistry II. Pharmaceutical Chemistry I. practical course grade
Pharmacognosy I. GYFMGGNDE1A	2	-	3	GYNOVGYNE2A GYOBIBIKME2A GYGYKGYKG1A	Pharmaceutical Botany II. Biochemistry II. Pharmaceutical Chemistry I. semi-final
Pharmaceutical Chemistry II. Practice GYGYKGYKG2A	-	5	4	GYKOLKOLG2A GYOBIBIKME2A GYGYKGYKG1A	Colloid Chemistry I. Biochemistry II. Pharmaceutical Chemistry I. practical course grade
Pharmaceutical Chemistry II. GYGYKGYKE2A	4	-	4	GYKOLKOLG2A GYOBIBIKME2 GYGYKGYKG1A	Colloid Chemistry I. Biochemistry II. Pharmaceutical Chemistry I. semi-final
Pharmaceutical Microbiology GYMIKGMIE1A	3	-	5	GYOBIBIKME2A GYKIKGELE1A GYENIMME1A	Biochemistry II. Physiology I. Basic Immunology final #
Pharmaceutical Microbiology Practice GYMIKGMIG1A	-	2	-	GYOBIBIKME2A GYKIKGELE1A GYENIMME1A	Biochemistry II. Physiology I. Basic Immunology signature
Pharmaceutical Technology II. Practice GYGYGYTG2A	-	5	4	GYGYKGYKG1A GYKOLKOLG2A GYGYGYTG1a	Pharmaceutical Chemistry I. Colloid Chemistry I. Pharmaceutical Technology I. practical course grade
Pharmaceutical Technology II. GYGYGYTE2A	2	-	3	GYGYKGYKG1A GYKOLKOLG2A GYGYGYTG1A	Pharmaceutical Chemistry I. Colloid Chemistry I. Pharmaceutical Technology I. semi-final
Summer Practice II. ** GYSZGYAKG2A	-	35	4		signature
			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

- 1 Falus A.: Immunology. Bp. Semmelweis K. 2001.
- 2 Csemesz: Experimental Colloid Chemistry. Bp. (SOTE)
- 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.)
- 10 Levinson, W.-Jawetz, E.: Medical Microbiology and Immunology. 7th ed. McGraw-Hill Co. 2002. ISBN 0-07-138217-8
- 11 Bruneton J.: Pharmacognosy Phytochemistry Medicinal Plants. Lavoisier Publ. 2nd ed. Paris, 1999. ISBN 1-898298 637
- 12 Principles of Medical Physiology. Ed. Fonyo A. Bp. Medicina Publ. House, 2001.
- 13 Bray, J.J.-Cragg, P.A.-Anthony D.C: Macknight, Roland G. Mills: Lecture notes on human physiology. 4th ed. 1999. Blackwell Science. ISBN 086542-775-5

Recommended textbooks:

- 1 Berne, R.M.-Levy, M.N.-Koeppen-Stanton: Physiology. 4th ed. Mosby Year Book Inc. 1998.
- 2 Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry. 10th ed. J.N. Delgado, W. Remers, 1998. ISBN 0-397-50877-8
- 3 Evans, W.C.: Trease and Evans' Pharmacognosy. Bailliere Tindell, London, 1989.

PHARMACEUTICAL CHEMISTRY

Director: **Prof. Dr. Noszál Béla**

Tutor: **Prof. Dr. Krisztina Takács–Novák**

First Semester

Week	Lectures (4 hours per week)	Practicals (5 hours per week)
1	Introduction. (Pharmaceutical Chemistry, Pharmacopoeias) Methods for identification of inorganic compounds. Solubility, acidity-basicity.	Equipping, repetitional analytical tasks.
2	Preliminary testing of organic compounds, classification Identification of organic functional groups	Preliminary testing and systematization of inorganic and organic compounds official in Ph. Eur.
3	General purity tests in Pharmacopoeias	Preliminary testing and systematization of inorganic and organic compounds official in Ph. Eur.
4	Structural and physical chemistry of drug action I.-II	General reaction of organic functional groups Analysis of IR spectra
5	Structural and physical chemistry of drug action III-IV.	General purity tests of inorganic ions I.
6	Narcotics Sedato-hypnotics and anxiolytics	General purity tests of inorganic ions II.
7	Major analgetics	General purity tests of inorganic ions III.
8	Minor analgetics	Complete pharmacopoeial qualification of an inorganic compound official in Ph. Eur.
9	Psychopharmacons	Narcotics, sedato-hypnotics
10	UV-VIS spectroscopy in the analysis of drug mixtures ORD and CD spectroscopy in the analysis of drug mixtures Separation techniques I.-V.	Major analgetics I.
11	Application of chromatographic methods for the drug analysis. TLC	Major analgetics II.
12	GC, HPLC, CE	Minor analgetics I.
13	Cholinergic and adrenergic agents	Minor analgetics II.
14	Cholinergic and adrenergic agents	Psychopharmacons

PHARMACEUTICAL CHEMISTRY

Second Semester

Week	Lectures (4 hours per week)	Practicals (5 hours per week)
1	Protonspeciation of drugs	Equipping, identification
2	Determination of protonation constants Optimization of pH-dependent processes	Drugs acting on the vegetative nervous system I.
3	Cardiac glycosides, sugars Analysis of cardiac glycosides, sugars	Drugs acting on the vegetative nervous system II.
4	Local anaesthetics	Local anaesthetics
5	Cardiovascular drugs: antiarrhythmic agents Cardiovascular drugs: antianginal agents	Digitalis glycosides, sugars
6	Cardiovascular drugs: antilipaemic agents Cardiovascular drugs: antihypertensive agents	Determination of protonation macroconstants
7	Diuretics	Determination of protonation microconstants
8	Vitamines	Determination of logP
9	Quality assurance, GLP, validation Non-steroid antiinflammatory agents	Diuretics
10	Corticosteroids Sexual hormones	Steroidal hormones
11	NMR:??phenomena NMR:??d, J, T1, T2	Complete pharmacopoeial qualification of an organic compound official in Ph. Eur.
12	NMR:??multiplicity, 1D NMR NMR:??spin echo, 2D NMR, MRI, MRS	Non-steroidal antiinflammatory agents
13	Desinfectants Chemotherapeutic agents: sulfonamides	Quality assurance, GLP, validation I.
14	Chemotherapeutic agents: antimalarial drugs, fluoroquinolones Antidiabetics	Quality assurance, GLP, validation II.

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.

Principle and practice of aseptic preparation. Eye drops.

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
Semi-solid preparations. Classification and preparation.
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 moulding.
Preparation of vaginal preparations.
Preparation of pills.
Preparation of multidose powders. Topical powders.
Preparation of single-dose powders. Division of powders. Manual capsule filling machine.
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.
 Carbohydrates. Mono- and oligosaccharides and their drugs. Homogenous polysaccharides and their drugs. Heterogenous polysaccharides: gums, neutral and acidic mucilages, pectins; polysaccharides from microorganisms and fungi. Algae polysaccharides.
 Lipids. Generalities, vegetable oils, alkyne derivatives.
 Amino acids (which are not constituents of proteins).
 Cyanogenic glycosides, glucosinolates. 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 arylalkanones)
 Tannins. Classification of tannins. Structures and properties of hydralyzable and condensed tannins, biological significance. Chief tannin -containing drugs.
 Polyketides-quinones. Naphthoquinone-containing drugs. Laxative hydroxyanthraquinone glycosides.
 Pharmacological properties.
 Main hydroxianthraquinone glycoside-containing drugs.
 Naphthodianthrone and diterpene quinone containing drugs. Hypericum perforatum.
 Orcinols and phloroglucinols. Cannabis.
 Humulus lupulus.

