Contents

Government of the University ............................................................... 7
The Academic Program Committee ........................................................ 7
The English Secretariat ....................................................................... 8
The Schedule of the 2009/2010 academic year ........................................... 9
The Examination and Studies Regulations ............................................. 11
Information on Neptun System .............................................................. 27
The Departments of Semmelweis University (English Program) ................. 30
How to reach Embassies ..................................................................... 36
Academic Staff .................................................................................. 37
Faculty of Medicine ........................................................................... 37
Faculty of Dentistry .......................................................................... 49
Faculty of Pharmacy ......................................................................... 51
The Central Library ........................................................................... 53
Information on language courses ......................................................... 53
Attention to all students .................................................................... 54
Study Programs
(The Study Programs contain the curricula, the lists of books and the tutors)

Faculty of Medicine ........................................................................... 55
Year 1 .............................................................................................. 55
Year 2 .............................................................................................. 79
Year 3 .............................................................................................. 99
Obligatory elective and elective subjects – schedule of the basic and pre-clinical modules
Year 4 ........................................................................................... 149
Year 5 ........................................................................................... 171
Elective subjects (basic/pre-clinical/clinical modules) – curricula ............. 197
Obligatory elective and elective subjects – schedule of the clinical module . 217
Year 6 ........................................................................................... 219

Faculty of Dentistry ........................................................................... 239
Year 1 .............................................................................................. 239
Year 2 .............................................................................................. 251
Year 3 .............................................................................................. 281
Year 4 .............................................................................................. 309
Year 5 ..............................................................................................

Faculty of Pharmacy ......................................................................... 325
Year 1 .............................................................................................. 325
Year 2 .............................................................................................. 345
Year 3 .............................................................................................. 361
Year 4 .............................................................................................. 377
Year 5 .............................................................................................. 393

Evaluation of Progress ...................................................................... 414
Exemptions ...................................................................................... 415
Diploma work ................................................................................... 416
General Board Examinations ............................................................... 418
The Diploma .................................................................................... 419
Cost of the Program, Reduction..............................4 2 0
Student Services Center .................................4 2 1
Residence Visa, Residence Permit, Entry for a Long Stay .................4 2 1
Reduction of tuition fee .................................4 2 3
The words of the freshmen's solemn vow, the words of oaths at the graduation ceremony.................................4 2 4
How to get a certificate of conformity with the EU .....................4 2 5
Fees ..........................................4 2 6
Summary of the most important information and frequently asked questions ........4 2 9
Union of Research Students...............................4 3 3
Faculty of Health Sciences ..................................4 3 5
Brief History of the Faculty of Health Sciences ......................4 3 6
Government, Dean's Office, Staff, Departments, the Academic Year 2009/2010, Details and Fees, Information about the new B.Sc. and M.Sc. programs, Nursing and Patient Care Program, Study Programs (Curricula)
School of Ph.D. Studies..................................4 6 7
History and basic information ..................................4 6 8
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Dr. Vilmos Ivády

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Academic Program Director for Medicine, Dentistry and Pharmacy in English:  
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Prof. Dr. József Mandl M. D., Ph.D., D. Sc.  
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e-mail: engsec@rekhiv.sote.hu

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Office hours: Monday: 10 a.m. – 12 p.m. – student card
Monday: 1 p.m. – 3 p.m. – all faculties
Tuesday: 10 a.m. – 12 p.m. – dentistry
Tuesday: 1 p.m. – 3 p.m. – medicine/pharmacy
Wednesday: CLOSED
Thursday: 10 a.m. – 12 p.m. – medicine/pharmacy
Thursday: 1 p.m. – 3 p.m. – dentistry/student card
Friday: 9 a.m. – 12 p.m. – all faculties
Lunch time: 12 p.m.–1 p.m.