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
 Phloroglucinols.
 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)

Lipid metabolism: Intestinal absorption of lipids. Plasma lipoproteins and lipid transport. Outline of triacyl glycerol metabolism. Regulation of lipid metabolism: lipogenesis and lipolysis. Metabolism of steroid hormones.

Metabolism of steroid hormones. Metabolism of arachidonic acid, eicosanoids. Nutritionally essential amino acids. Interconversion. of amino acids: transamination. Overall aspects of amino acid metabolism. Amino acid catabolism. Fate of nitrogen: Deamination. Elimination of ammonia: The urea cycle. Biosynthesis of nonessential amino acids. Metabolic fates of individual amino acids: glycogenic and ketogenic amino acids. Amino acid decarboxylation: biogen amines. Nucleotide metabolism: biosynthesis and catabolism of purine and pyrimidine nucleotides. Physical properties of DNA. Structure of DNA (A, B, Z-DNA). Topoisomerases. Supercoiling of DNA. The structure of nucleosome. Replication in prokaryotes. DNA polymerases. Okazaki fragments. DNA ligase. The mechanism of replication. Origin of replication. Replication of eukaryotic cells. The cell cycle. DNA polymerase alpha, beta, gamma and delta. Mutations, Ames test. The repair processes. Excision repair of UV-induced thymine-thymine dimmers. The different types of RNAs. Prokaryotic transcription. The role of sigma factor. The operon model. The lac and trp operons. Eukaryotic replication. Transcription factors. Enhancers. The maturation of the different RNAs. Splicing. Translation. The genetic code. Initiation, elongation and termination. Signals for protein sorting. Biochemical preparations in therapy. Biotechnological methods for drug preparation. Recombinant DNA technology. Therapy of the diseases (inherited enzymopathies) by biochemical preparations.

Practicals

Seminar: Lipoprotein lipase and carnitine deficiency

Seminar: Pyruvate dehydrogenase and pyruvate carboxylase deficiency

Seminar: Liver failure

Midterm: lipids and amino acids

Seminar: Vitami B12 and folate deficiency

Midterm: nucleotides and macromolecules

Lectures (2 hours per week)

Microsomal drug metabolism. Microsomal mono-oxygenase system: induction of cytochrome P-450. 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 protein kinases and phosphorylation of specific proteins. Interaction of receptors and hormones. Mechanism of neurotransmission. The cholinergic and adrenergic transmission. The insulin and steroid receptors.

Practicals

Seminar: gene therapy

Consultation.

COLLOID CHEMISTRYTutor: **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. Flotation 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 of components of a dye mixture by zone electrophoresis.

Suspensions and emulsions

Determination of particle size distribution by Andreasen pipette.

Determination of apparent viscosity of concentrated suspensions, investigation of thixotropy. Preparation of emulsion by dispersion method, determination of the type of emulsion. Measurement of the viscosity of concentrated emulsions by rotational viscometric method.

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 Ivánics**

First Semester

Week

Lecture (5 hours per week)

- 1 Historic overview, concepts of physiological control, homeostasis. Basics in cell physiology. Cell-to-cell interactions. Cellular membranes and transmembrane transport. Membrane receptors. Ionic equilibria and resting membrane potentials, ion channels and gates. Action potentials, synaptic transmission.
- 2 Muscle. Contractile mechanism. Skeletal, cardiac, and smooth muscles. Biomechanics, electrical properties, metabolism.
- 3 Physiology of blood circulation. Introduction. Functional organization of the cardiovascular system, basic principles and conditions of its healthy functioning. Dynamics of blood and lymph flow: Physiological functions of the blood vessels, their significance in the healthy functioning of the organism. Principles of hemodynamics. Rheology of blood.
- 4 Biomechanical properties of the vessel wall. Significance of vessel geometry. Signal transduction in the blood vessels. Pressure & flow in large vessels. Circulatory resistance. Measurement of pressure, flow and cardiac output. Factors influencing blood pressure. Venous circulation.
- 5 Cardiac functions: Biomechanical basis of cardiac functions. Cardiac pump. Signal transduction in the cardiomyocytes.
- 6 Cardiac cycle. Electrical activity of the heart. Transmembrane potentials. Conduction in cardiac fibers, cardiac excitability, cardiac rhythmicity, electrocardiography.
- 7 Microcirculation. Tissue oxygenization. Fluid movement across the capillary wall. Control of lymphatic flow and interstitial fluid volume.
- 8 Cardiovascular control mechanisms: Systemic control mechanisms. Local control mechanisms. Control of cardiac output.
- 9 Circulation through organs and special regions: Coronary circulation. Circulation of blood and cerebrospinal fluid in the brain. The blood-brain barrier. Regulation of cerebral circulation. Brain metabolism & oxygen requirements.
- 10 Splanchnic circulation. Circulation through skeletal muscles. Circulation of the skin. Thermoregulation. Placental & fetal circulation. Physiological aspects of circulatory shock.

Week**Lecture** (5 hours per week)

- 11 Pulmonary circulation. Structure and function of the respiratory system, pulmonary mechanics. Gas transport between the lungs and the tissues. Regulation of RBC count - erythropoietin, acclimatization.
- 12 Regulation of respiration: Neural and chemical control of respiration. Adaptation of cardiorespiratory system and skeletal muscle to physical exercise.
- 13 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.
- 14 Liver & biliary system. Digestion & Absorption. Carbohydrates, lipids and proteins. Absorption of water and electrolytes. Absorption of vitamins and minerals.

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.
- 2 Tubular functions. Mechanisms adjusting the composition of urine. Fluid compartments. Regulation of extracellular fluid composition and volume. Role of the kidneys in the control of blood pressure. Micturition.
- 3 Regulation of acid-base balance.
- 4 General principles of endocrine physiology. The pituitary gland. Posterior lobe hormones. Anterior lobe hormones. Growth hormone and physiology of growth.
- 5 The adrenal cortex. Blood supply and its control. Innervation. Structure and biosynthesis of adrenocortical hormones. Effects of glucocorticoids and control of their secretion. Effects of mineralocorticoids and control of their secretion. Effects of adrenal androgens and estrogens. Endocrine regulation of calcium metabolism and the physiology of bone.
- 6 The thyroid gland. Formation and secretion of thyroid hormones. Control of synthesis and secretion. Transport and metabolism of thyroid hormones. Effects of thyroid hormones. Clinical correlates. Endocrine functions of the pancreas and the regulation of carbohydrate metabolism. Hormonal control of intermediary metabolism.
- 7 The reproductive glands. Development and function of the reproductive system. The female reproductive system. The menstrual cycle. Ovarian hormones. Control of ovarian function. Pregnancy. Lactation. The male reproductive system. Endocrine function of the testes. Control of testicular function.

Week

Lecture (5 hours per week)

- 8 Principles of sensory systems. Sensory receptors. Electrical and ionic events in receptors. "Coding" of sensory information. Somatosensory functions. Cutaneous, deep and visceral sensation; pathways. Pain. Arousal mechanisms, sleep and the electrical activity of the brain. The reticular formation and the reticular activating system. The thalamus and the cerebral cortex. Evoked cortical potentials and the EEG. Physiologic basis of consciousness and sleep.
- 9 Spinal organization of motor function. Monosynaptic reflexes. Polysynaptic reflexes. Spinal reflexes. Ascending and descending pathways. Spinal and supraspinal control of muscular tone. Effects of lesions. Spinal shock.
- 10 Control of posture and movement. The vestibular system. Basal ganglia. Cerebellum. Lateral and medial descending pathways involved in motor control (spinal integration, medullary, midbrain and cortical components).
- 11 The visual system. The image-forming mechanism. The photoreceptor mechanism: Genesis of action potentials.
Responses in the visual pathways and cortex. Color vision. Eye movements
- 12 The auditory system. Chemical senses. Olfactory receptors and pathways. Physiology of olfaction. Taste receptor organs and pathways. Physiology of taste.
- 13 The autonomic nervous system and its central control. Anatomic organization and chemical transmission. Adrenal medulla. Control of autonomic functions.
- 14 Neural basis of instinctual behavior. The integrative role of the hypothalamus. Limbic functions. Sexual, maternal and feeding behavior. Fear and rage. Motivation. Emotion. "Higher functions of the nervous system". Conditioned reflexes, learning and related phenomena. Learning and memory. Functions of the neocortex.

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

Lectures (3 hours per week)

Introduction. Short history, subject and aim of Microbiology. Occurrence and importance of microorganisms in the nature. General microbiology. Microbial genetic. Principles and practice of sterilization. Sterile pharmaceutical products. Sterility control. Contamination of non-sterile pharmaceuticals in hospital and community environment. Chemical disinfectants, antiseptics and preservatives. Types of antibiotics and synthetic antimicrobial agents. Mechanisms of action of the antibiotics. Bacterial resistance to antibiotics. Interactions. Principles of microbial pathogenicity and epidemiology. Immunity to microbes. Active and passive immunization. Bacteria causing purulent diseases. Bacteria causing enteric diseases. Causative agents of respiratory tract. Aerobic and anaerobic endospore forming bacteria. Other anaerobic microbes. Spirochetes. Rickettsiae. Chlamydia. Mycoplasmas. Parasitology (parasites and helminths). Causative agents of human mycosis and their therapy. General virology. Interactions between viruses and the human host. Characterization of virus Families causing human diseases. Respiratory pathogen viruses and the most important diseases. Enteric viruses and diseases caused by them. Hepatitis viruses. Arthropode-borne viruses and diseases caused by them. Other important virus caused diseases. Slow virus infections. Conventional and non-conventional agents. Prions. AIDS. The role of viruses in carcinogenesis. Antiviral chemotherapy. Interferon. Immunity to viral infections. Application of microorganisms in the pharmaceutical sciences. Production of therapeutically useful substances by recombinant DNA technology. New ways in vaccine production. The manufacture and quality control of immunological products. Importance of nosocomial infections. Factory and hospital hygiene and good manufacturing practice.

In the course of laboratory practices, the students of Faculty of Pharmacy become acquainted with the most important methods used for microbiological diagnosis of human pathogen bacteria, viruses and parasites.

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.

Practices (2 hours per week)

Introduction to basic microbiology. Laboratory rules. Morphology of bacteria (Microscopic examinations I.) Morphology of bacteria. Staining procedures (Microscopic examinations II.) Methods for cultivation of bacteria. Examination of biochemical activity of microorganisms I.

Colony morphology of bacteria. Examination of biochemical activity of microorganisms II.

Laboratory procedures of sterilization and disinfection. Antibiotic susceptibility of bacteria.

In vitro antigen-antibody reactions (serological reactions). Bacteria causing purulent diseases. Bacteria of the respiratory tract I. Bacteria of the respiratory tract II.

Normal flora and pathogens of the gastrointestinal tract.

Aerobic and anaerobic endospore forming Bacteria. Spirochetes. Chlamydiae.

Morphology and cultivation of human pathogen Fungi. Medically important protozoons. Medically important helminths.

Cultivation of viruses. Virus-cell interactions. Bacteriophages.

Medical virology. The most important viral diseases: prevention and therapy.

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.dgci.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, colloids, physiology etc.) to the practical work in pharmacies.

Duties and respects:

1. Appreciation of prescriptions, reading of prescriptions (Formula Magistralis, Formula Normales, Formula Originalis). The forms of dispensing, dose calculating etc. Preparation of medicaments (Formula Magistralis) under supervision of the instructing pharmacist.
2. Prescriptions and regulations of narcotics
3. Various dosage forms (solutions, suspensions, emulsions, ointments, solid dosage forms etc.), their preparation.
4. Practising of the pharmaceutical technological manipulations, procedures etc.
5. Aseptic production of medicaments. Main technological steps.
6. Guidelines for the preparation of incompatible drugs. Preparation of these medicaments.
7. Health accessories.
8. Control of medicines and raw materials in the pharmacy. Administration in the pharmacy.
9. Organization of drug supply.

Important note: Document certifying the completion of the practice must be handed in at registration! Registration to the next year is not allowed without it!



Faculty of Pharmacy
4th year

STUDY PROGRAMME**Fourth Year**

The prerequisite to start 4th year is to take a Basic Hungarian Language Exam (oral).

7th semester						
Subjects	Lectures	Practices	Credit Points	Prerequisites	Examination	
Pharmacognosy II. Practice GYFMGGNDG2A	-	4	3	GYFMGGNDE1A GYGYKGYKE2A	Pharmacognosy I. Pharmaceutical Chemistry II.	practical course grade
Pharmacognosy II. GYFMGGNDE2A	2	-	3	GYFMGGNDE1A GYGYKGYKE2A	Pharmacognosy I. Pharmaceutical Chemistry II.	final #
Pharmaceutical Chemistry III. Practice GYGYKGYKG3A	-	4	3	GYGYKGYKE2A GYKIKELTE2A	Pharmaceutical Chemistry II. Physiology II.	practical course grade
Pharmaceutical Chemistry III. GYGYKGYKE3A	2	-	3	GYGYKGYKE2A GYKIKELTE2A	Pharmaceutical Chemistry II. Physiology II.	final #
Pharmacology and Toxicology I. Practice GYGYHATG1A	-	2	2	GYKIKELTE2A GYGYKGYKE2A GYMIKGMIE1A GYGENIMME1A	Physiology II. Pharmaceutical Chemistry II. Pharmaceutical Microbiology Basic Immunology	practical course grade
Pharmacology and Toxicology I. GYGYHATE1A	4	-	4	GYKIKELTE2A GYGYKGYKE2A GYMIKGMIE1A GYGENIMME1A	Physiology II. Pharmaceutical Chemistry II. Pharmaceutical Microbiology Basic Immunology	semi-final
Pharmaceutical Technology III. Practice GYGYIGYTG3A	-	9	5	GYGYKGYKE2A GYGYIGYTE2A	Pharmaceutical Chemistry II. Pharmaceutical Technology II.	practical course grade
Pharmaceutical Technology III. GYGYGYTE3A	3	-	4	GYGYKGYKE2A GYGYIGYTE2A	Pharmaceutical Chemistry II. Pharmaceutical Technology II.	semi-final
Basic Medical Pathophysiology I. GYGYHKAIE1A	2	-	2	GYKIKELTE2A GYMIKGMIE1A	Physiology II. Pharmaceutical Microbiology	semi-final
Industrial Pharmaceutical Technology I.** GYGYIIGTE2A	2	-	2	GYGYKGYKE2A GYGYIGYTE2A	Pharmaceutical Chemistry II. Pharmaceutical Technology II.	semi-final
31						