(More details at the entrance of the English Secretariat.)
# SCHEDULE FOR THE 2009/2010 ACADEMIC YEAR

( Faculty of Medicine, Faculty of Dentistry, Faculty of Pharmacy)

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Opening Ceremony</strong></td>
<td>September 6, 2009</td>
</tr>
<tr>
<td><strong>First Semester</strong></td>
<td></td>
</tr>
<tr>
<td>Date of registration</td>
<td>August 31 – September 4, 2009</td>
</tr>
<tr>
<td>Place of registration</td>
<td>English Secretariat</td>
</tr>
<tr>
<td>First day of the semester</td>
<td></td>
</tr>
<tr>
<td>Faculty of Medicine (1st–5th years)</td>
<td>September 7, 2009</td>
</tr>
<tr>
<td>Faculty of Dentistry</td>
<td>September 7, 2009</td>
</tr>
<tr>
<td>Faculty of Pharmacy (1st-4th years)</td>
<td>September 7, 2009</td>
</tr>
<tr>
<td>Last day of the semester</td>
<td></td>
</tr>
<tr>
<td>Faculty of Medicine (1st–5th years)</td>
<td>December 11, 2009</td>
</tr>
<tr>
<td>Faculty of Dentistry</td>
<td>December 11, 2009</td>
</tr>
<tr>
<td>Faculty of Pharmacy (1st-4th years)</td>
<td>December 11, 2009</td>
</tr>
<tr>
<td>5th year Pharmacy: Practical training</td>
<td>August 3, 2009 – September 25, 2009</td>
</tr>
<tr>
<td>The semester lasts for 5th year Pharmacy</td>
<td>September 28 – December 18, 2009</td>
</tr>
<tr>
<td><strong>Examination period</strong></td>
<td></td>
</tr>
<tr>
<td>Faculty of Medicine (1st–5th years)</td>
<td>December 14, 2009 – January 22, 2010</td>
</tr>
<tr>
<td>Faculty of Dentistry</td>
<td>December 14, 2009 – January 22, 2010</td>
</tr>
<tr>
<td>Faculty of Pharmacy (1st-4th years)</td>
<td>December 14, 2009 – January 22, 2010</td>
</tr>
<tr>
<td><strong>Examination period for 5th year Pharmacy</strong></td>
<td>December 21, 2009 – January 29, 2010</td>
</tr>
<tr>
<td><strong>Extension (retake exam) period</strong></td>
<td></td>
</tr>
<tr>
<td>Medicine, Dentistry, (1st–5th years), Pharmacy (1st-4th years)</td>
<td>January 25 – 29, 2010</td>
</tr>
<tr>
<td>Pharmacy (5th year)</td>
<td>February 1 – 5, 2010</td>
</tr>
<tr>
<td><strong>Second Semester</strong></td>
<td></td>
</tr>
<tr>
<td>Date of registration</td>
<td>January 25 – 29, 2010</td>
</tr>
<tr>
<td>Place of registration</td>
<td>English Secretariat</td>
</tr>
<tr>
<td>First day of the semester</td>
<td></td>
</tr>
<tr>
<td>Medicine and Dentistry</td>
<td>February 1, 2010</td>
</tr>
<tr>
<td>Last day of the semester for 1st-5th years</td>
<td></td>
</tr>
<tr>
<td>Medicine and 1st-4th years Dentistry</td>
<td>May 14, 2010</td>
</tr>
<tr>
<td>Last day of the semester for 5th year Dentistry</td>
<td>April 30, 2010</td>
</tr>
<tr>
<td>Faculty of Pharmacy</td>
<td></td>
</tr>
<tr>
<td>First day of the semester</td>
<td>February 1, 2010</td>
</tr>
<tr>
<td>Last day of the semester (1st-4th years)</td>
<td>May 14, 2010</td>
</tr>
<tr>
<td>Last day of the semester (practice) for 5th year</td>
<td>May 21, 2010</td>
</tr>
</tbody>
</table>
### Examination period for Faculty of Medicine, Faculty of Dentistry