8 th semester						
Subjects	Lectures	Practices	Credit Points	Prerequisites	Examination	
Pharmacology and Toxicology II. Practice GYGYHHATG2A	-	2	2	GYGYHHATE1A GYGYGYKE3A GYGYGTE3A GYGYHKAE1A	Pharmacology and Toxicology I. Pharmaceutical Chemistry III. Pharmaceutical Technology III. Basic Medical Pathophysiology I.	practical course grade
Pharmacology and Toxicology II. GYGYHHATE2A	4	-	4	GYGYHHATE1A GYGYGYKE3A GYGYGTE3A GYGYHKAE1A	Pharmacology and Toxicology I. Pharmaceutical Chemistry III. Pharmaceutical Technology III. Basic Medical Pathophysiology I.	final #
Pharmaceutical Technology IV. Practice GYGYIGTG4A	-	9	6	GYGYGYKE3A GYGYGTE3A GYFMGGNDE2A	Pharmaceutical Chemistry III. Pharmaceutical Technology III. Pharmacognosy II.	practical course grade
Pharmaceutical Technology IV. GYGYGYTE4A	3	-	4	GYGYGYKE3A GYGYGTE3A GYFMGGNDE2A	Pharmaceutical Chemistry III. Pharmaceutical Technology III. Pharmacognosy II.	final #
Pharmacy Administration I. GYEGYSZE1A	2	-	2	GYINFBEE2A GYEGYTPPE1A GYGYGYTE3A	Introduction to Health Informatics II. History of Sciences, Propedeutics Pharmaceutical Technology III.	semi-final
Basic Medical Pathophysiology II. GYGYHKAE2A	2	-	2	GYGYHKAE1A GYGYHHATE1A	Basic Medical Pathophysiology I. Pharmacology and Toxicology I.	final #
Public Health GYNEINETE1A	2	-	2	GYKIKGELE2A GYMIKGMIE1A	Physiology II. Pharmaceutical Microbiology	final #
Public Health Practice GYNEINETG1A	-	2	2	GYKIKGELE2A GYMIKGMIE1A	Physiology II. Pharmaceutical Microbiology	practical course grade
Written scientific thesis (diploma work) I. GYSZAKDKG1A	-	4	0	All of the 7 th semester subjects		signature
First Aid * GYTRAEELSE1A	1	1	0			signature
Industrial Pharmaceutical Technology II. ** GYGYINIPE1A	2	-	2	GYGYINIPE1A GYGYGTE3A	Industrial Pharmaceutical Technology I. Pharmaceutical Technology III.	semi-final
			26			

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

- 1 Rang H.P.-Dale M.M.-Ritter J.M.-Moore P.K.: Pharmacology. 5th ed. Churchill Livingstone, 2003. ISBN 0 443 071454
- 2 Hadrhazy P.:The Basis of Functional and Medical Pathology. Bp.
- 3 The New Public Health: An Introduction for the 21st Century. By: T.Tulchinsky, E.A.Varavikova. 2000. ISBN 0-12-703350-5
- 4 Dandy, D.J.: Essential Orthopaedics and Trauma. 2nd ed. 1989. Churchill Livingstone.
- 5 Z.Vincze: Pharmacy Administration. Lecture notes.

Recommended textbooks:

- 1 Forrai J.-Baller P.: Chrestomathy on the History of Medicine. Bp. SOTE 1992.
- 2 C. Edwards-P. Stillman: Minor Illness or Major Disease? (Ph. P. Pharmaceutical Press, 2000.) ISBN 0 85369 447 8

PHARMACEUTICAL CHEMISTRY

Director: **Prof. Dr. Béla Noszál**

Tutor: **Dr. Péter Horváth**

First Semester

Week	Lectures (2 hours per week)	Practicals (4 hours per week)
1	Antibiotics I.	Equipping, identification
2	Antibiotics II.	Desinfectants, chemotherapeutics
3	Antibiotics III.	Antibiotics
4	Analysis of drug mixtures I.	Identification of drug mixtures
5	Analysis of drug mixtures II.	Identification of drug mixtures
6	Analysis of drug mixtures III.	Quantitative determination of drug mixtures
7	Anticancer agents	Quantitative determination of drug mixtures
8	Antiviral agents	Quantitative determination of drug mixtures
9	Lipophilicity in drug research	Quantitative determination of drug mixtures
10	Rational methods of drug design I.	Quantitative determination of drug mixtures
11	Rational methods of drug design II.	Quantitative determination of drug mixtures
12	Lead compound discovery strategies I.	
13	Lead compound discovery strategies II.	
14	Antihistamines	

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.
Pirogenicity. Endotoxins.
Stability of pharmaceutical preparations. Stability tests. Stabilization methods.
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 oxydation 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 salicylic 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 veteriner 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.
 Lamiaceae containing essential oils.
 Anise-flavored 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 and 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: ergotane alkaloids, monoterpene indole alkaloids and chief drugs.
 Alkaloids derived from anthranilic acid: quinoline, quinazoline alkaloids. Alkaloids derived from histidine: imidazole alkaloids. Terpenoid alkaloids.
 Purine bases.
 Alkaloids with miscellaneous structure.
 Vitamins and vitamin containing drugs.
 Plants in complementary and traditional systems of medicine.
 Plants in prevention, Functional foods

Practicals (4 hours per week)

Essential oil containing drugs (Lamiaceae, Asteraceae, Apiaceae)

Methods in essential oil analyses (GC, TLC). Steam distillation of essential oils.

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, piperidine 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.

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 antidiabetic drugs
 Pharmacology of bone metabolism
 Vitamins
 Pharmacology of the thyroid, retinoides

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, amnesic disturbances
Inflammation. Tissue repair. Pain. Edema
Injuries produced by high and low temperatures and electricity
Schizophrenia. Depressive disorders
Anxiety disorders. Drug induced disorders
Sleep disorders. Eating disorders. Impulse control disorders
Epilepsy. Neurodegenerative disorders
Inflammatory diseases of the central nervous system
Headache. Backache Disorders of erythropoiesis and haemostasis
Varicose veins. Thrombo-embolic disorders
Congestive heart failure. Atherosclerosis
Ischaemic heart disease. Cardiac arrhythmia
Inflammatory diseases of the heart
Hypertension. Circulatory shock

Second Semester

Gastrointestinal disorders I
Gastrointestinal disorders II
Gastrointestinal disorders III
Respiratory diseases I.
Respiratory diseases II.
Genitourinary disorders
Infectious disorders I.
Infectious disorders II.
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.

Malnutritions. Nutrition related non infectious diseases. Vegetarianism.

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 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

Practices (2 hours per week)

Introduction to Public Health. Principles of epidemiology of communicable diseases.

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.

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:

History of industrial pharmacy. Profiles of the pharmaceutical industry, career for pharmacists. Pharmaceutical technological aspects of product authorization. Evolution of dosage forms. Innovation and intellectual property. Preformulation and formulation studies. Optimization of dosage form composition. Control of active substance and excipients, physic-chemical and solid state characterization. Novel drug delivery systems. Design of the manufacturing process. Critical formulation attributes and process parameters. Comparison of scaling-up methods.

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:

Evolution of pharmaceutical manufacturing operations and procedures. Novel technologies for the production of dosage forms. Quality by design, manufacturing related to quality assurance and quality control. Critical parameters in the production. In-process control methods. Process Analytical Technology. Novel analytical methods for testing production and product quality. Validation of the manufacturing method. Methods for statistical process control. Current Good Manufacturing Practice.