<table>
<thead>
<tr>
<th>Year</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st – 5th year Medicine</td>
<td>May 17 – June 30, 2010</td>
</tr>
<tr>
<td>1st – 4th year Dentistry</td>
<td>May 17 – June 30, 2010</td>
</tr>
<tr>
<td>5th year Dentistry</td>
<td>May 3 – June 11, 2010</td>
</tr>
</tbody>
</table>

### Faculty of Pharmacy

<table>
<thead>
<tr>
<th>Year</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st – 3rd year</td>
<td>May 17 – June 25, 2010</td>
</tr>
<tr>
<td>4th year</td>
<td>May 17 – July 9, 2010</td>
</tr>
</tbody>
</table>

### Autumn examination period for

<table>
<thead>
<tr>
<th>Year</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st – 4th year Medicine</td>
<td>August 16 – 27, 2010</td>
</tr>
<tr>
<td>5th year Medicine</td>
<td>July 1 – 9, 2010</td>
</tr>
<tr>
<td>1st – 4th year Dentistry</td>
<td>August 23 – 27, 2010</td>
</tr>
<tr>
<td>1st – 3rd year Pharmacy</td>
<td>August 16 – 27, 2010</td>
</tr>
<tr>
<td>4th year Pharmacy</td>
<td>July 12 – 16, 2010</td>
</tr>
</tbody>
</table>

### Extension (retake exam) period

<table>
<thead>
<tr>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 30 – September 3, 2010</td>
</tr>
</tbody>
</table>

### Schedule for 6th year Medicine

<table>
<thead>
<tr>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 13, 2009 – May 7, 2010</td>
</tr>
</tbody>
</table>

### General Board Examination Period

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty of Medicine</td>
<td>June 7 – 18, 2010</td>
</tr>
<tr>
<td>Faculty of Dentistry</td>
<td>August 23 – September 3, 2010</td>
</tr>
<tr>
<td>Faculty of Pharmacy</td>
<td>June 14 – June 17, 2010</td>
</tr>
<tr>
<td></td>
<td>May 24 – June 15, 2010</td>
</tr>
</tbody>
</table>

### Holidays

<table>
<thead>
<tr>
<th>Holiday Type</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring (including Eastern) holidays</td>
<td>March 29 – April 5, 2010</td>
</tr>
</tbody>
</table>

### No lectures or seminars

**National/Public holidays:**
- October 23, 2009 (Friday)
- March 15, 2010 (Monday)

**Research Students’ Conference:**
- February 17–18, 2010
- for the 2nd – 6th year students
- On February 19 due to the Conference no lectures or seminars will be held in the NET building!

**Faculty Day:**
- April 14, 2010
- for the students studying at the Faculty of Medicine

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 Hungarian students!

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 pre-requisites prior to taking the course.

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

Article 5

The periods of studies

1. During the semester students attend classes and complete tasks related to the subject. The length of the semester is at least 13 weeks. The length of the lessons (lectures and seminars) is 45 minutes.

   In the 9th semester of the Faculty of Pharmacy the length of the semester is 12 weeks to which 8 weeks professional training is added.

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

   During the exam period the meeting of requirements related to the semester may only be met in exceptional cases.

3. The period of professional training:

   Faculty of Medicine: The weekly number of hours of summer training and training for sixth-year students is 35. In addition every two weeks a 24-hour duty is required.

   Faculty of Pharmacy: The weekly number of hours of summer training is 35 and of professional training preceding the General Board Examination is 40.