COMPULSORY SUMMER PRACTICE

Program

Four weeks: 35 hours/week; max. 8, min. 6 hours/day. The aim of the summer practical training: to profound theoretical and practical knowledge of Pharmaceutical Technology learnt in the 4th year; adaptation of basic knowledges (chemistry, physics, colloids, 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.
7. Health accessories.
8. Control of medicines and raw materials in the pharmacy. Administration in the pharmacy.
9. Organization of drug supply.

Important note: Document certifying the completion of the practice must be handed in at registration! Registration to the next year is not allowed without it!



Faculty of Pharmacy
5th year

STUDY PROGRAMME**Fifth Year****9th semester (12 weeks)**

Subjects	Lectures	Practices	Credit Points	Examination
Compulsory Practical Training I. (2 months) * GYSZGSZVG1A	–	40	8	signature
Biopharmacy-Pharmacokinetics Practice GYGYIBFKG1A	–	3	2	practical course grade
Biopharmacy-Pharmacokinetics GYGYIBFKE1A	2	–	2	semi-final
Pharmaceutical Sociology, Ethics GYMAGGYEE1A	2,5	–	2	semi-final
Drug Therapy Practice GYGYHGTA1A	–	2	0	signature
Drug Therapy GYGYHGTA1A	2	–	4	semi-final
Pharmacy Administration II. Practice GYEGYGSZG2A	–	2	2	practical course grade
Pharmacy Administration II. GYEGYGSZE2A	2	–	2	final #
Pharmaceutical Care ** GYEGYKGYE1A	2	–	4	semi-final
Pharmaceutical Care Practice GYEGYKGYG1A	–	3	–	semi-final
Written Scientific Thesis (diploma work) II. GYXXSZD_2A	–	6	0	signature
Facultative subject 1.	3	–	2	semi-final
Facultative subject 2.	3	–	2	semi-final
Facultative subject 3.	3	–	2	semi-final
			32	

** The new name of Clinical Pharmacy is Pharmaceutical Care

10th semester (16 weeks)

Subjects	Lectures	Practices	Credit Points	Examination
Compulsory Practical Training I. (4 months) * GYSZGSZVG2A	–	40	16	signature
Diploma Defence GYXXDIVE1A			15	final
			31	

* 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.
3. Examination Period (6 weeks) from December 19, 2011 to January 27, 2012.

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

- 1 Walker and Edwards: Clinical Pharmacy and Therapeutics. Longman Group UK Limit. 1994. ISBN 0 443 04553
- 2 Z. Vincze: Pharmacy Administration. Lecture Administration.
- 3 Wells BG., DiPiro JT., Schwinghammer TL., Hamilton CW.: Pharmacotherapy Handbook. 6th ed. McGraw-Hill, New York, 2006
- 4 Conrad Fischer—Caterina Oneto (2009): USMLE Medical Ethics: The 100 cases you are most likely to see on the exam (Second edition) New York: Kaplan Publishing ISBN: 9781419553141

Recommended textbooks:

- 1 Herfindal-Gourley-Hart,L: Clinical Pharmacy and Therapeutics. Williams and Wilkins USA. ISBN 0 683 03966 0
- 2 Fincham,J.E:-Wertheimer,A.I: Pharmacy U.S. Health Care System. ISBN L-56024-097-0
- 3 Smith,M.C: Studies in Pharmaceutical Economics. ISBN 0-7890-0062-8
- 4 Ritschel,W.A.: Handbook of Basic Pharmacokinetics. Drug Intelligence Publ. Inc. Hamilton Press, 1999. ISBN 0-914768-40-9

PHARMACEUTICAL CARE

Faculty of Pharmacy

University Pharmacy Department of 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
4. Clinical guidelines in the treatment of type 2 diabetes mellitus
5. Clinical guidelines in the treatment of hypertension
6. Special conditions influencing drug therapy
7. Clinical bio-analytical analyses
8. Therapeutic drug monitoring, Pharmaco-genetics
9. Pediatrics
10. Total Parenteral Nutrition
11. Pharmaceutical care in asthma
12. Patient education in OTC products I.

Practical lessons

1. Pharmaceutical care in diabetes
2. Pharmaceutical care in hypertension
3. Surgery
4. Dermatology
5. Preparations for surgery, intensive therapy
6. Headache, depression, distress, insomnia
7. Patient education in OTC products I..
8. Patient education in prescription drugs
9. Patient education in OTC products II.
10. Drug information systems
11. Laboratory diagnostic
12. Adverse Drug reactions

BIOPHARMACY – PHARMACOKINETICS

Department of Pharmaceutics

Director: **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-maleficence.

The principle of beneficence.

The principle of justice.

Arguments against „principalism”.

3. week (Lecture)

Justice in Health Care .. Ethical questions of macro- and microallocation

Higher and lower level macroallocational problems.

The principles and practice of rationing in contemporary health care systems. (Soft and hard rationing.)

Medical ethics and medical economics. Ethical questions of cost-benefit and cost effectiveness analysis.

The problem of right to health care. (The libertarian, the liberal and the socialist views about the right to health care.)

The role of the market and that of the state in the health care system.

The concept of microallocation.

Ethical analysis of various selection criteria. (Medical benefit, psychological ability, supportive environment, social value criterion, resources required criterion, age, ability to pay, random selection, personal responsibility for the illness, etc.)

4. week. (Lecture)

Informed consent and truth telling

Simple consent and paternalism in medicine.

The emergence of the doctrine of informed consent.

Standards for information disclosure for patients.

When is informed consent not necessary?

Standards of competence and incompetence.

The right to refuse medical treatment.

Some psychological and communicational aspects of informed consent.

The history of information disclosure to terminally ill patients.

Pros and cons for lying to terminally ill patients.

The weaknesses of the arguments in favour of lying.

The dying process according to E. Kübler-Ross.

How to communicate the bad news to terminally ill patients.
The physicians's relationship with the relatives of the deceased patient.

5. week. (Lecture)

Euthanasia and the withholding of life-sustaining treatment

Definitions.

The sanctity of life versus the quality of life doctrine.

Is there any difference between active and passive euthanasia?

The practice of active euthanasia in the Netherlands. The Rammelink Report.

Refusal of life sustaining treatment by competent and incompetent patients.

Possibilities to extend the autonomy of patients: living will, durable power of attorney, substituted judgement, etc.

The concept of medically futile treatment.

Ethical problems of the treatment of handicapped newborns. (The debate about the treatment of spina bifida babies, the Baby Doe case, the legal situation, etc.)

6. week (Lecture)

Ethical questions of human experimentation.

Possible forms of experimentation on humans.

Contradiction between the two roles of the physician. (Healer and scientist.)

The ethics of Randomized Controlled Clinical Trials. (RCT)

Randomization and prerandomization.

7. week (Lecture)

Ethical questions of organ- and tissue transplantation.

Some problems of justice concerning kidney transplantation and chronic 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: 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

1089. Budapest, Nagyvárád tér 4.

Tel: 210-2953

Secretary: NET Building, 20th floor, Room-2005

List of questions

1. Deontological theories of ethics.
2. Utilitarian theories of ethics.
3. The principles of medical ethics
4. Justice and medical ethics: the allocation of scarce medical resources.
5. Paternalism in medical practice
6. Informed consent
7. Information disclosure for terminally ill patients
8. Advance Directives
9. Medical confidentiality
10. Experimentation on human subjects
11. Objection to Transplantation of Organs and Counterarguments
12. Ethical problems of live organ donation
13. Organ donation from brain-dead donors: the system of donor cards.
14. Organ donation from brain-dead donors: presumed consent
15. Stages of Dying
16. Active and Passive Euthanasia
22. Withdrawing and withholding life sustaining treatment.