Article 7

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

Government Decree 79/2006 (April 5)

Article 24

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

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

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

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

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

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

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

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

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

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

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

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

**Article 8**

**Suspension of studies**

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 obligatory dropping of a course the student fails to obtain the missing credit points by no later than the two following semesters in which the subject is offered,
4. In case the legal relationship terminates for the reason specified in Section 9/1, and the student is admitted to the University through a new application procedure, he/she may not request that his/her earlier studies be recognized.
Article 10

Re-admittance

1. A student whose legal relationship with the university terminates under Article 76 Section 1 point b of the AHE may request re-admittance in writing from the Faculty Committee of Studies within 3 years from the day the resolution on termination became final.
2. Re-admittance is allowed only once during the term of studies.
3. In case of re-admittance the student is obliged to retake all courses he or she attended but the credits of which he or she has not obtained.
4. In case the student used a special permission before re-admittance that is only available for a student on one occasion, he or she will not be entitled to use this special permission after re-admittance.

Article 11

Transfer

1. A student of another institution of higher education may request transfer to Semmelweis University to a major equivalent to his/her major in case the conditions of terminating the legal relationship of the student do not apply.
2. To the Faculty of Medicine transfer is only allowed from the same faculty of another university following the completion of the basic or pre-clinical module. The request must be submitted by 15 July in every year to the Dean’s Office of the Faculty. The following must be attached to the application: the validated original lecture book, the curriculum of the university, and in case of foreign studies the authentic translation of these if they have not been written in a language that is used for education at this university.

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

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

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

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

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

**Article 12**

*Simultaneous (parallel) studies*

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

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

**Article 13**

*Guest students*

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

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

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

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

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

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

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 76% of lectures and seminars is necessary for the end-term signature. If the instructor requires a lower tolerable absence rate than 25%, opportunities must be provided for supplementing the missed seminars by the beginning of the exam period.

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

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

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

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

12. For a semi-final exam with a practice connected to the lectures or for just-practice courses the head of the educational organization unit (the instructor of the course) may offer a grade based on the performance of the student in the regular period of the semester (grade 4 “good” or grade 5 “excellent”). The student is not obliged to accept the grade offered, and may request to take the exam.

13. The student obtains the credit if he or she receives a better grade than fail (“1” or “unsatisfactory” = “nem felelt meg”).
14. There is no legal remedy available regarding the evaluation or the grade.
15. It is regarded as dropping the course if the student fails to obtain
   a) the end-semester signature,
   b) obtains the signature, but does not show up at the exam and does not attempt to
      pass the exam in the examination period,
   c) fails to meet the exam requirements (fails the exam) within the framework of the
      available retakes within the examination period.
16. In case of a course dropped, the credits may not be obtained later than in two later
    semesters when the course is announced, except in case the student suspends his or
    her legal relationship with the university in that period.
17. In case of multi-semester courses with the courses built on each other, by the end of
    the registration period at the latest, and based on the approval of the head of the
    organizational unit the head of the Faculty (dean or director) may permit the student
    solely in one subject to take the next semester of the subject if the student has
    obtained the end-semester signature but failed to meet the exam requirements.
    Obtaining the exam grade in the next semester, however, is only possible if the
    student acquires the credit points from the previous semester.

Article 19

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

1. Exams are to be taken in the examination period. Please, note that taking of an exam
   before the start of the examination period is not allowed!
   The examination period designated to the autumn semester is 6 weeks long plus one
   week retake exam period, and, in case of the spring semester, 8 weeks plus
   one-week retake examination period are provided – 6 weeks in May and June and 2
   weeks in the summer break before the beginning of the autumn semester. The
   one-week time extension period falls in with the one-week registration period straight
   before starting the autumn and the spring semester.
   In the latter period the departments will provide a limited number of exam dates.
2. In the summer examination period after July 31 and in the extension period, improving
   the grade of a successful exam is not allowed. In the extension period only exams
   attempted and failed in the regular examination period can be repeated.
3. The number of exam places provided must be at least twice of the number of
   students. In the examination period the education organizational units must provide at
   least 2 exam days per week for an oral exam and 1 exam day per week for a written
   exam (per course and per class in both cases). Retakes may be made available on the
   3rd calendar day following the failed exam at the earliest.
4. Registration for the exam and the order of rescheduling must be regulated by the
   head of the education organizational unit (the instructor of the course).
5. Absence from the exam must be certified at the head of department or course
   director within 3 working days. Failing to certify absence or denying it cause
   registering “absence” = “nem jelent meg” in the lecture book. It reduces the number
   of exam attempts in the subject concerned.
6. In case of a final examination, it must be conducted by leading instructors (associate
   professors and professors), but the department chair may allow (by recommendation
   of the dean) the participation of senior lecturers. The final examination must be taken
   before an exam committee consisting of at least two members if the final examination
is a retake or if the final exam includes several subjects. The head of the committee may only be a leading instructor.