Important notes:

To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature. (Two absences from the lectures is the maximum number permitted.) The student can make up for the absences in practicals held at other times elsewhere.

Justification of an absence: Doctor's certificate

Semester requirement: To participate on at least 75% of the total number of lessons.

Grade: The result of the semi-final.

Sign up for the exam: Through the NEPTUN system.

Modifying of the exam date: Through the NEPTUN system.

Justification of absence from the exam: A telephone message to the secretary of the Institute.

Textbook:

Conrad Fischer—Caterina Oneto (2009): USMLE Medical Ethics: The 100 cases you are most likely to see on the exam (Second edition) New York: Kaplan Publishing ISBN: 9781419553141

SOCIOLOGY

(14 hours)

Course objectives:

To introduce to the students the concepts of the social distribution of health and illness, the causes and consequences of health status inequalities, the role of psychosocial factors in health care, the social phenomena occurring in healing, the social situation of medicine, and the social embeddedness of the health care system.

Course syllabus

- 1 Social Science and Pharmacy (lecture)
- 2 Sociological Understanding of Health and Illness (lecture)
- 3 Lay Health Beliefs and "Help-seeking" Behavior (lecture)
- 4 Social Factors and Health (lecture)
- 5 Social Inequalities and Health (lecture)
- 6 Is Pharmacy a Profession? (lecture)
- 7 Pharmacist and Health Promotion (lecture)

Course Faculty:

Zsuzsa Szántó, PhD, (Head of the Department of Sociology), 210-2930/56338; e-mail: szanzsu@net.sote.hu
Katalin Kovács, PhD e-mail: kovacsk.katalin@gmail.com

Department:

Institute of Behavioral Sciences
Department of Sociology
NET Building, 19th, 20th floor
1089. Budapest, Nagyvárud tér 4.
Tel: 210-2953
Secretary: NET Building, 20th floor, Room-2005

Important notes: To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature. (Two absences from the lectures is the maximum number permitted.) The student can make up for the absences in practicals held at other times elsewhere. Participation submitting home paper.

Justifying absence: with doctor's certificate

Semester grade: The result of the semi-final and home paper.

Justifying absence from the exam: A telephone message to the secretary of the Institute.

Textbook:

- 1 Kevin Taylor, Sarah Nettleton, Geoffrey Harding: Sociology for pharmacists. Taylor and Francis, London, 2003
- 2 Handouts for the lectures will be accessible on the homepage of the Institute of Behavioral Sciences: www.magtud.sote.hu.

PHARMACY ADMINISTRATION

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 Pálfi**

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 chemotherapy: 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.

- 1 Investigation methods used in phytochemistry
UV and IR spectroscopy in phytochemical analysis
- 2 Chromatography (TLC, PLC, HPLC, GC) in phytochemical analysis.
- 3 Type of active substances and their quantitative
determination in plant material
Different methods and their comparing valuation for the
determination of flavonoid content.
- 4 Determination of tannin and procyanidin content,
determination of anthraglycoside content,
determination of total essential oil content.
- 5 Determination of alkaloid content, determination of bitter substance content.
- 6 Qualitative investigation and detection of active components
TLC investigations of different glycosides and their aglycons.
- 7 GC investigation of essential oil components
- 8 Possibility of standardization of complex plant products
Preparing (extraction, purification, etc.) of investigated samples
dependent on different medicament forms.
- 9 Chemical analysis of tea mixtures, tea decocts, aqueous solutions
- 10 Chemical analysis of tinctures, aqueous alcoholic solution
- 11 Chemical analysis of oleaginous solutions, ointments
- 12 Consultation

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 5 hours
(theory and practice)

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 spectroscopical 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.

PHYTOTHERAPY

Institute of Pharmacognosy

- 1 Cardiac and cardiotoxic natural products
Vasodilators.
- 2 Plant preparations for troubles of memory, equilibrium
and auditory disturbance.
The horse-chest, its preparations and effectivities.
- 3 Oxy- and methoxycumarines in medical plants.
The occurrence of rutin and diosmine.
- 4 The bitter principals.
The appetiser preparations.
- 5 The essential oils.
Procyanidine crude drugs and preparations.
- 6 The liver therapy (natural products and medical plants).
Choloretics and cholagoges with plant origin.
- 7 Cholesterin level decreasing diets and others for diabetics.
Slimming cures and their aims. Fat-reducing mechanism.
- 8 Plant sedatives, their effects and combinations.
Natural products with stimulating and animating activity (stress).
- 9 Urological phytopreparations and some for prostata diseases.
- 10 The Kneipp cures and their possibilities.
Gerontology.
- 11 Antitussives, expectorants and their application. Antiasthmatics.
Treatment of rheumatism.
- 12 Phytopharmacy in the therapy of psoriasis. Unclean skin and eczema.
Immunstimulant medicinal plants.
- 13 Cure of cold with medicinal plant remedies, Phytopreparations.
Plant compounds for the badly healing wounds.
- 14 Medical plant remedies in the family doctor's activity.
Importance of medicinal plants in pediatrics.

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
3.	Mathematical Statistical Principles: descriptive statistics, hypothesis theorem
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. iridoids, peptides).
2. Structure elucidation of natural products.
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, gíngkolide).
9. Solid phase synthesis of polypeptides and polynucleotides.
10. Total synthesis of saccharides, sassharides in total synthesis.
11. Cosmogogenesis and molecular evolution of organic molecules.

BIOINORGANIC CHEMISTRY

Institute of Inorganic Chemistry (ELTE)

During the last two decades our knowledge on the behavior of metals and some nonmetals (e.g. boron, silicon, selenium) has widened considerably. As a result of this the cooperation between inorganic chemists, biochemists and biologists became most involved and a new multidisciplinary branch of natural sciences developed that is termed bioinorganic chemistry or inorganic biochemistry.

It is rather difficult to mark the boundaries of this discipline since it includes biological metabolic processes and syntheses where metal ions and/or metal complexes are involved as well as ion transport, biomineralization, metal toxicity, chelate therapy, and the application of metal complexes in the treatment of different conditions.

In order to understand all aspects of the material discussed in the course a brief summary is given on metal coordination compounds: on their 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 hydrolytic and group transfer reactions. Iron, copper and molybdenum take part in many bioredox processes, and the former two metals also in the transport of molecular oxygen. Also, cobalt, manganese, chromium, nickel and vanadium have their roles in important biochemical processes.

Transition metals are needed to activate small molecules as CO_2 , N_2 and O_2 . The biochemistry of the latter is an intriguing topic of bioinorganic chemistry. The deposition of certain solid inorganic compounds (CaCO_3 , 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
Selection and screening. Culture maintenance. Mutagenesis. Protoplast and cell fusion technologies.
3. Introduction to genetic engineering
The emergence of recombinant DNA technology. Regulation and control of recombinant DNA experimentation. Basic recombinant DNA techniques. Restriction endonucleases and other DNA and RNA modification enzymes.
4. Gene cloning
Transformation. Cloning vectors. Construction of libraries. Identification of transformants and recombinants. Gene isolation and analysis. Nucleic acid labelling and detection. Hybridization analysis. DNA sequencing. DNA amplification by the polymerase chain reaction.
5. Expression of foreign DNA in bacteria
Control of gene expression in bacteria and in eukaryotes. Expression of eukaryotic genes in bacteria. Alternative host organisms.
6. Cloning in higher organisms
Gene cloning in mammalian cells. Vector systems. Gene transfer methods. Plant tissue culture techniques. Protoplast fusion. Plant genetic engineering. Transformation using *Agrobacterium* as a gene vector. Direct gene transfer. Crop improvement using molecular techniques: resistance to herbicides and diseases. RFLP-analysis.
7. Application of molecular biology in medicine
Diagnosis of genetic disorders. DNA fingerprinting. Case applications.
8. Genetic engineering and the pharmaceutical industry
Fermentation products. Antibiotics production. Protein production. Recombinant virus vaccines. Monoclonal antibodies.
9. Fermentation technology
Microbial cultivation. Bioreactor design. Media design. Instrumentation and process control. Scale-up. Animal and plant cell cultivation. Solid substrate fermentation.
10. Enzyme technology
Enzyme engineering. Site-directed mutagenesis. Enzyme stabilization. Purification of enzymes. Immobilized enzymes. Immobilization of cells.
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 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 of 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.
4. Chemical stability and reactivity: thermodynamics and kinetics: qualitative and quantitative predicting methods; case studies.
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

Lectures	References	Hour
1. MEDICAL INFORMATICS AS A DISCIPLINE	HEALTH INFORMATICS IN THE 21st CENTURY by John Mantas, Document 506 GLOBAL INFORMATION SOCIETY AND HEALTHCARE by Jean ROBERTS Document 508	2
2. DATA TYPES, CLINICAL DATA-BASES, DATA BASE MODELS, AND MEDICAL IMAGES	TERMING, CODING AND GROUPING SYSTEMS IN HEALTH by Rudiger KLAR, Document 416 DATABASES, SPREADSHEETS AND WORD PROCESSING IN HEALTH by Francesco PINCIROLI, Luisa PORTONI Document 401	2
3. THE THERAPEUTIC PROCESS AND THE MEDICAL RECORD	HEALTHCARE RECORD by Jos AARTS Document 407	2
4. HEALTH CARE INFORMATION SYSTEMS	OPERATIONAL USES OF HOSPITAL INFORMATION SYSTEMS by Marie-Christine JAULENT, Document 405 ARCHITECTURES IN HEALTH by Sergio TORRES, Jose TORRES Document 422	2
5. COMPUTER-BASED SUPPORT FOR PHARMACISTS (AN OVERVIEW)	EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990	2
6. REPRESENTING DRUG-RELATED KNOWLEDGE (classification of drugs, describing drug properties, drug informationsystems, examples)	EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990	2
7. HOSPITAL PHARMACY AND DRUG-USE MONITORING SYSTEMS (informatics of public and hospital pharmacies, patient education)	EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990	2
8. INFORMATION RESOURCES AND THE INTERNET, KNOWLEDGE COUPLERS EVIDENCE-BASED DRUG THERAPY (pharmacoeconomics and outcome research planning therapeutic protocols)	REFERENCE SOURCES IN HEALTH by Jean ROBERTS, UK Document 412 ELECTRONIC COMMUNICATIONS IN HEALTH by Enrique GOMEZ AGUILERA, Francisco DEL POZO GUERRERO, Teresa ARREDONDO WALDMEYER, Andres MARTINEZ FERNANDEZ, Document 403	2
9. INFORMATICS OF DRUG PRESCRIPTION	EXPERT SYSTEMS AND ARTIFICIAL INTELLIGENCE IN HEALTH by Jana ZVAROVA, Jan TALMON Document 424 COMPUTER-AIDED DIAGNOSTIC SUPPORT by Ann OOSTENDORP, Document 408	2
10. COMPUTER SUPPORT FOR PLANNING DRUG THERAPY (Watchdog, focusing, critiquing and advisory systems, patient-centred pharmacotherapy), PLANNING DRUG DOSAGE	EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990 Van Bommel and M.Musen: Handbook of Medical Informatics, Springer, 197 (www.mihandbook.stanford.edu)	2
	Total:	20

PRACTICES :
10 hours

1. Informatics of high throughput screening (METABOL EXPERT)	2
2. Drug information systems (Micromedex and Internet resources) Resources of evidence based medicine (Cochrane library)	2
3. Analysis of dose response data in pharmacology (PROBIT analysis) Evaluation of clinical trial data (analysis of variance)	2
4. An antibiotic advisor UTI	2
5. A drug-dosage planning assistant USC PACK	2
Total:	10

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:

Outstanding	(kitűnő)	if the average is 5.00
Excellent	(jeles)	if the average is 4.51–4.99
Good	(jó)	if the average is 3.51–4.50
Fair	(közepes)	if the average is 2.51–3.50
Passing	(elégséges)	if the average is 2.00–2.50

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 members 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 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.

GENERAL BOARD EXAMINATION – GBE (Complex Final 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 be 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 is 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:

$$XD = \frac{Xn + D + I + Sz + Gy}{n + 4}$$

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

Medicine	USD 8,200 / semester
Dentistry	USD 8,200 / semester
Pharmacy	USD 6,000 / semester

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

Medicine	USD 8,400	(USD 8,200 tuition fee + USD 200 registration fee payable once during the studies)
Dentistry	USD 8,400	(USD 8,200 tuition fee + USD 200 registration fee payable once during the studies)
Pharmacy	USD 6,200	(USD 6,000 tuition fee + USD 200 registration fee payable once during the studies)

Before February 1	Medicine	USD 8,200
	Dentistry	USD 8,200
	Pharmacy	USD 6,000

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, Lichteinstein)

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 szerződés (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:	8³⁰-13⁰⁰
TUESDAY:	13⁰⁰-18⁰⁰
WEDNESDAY:	8³⁰-12⁰⁰
THURSDAY:	8³⁰-13⁰⁰
FRIDAY:	8³⁰-12⁰⁰

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 Móricz Zsigmond tér, bus No.33 or No.33/A 5th bus stop-Hengeralmos utca.

OPENING HOURS OF THE IMMIGRATION OFFICE

(residence permit application)

MONDAY:	8³⁰-13⁰⁰
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WEDNESDAY:	8³⁰-12⁰⁰
THURSDAY	8³⁰-13⁰⁰
FRIDAY:	8³⁰-12⁰⁰

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."