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

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

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

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

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

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

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

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

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

Article 20

The registration and index-numbers of results

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

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

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

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

6. At the closing of each semester the number of credits and the weighted average of the student must be recorded in the lecture book that has to be attested by the Dean’s signature.

7. Correction in the lecture book can be completed only by the entitled person.

8. Notes and corrections should be signed and dated.

9. The lecture book must be given to the student at termination of the legal relationship except in case of transfer.
Article 21

Accepting substitute and elective courses

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

Article 22

Professional training programs

1. The student is obliged to complete the professional training programs based on the syllabus of the Faculty at the organization units of the Faculty or the accredited education institutes of the Faculty.
2. The dean or director of the Faculty may allow the completion at other universities in the country and their education hospitals, or in a foreign health institute if a statement of acceptance is provided. The student is obliged to submit the certificate of completion issued by the accepting institute at the Dean’s Office before registration.
3. The monitoring of the professional training courses will be organized and controlled by the head of the organization unit responsible for teaching the course. The head is obliged to send a report on the lessons drawn from the professional training program to the Dean by the 15th of September each year.
4. In case of professional training courses no signature may be granted if the student is absent 25% of the time or more.

5. The compulsory professional training is evaluated by either “completed” or “not completed”. The latter has a suspending effect, the student may not continue the studies as long as the professional training program is not completed.

At the Faculty of Pharmacy the professional training preceding the General Board Examination has to be evaluated with the three-level scale: excellent (5), satisfactory (3), unsatisfactory (1).

Article 23

Leaving (pre-degree) certificate – Absolutorium

Article 60 of the AHE

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

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

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

Article 24

The diploma work

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

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. In case any subject is failed, or a partial exam is given a fail, the student must retake the relevant failed part or subject only.
At the Faculty of Pharmacy: In case a part out of the three (written, practical, oral) following each other of the GBE is a failure, the GBE cannot be continued. Retake must be taken just from the failed one.

12. The GBE may only be retaken twice. A GBE may only be retaken in later GBE periods.

13. No credit is granted for passing the GBE.

14. If the GBE is passed over seven years past the obtaining of the final certificate, the prerequisite of the GBE is the successful completion of the final year of studies.

Article 26

The diploma (final certificate)

1. The credit value of subjects accepted by the university through a credit transfer process or the credit value of a diploma issued by another institute of higher education may not exceed 50% of the credit value required by the qualification requirements.

3. The rector of the university may transfer the right of signing the degree on the relevant Dean of the Faculty.

5. The diploma must indicate the grade of the diploma.

7. The issuing of the diploma supplement is the obligation of the relevant Dean’s Office (English Secretariat).

8. The basis of the grade is the general cumulated and weighted average of grades rounded to the hundredth.
   In case of a five-scale evaluation:
   - 4.51–5.00: excellent
   - 3.51–4.50: good
   - 2.51–3.50: fair
   - 2.00–2.50: passing

   In case of a three-scale evaluation:
   - 4.51–5.00: summa cum laude
   - 3.51–4.50: cum laude
   - 2.00–3.50: rite

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

9. The method of calculation:

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

   Where:
   - \( XD \) = the number to be taken into consideration for the diploma grade
   - \( X_n \) = the sum of required final exam grades
   - \( n \) = the number of required final exams
   - \( D \) = the five-scale grade of the diploma work (part of the GBE)
   - \( I \) = the result of the written part (part of the GBE)
   - \( Sz \) = the result of the oral part (part of the GBE)
   - \( Gy \) = the result of the practical part (part of the GBE)
10. By request of the student (and in case the related costs are paid) the university issues a more elegant honorary diploma signed by the rector, the dean and the head of the GBE committee.