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

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
11. Failing to keep any deadlines: (the old type: 500 HUF/page) 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 trail 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 Semellweis 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



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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SCHEDULE FOR THE ACADEMIC YEAR 2011/2012

Autumn semester

Registration for 1 st year students	August 29, 2011
Opening Ceremony	September 4, 2011
First day of the term	
Week 0 - For 1 st year students	August 29, 2011
Week 1 - For 2 nd 3 rd and 4 th 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

Giving back the index book at the Foreign Students Secretariat	<i>Autumn semester:</i> Jan 27, 2012 <i>Spring semester:</i> Jul 6, 2012
Announcement of continuing studies	<i>Autumn semester:</i> Jul 8, 2011 <i>Spring semester:</i> Jan 27, 2012
Announcement of continuing studies after deadline with paying a default charge	<i>Autumn semester:</i> Sept 2, 2011 <i>Spring semester:</i> Feb 3, 2012
Withdrawal of announcement of continuing studies	within a month after the beginning of the term <i>Autumn semester:</i> Oct 5, 2011 <i>Spring semester:</i> March 6, 2012
Signing up for courses/subjects semester	until the end of the exam period of the previous semester <i>Autumn semester:</i> Jul 8, 2011 <i>Spring semester:</i> Jan 27, 2012
Changing of courses/subjects	till the end of the zero week <i>Autumn semester:</i> Sept 2, 2011 <i>Spring semester:</i> Feb 3, 2012
Taking the index book for the examination period from the Foreign Students Secretariat	<i>Autumn semester:</i> earliest Dec 7, 2011 <i>Spring semester:</i> earliest May 16, 2012
Getting a signature in the index after term time	till the end of the 2 nd week of the exam period <i>Autumn semester:</i> Dec 23, 2011 <i>Spring semester:</i> June 1, 2012
Retake of an end-term exam	earliest on the third calendar day after the failed exam
Retake of a comprehensive exam	earliest on the fifth calendar day after the failed exam
Changing the exam date in the Neptun	48 hours before the actual date of the exam
Handing in the thesis and signing up for the final examination	<i>for final examination in October</i> Aug 11, 2010 <i>for final examination in June</i> Mar 15, 2012

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:

	2011/2012 autumn semester	2011/2012 spring semester		
	Tuition fee payment deadline	Tuition fee payment with a default charge	Tuition fee payment deadline	Tuition fee payment with a default charge
1 st year	29/08/2011	05/09/2011	27/01/2012	03/02/2012
2 nd /3 rd /4 th year	01/09/2011	08/09/2011		

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:	100 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: – first time	500 HUF
– every other occasion	1.500 HUF
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 paediatrics, 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, paediatrics, 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 childbed,
- 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 extramural 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



*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 Rác

President of the Doctoral Council

President of the Doctoral Council

Dr. Károly Rác

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	Wednesday:	13.00 p.m. - 16.00 p.m.

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Dr. Károly Rác	President
Dr. Ágoston Szél	Former-President
Dr. József Tímár	Vice-President
Dr. Miklós Tóth	Vice-Rector of Scientific and International Affairs
Dr. László Rosivall	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 Dániel	János Szentágothai Neurosciences Ph.D. School
Dr. József Mandl	Ph.D. School of Molecular Medical Sciences
Dr. László Kopper	Ph.D. School of Pathology
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Dr. János Rigó	President of the Quality Control and Evaluation Board
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Dr. Péter Sótónyi	Szent István University, Faculty of Veterinary Science
Sándor Békási	President of the Doctoral Students' Union

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University School of Ph. D. Studies

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Biological Effects of Ionizing and Non-Ionizing Radiations	Dr. Miklós Kellermayer MD, PhD
Cardiovascular Disorders: Physiology and Clinic of Ischaemic Circulatory Diseases	Prof. Béla Merkely MD, PhD, DSc
Clinical and Experimental Cardiology/Atherosclerosis	Dr. Zoltán Prohászka MD, PhD
The Mechanisms of Normal and Pathologic Functions of the Circulatory System	Prof. Emil Monos MD, PhD, DSc
Physiology and Pathophysiology of the Regulation of Fluids and Electrolyte Homeostasis	Prof. László Rosivall MD, PhD, DSc

II. CLINICAL MEDICINE

Chairman: **Prof. Zsolt Tulassay** MD, PhD, DSc

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Clinical Haematology	Prof. Lídia Sréter MD, PhD, DSc
Dental Research	Prof. Gábor Varga MD, PhD, DSc
Fetal and Neonatal Medicine	Prof. Zoltán Papp MD, PhD, DSc
Gastroenterology	Prof. Zsolt Tulassay MD, PhD, DSc
Ophthalmology	Prof. Ildikó Süveges MD, PhD, DSc
Oxidative Stress and Immunological Reaction in Liver Diseases	Prof. János Fehér MD, PhD, DSc †
Physiology and Pathology of the Musculoskeletal System	Prof. Miklós Szendrői MD, PhD, DSc
Prevention of Chronic Diseases in Childhood	Prof. Tivadar Tulassay MD, PhD, DSc
Pulmonology	Prof. György Losonczy MD, PhD, DSc
Hormonal regulations	Prof. Károly Rác MD, PhD, DSc
Urology	Prof. Imre Romics MD, PhD, DSc
Clinical and Experimental Research in Angiology	Prof. György Acsády MD, PhD, DSc
Dermatology and Venereology	Prof. Sarolta Kárpáti MD, PhD, DSc
Molecular Genetics, Pathomechanism and Clinical Aspects of Metabolic Disorders	Prof. Péter Lakatos MD, PhD, DSc

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Programs	Co-ordinators
Experimental and Clinical Pharmacology	Prof. Kálmán Magyar MD, PhD, DSc
Modern Trends in Pharmaceutical Scientific Research	Dr. István Antal MSc, PhD

IV. MENTAL HEALTH SCIENCES

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Programs	Co-ordinators
Clinical Psychology and Psychiatry	Prof. László Tringer MD, PhD, DSc
Behavioral Sciences	Prof. Mária Kopp MD, PhD, DSc

V. SPORT SCIENCES

Chairman: **Prof. Zsolt Radák** MD, DSc, PhD
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Programs	Co-ordinators
Training and Adaption	Prof. Gábor Pavlik MD, PhD, DSc
Physical Training, Regulation, Metabolism	Prof. Zsolt Radák MD, PhD, DSc
Sport and Social Sciences	Prof. Gyöngyi Szabó MD, PhD, DSc

VI. NEUROSCIENCES

Chairman: **Prof. Dániel Bereczki** MD, PhD, DSc
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Programs	Co-ordinators
Neuromorphology and Cell Biology	Prof. Miklós Palkovits MD, PhD, DSc
Neuroendocrinology	Prof. Zsolt Liposits MD, PhD, DSc
Functional Neurosciences	Prof. E. Szilveszter Vizi MD, PhD, DSc
Clinical Neurosciences	Prof. Zoltán Nagy MD, PhD, DSc
Clinical Neurological Research	Prof. Imre Szirmai MD, PhD, DSc
Biological Psychiatry	Prof. Gábor Faludi MD, PhD, DSc

VII. MOLECULAR MEDICINE

Chairman: **Prof. József Mandl** MD, PhD, DSc

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Programs	Co-ordinators
Basis of Human Molecular Genetics and Gene Diagnostics	Prof. András Falus MD, PhD, DSc
Cellular and Molecular Physiology	Prof. Erzsébet Ligeti MD, PhD, DSc
Embryology, Theoretical, Experimental and Clinical Developmental Biology	Prof. Imre Oláh MD, PhD, DSc
Immunology	Prof. Péter Gergely MD, PhD, DSc
Pathobiochemistry	Prof. József Mandl MD, PhD, DSc

VIII. PATHOLOGICAL SCIENCES

Chairman: **Prof. László Kopper** MD, PhD, DSc

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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	Prof. Zsuzsanna Schaff MD, PhD, DSc
Experimental Oncology	Prof. László Kopper MD, PhD, DSc
Public Health Science	Prof. Péter Sótonyi MD, PhD, DSc
Study of the Immunobiological Effects of Micro-organisms and of their Components at Molecular and Cellular Level and in the Microorganisms	Prof. Károly Nagy MSc, PhD
Clinical and experimental transplantation Health Sciences	Prof. Róbert Langer MD, PhD, Prof. István Szabolcs MD, PhD, DSc

NOTE