Article 27

Special permission

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

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.
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 unauthorised 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. 2009/10/1) 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. Cancelling 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 fulfil
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
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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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Information on language courses
For students starting their studies in the academic year 2009/2010 Hungarian is a compulsory
subject. Students of Medicine and Pharmacy study Hungarian for 5 semesters, whereas for students
of Dentistry the subject is compulsory for 6 semesters.
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 semesters 2-4 (2-5 for Dentistry students) students take 4 classes a week, are required to write
minimum 2 tests and are granted 2 credits for the successful completion of each semester.
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.
For students in their 2nd and 3rd year in the academic year 2009/2010 the previous system is in
effect.
For students of Medicine and Pharmacy, Hungarian is an elective subject in semesters 2-5, with 4
classes per week and 2 credits per semester. In semester 6 it is compulsory, 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.
For Dentistry students, Hungarian is an elective subject in semesters 2-4 with a practical course
grade and 2 credits per semester and 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.
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
### STUDY PROGRAMME

**First year**

#### 1st semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOFIZFIZ_1A</td>
<td>Medical Physics and Statistics I.</td>
<td>2,5</td>
<td>2,5</td>
<td>5</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>A00BIKEM_1A</td>
<td>Medical Chemistry I.</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>A00GENBIO_1A</td>
<td>Medical Biology I.</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
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</tr>
<tr>
<td>AOANTANA11A1A</td>
<td>Anatomy, Histology, Embryology I.</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>semi-final</td>
<td>–</td>
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<tr>
<td>AOHUMANAN21A2</td>
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<td></td>
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<tr>
<td>AOLEKMSZ_1A</td>
<td>Hungarian Medical Terminology I.</td>
<td>–</td>
<td>4</td>
<td>4</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOLEKOTR_1A</td>
<td>Medical Terminology (Latin)</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
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<tr>
<td>AOTSITSN_1A</td>
<td>Physical Education I.</td>
<td>–</td>
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</tbody>
</table>

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

**Obligatory elective subjects**

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKOZTOR_1A</td>
<td>History of Medicine</td>
<td>2</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
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<tr>
<td>AOKIKINO101A_1A</td>
<td>Information Retrieval Science in Library</td>
<td>–</td>
<td>3</td>
<td>pract. mark</td>
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</tbody>
</table>

**Elective Subjects**

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKOZTOH_1A</td>
<td>History of Medical Professionalism</td>
<td>2,5</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AO0MNOHM_1A</td>
<td>Basics of Medical Chemistry</td>
<td>2</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AO0WNI101A_1A</td>
<td>Jewish Medical Ethics I.</td>
<td>2</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
</tbody>
</table>

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

---

1. Department of Anatomy, Histology and Embryology
2. Department of Human Morphology and Developmental Biology
# First year

## 2nd semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOFIZFIZ_2A</td>
<td>Medical Physics and Statistics II.</td>
<td>2,5</td>
<td>2,5</td>
<td>5</td>
<td>final #</td>
<td>Medical Physics and Statistics I.</td>
</tr>
<tr>
<td>AOOBIKEM_2A</td>
<td>Medical Chemistry II.</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>final #</td>
<td>Medical Chemistry I.</td>
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<tr>
<td>AOGENBIO_2A</td>
<td>Medical Biology II.</td>
<td>1,5</td>
<td>2</td>
<td>3</td>
<td>semi-final #</td>
<td>Medical Biology I.</td>
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<tr>
<td>AOGENIMM_1A</td>
<td>Basic Immunology *</td>
<td>2</td>
<td>–</td>
<td>2*</td>
<td>semi-final</td>
<td>Medical Biology I.</td>
</tr>
<tr>
<td>AODANTANA12A1</td>
<td>Anatomy, Histology, Embryology II.</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>semi-final</td>
<td>Anatomy, Histology, Embryology I.</td>
</tr>
<tr>
<td>AOHUMAHA22A2</td>
<td>Hungarian Medical Terminology II.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology I.</td>
</tr>
</tbody>
</table>

**Total Number of Credit Points from Obligatory Subjects**: 24

### Obligatory elective subjects

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADINFINF_1A</td>
<td>Introduction to Medical Informatics</td>
<td>–</td>
<td>1</td>
<td>1</td>
<td>pract. mark</td>
<td>–</td>
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<tr>
<td>ADCSAOHI_1A</td>
<td>Medical Profession</td>
<td>0.67</td>
<td>1.33</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
</tbody>
</table>

### Elective Subjects

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKJIOHE_1A</td>
<td>History of Medical Professionalism</td>
<td>2,5</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOSMAG139_2A</td>
<td>Jewish Medical Ethics II.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Jewish Medical Ethics I.</td>
</tr>
<tr>
<td>AOTDKTDKI_A</td>
<td>Work within the union of ** research students</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>signature</td>
<td>–</td>
</tr>
</tbody>
</table>

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

1 Department of Anatomy, Histology and Embryology
2 Department of Human Morphology and Developmental Biology
# The grade influences the qualification of the Diploma
* From 2009/10 exclusively for those who didn’t complete immunology in 2008/09
** Previous semester’s average result at least good (4). Good or excellent grade in the related subject.
LIST OF TEXTBOOKS

15. Tóth: Concise Inorganic Chemistry for Medical Students. Bp. SOTE
16. Laboratory Manual I-II. (Bp.)
18. Hrabák: Selected Collection of Chemical calculations. (Bp.) SOTE.
19. Sasvári: Bioorganic Compounds. (Bp.) (SOTE)

Recommended textbooks:

ANATOMY, HISTOLOGY AND EMBRYOLOGY

First Semester

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

Anatomy: Osteology, arthrology, myology, skull.
Histology: Basic tissues (except the nerve tissue), histology of blood vessels, blood cells, cells of the bone marrow, lymphatic organs.
Embryology: Spermatogenesis, oogenesis, fertilization, morula, blastula, formation of germinal layers, axes, molecular basis of right-left asymmetry, Hox genes, formation of the placenta, placenta. Factors inducing congenital anomalies. Development of the limbs, trunk and the skull.

Credits: 9
Lectures: 3 hours/week
Laboratory: 6 hours /week
Gross anatomy class: 4 hrs/week
Histology class: 2 hrs/week

Detailed weekly curriculum

<table>
<thead>
<tr>
<th>LECTURE</th>
<th>ANATOMY</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Significance of the subject in the medical training.</td>
<td>Anatomical nomenclature, body axes, terms of orientation.</td>
</tr>
<tr>
<td>2.</td>
<td>General osteology.</td>
<td>Bones of the upper limb.</td>
</tr>
<tr>
<td>4.</td>
<td>General syndesmology and myology</td>
<td>Bones of the upper limb. Joints of the upper limb</td>
</tr>
<tr>
<td>6.</td>
<td>Oocyte, oogenesis.</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Connective tissue, connective tissue cells and ground substance.</td>
<td>Glandular epithelium I.</td>
</tr>
<tr>
<td>11.</td>
<td>Classification of connective tissue. Adipose, chordoid tissue.</td>
<td>Glandular epithelium II.</td>
</tr>
<tr>
<td>12.</td>
<td>Morula, blastula, implantation.</td>
<td></td>
</tr>
<tr>
<td>Topic</td>
<td>LECTURE</td>
<td>LAB</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>-----</td>
</tr>
<tr>
<td>14.</td>
<td>Cartilage.</td>
<td>MID-TERM TEST. Connective tissue II.</td>
</tr>
<tr>
<td>31.</td>
<td>Pelvic diaphragm.</td>
<td>Review.</td>
</tr>
<tr>
<td>33.</td>
<td>Development of the limbs and muscles.</td>
<td>Review.</td>
</tr>
<tr>
<td>34.</td>
<td>Lymphatic tissue. Thymus. Mucosal lymphatic tissue, tonsils.</td>
<td>Review.</td>
</tr>
<tr>
<td>35.</td>
<td>MID-TERM TEST.</td>
<td>Review.</td>
</tr>
<tr>
<td>36.</td>
<td>Development of the vertebreal column and the trunk.</td>
<td>Review.</td>
</tr>
<tr>
<td>37.</td>
<td>Histology and circulation of the spleen and the lymph nodes.</td>
<td>Review.</td>
</tr>
<tr>
<td>38.</td>
<td>Abdominal wall, inguinal canal.</td>
<td>Review.</td>
</tr>
<tr>
<td>40.</td>
<td>Subinguinal hiatus, hernial canals.</td>
<td>Review.</td>
</tr>
<tr>
<td>41.</td>
<td>Pelvis. Statics of the pelvis.</td>
<td>Review.</td>
</tr>
<tr>
<td>42.</td>
<td>Structure of the foot. Mechanism of walking.</td>
<td>Review.</td>
</tr>
<tr>
<td>43.</td>
<td>Clinical anatomy.</td>
<td>Review.</td>
</tr>
<tr>
<td>44.</td>
<td>Clinical anatomy.</td>
<td>Review.</td>
</tr>
<tr>
<td>45.</td>
<td>Clinical anatomy.</td>
<td>Review.</td>
</tr>
</tbody>
</table>
## Second Semester

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

**Subject:** Muscles of the neck. 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 and congenital anomalies of the digestive, the respiratory, the urinary, and the reproductive system. Histology of the placenta and umbilical cord. Histology of the skin and the mammary gland.

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

### Detailed weekly curriculum

<table>
<thead>
<tr>
<th>LECTURE</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic</strong></td>
<td><strong>Anatomy</strong></td>
</tr>
<tr>
<td>3. Development of the face.</td>
<td></td>
</tr>
<tr>
<td>5. Trachea, lung, pleura.</td>
<td></td>
</tr>
<tr>
<td>11. Cardiac wall, annulus fibrosus, cardiac valves.</td>
<td></td>
</tr>
<tr>
<td>LECTURE</td>
<td>Topic</td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>17.</td>
<td>Histology of the stomach.</td>
</tr>
<tr>
<td>18.</td>
<td>Development of the heart, partitioning of cardiac chambers.</td>
</tr>
<tr>
<td>20.</td>
<td>Large intestine and rectum - gross anatomy and histology.</td>
</tr>
<tr>
<td>21.</td>
<td>Development and congenital anomalies of the heart and great blood vessels.</td>
</tr>
<tr>
<td>23.</td>
<td>Histology of the liver.</td>
</tr>
<tr>
<td>27.</td>
<td>Division of the embryonic body cavity. Septum transversum.</td>
</tr>
<tr>
<td>29.</td>
<td>Histology of the testis and the epididymis.</td>
</tr>
<tr>
<td>30.</td>
<td>Development of the digestive tract, development of the foregut, hindgut, the liver and the pancreas.</td>
</tr>
<tr>
<td>32.</td>
<td>Female reproductive tract - overview, histology of the ovary.</td>
</tr>
<tr>
<td>33.</td>
<td>Development of the peritoneum.</td>
</tr>
<tr>
<td>34.</td>
<td>Uterus - parts, topography, blood supply.</td>
</tr>
<tr>
<td>35.</td>
<td>Histology of the uterus, uterine cycle.</td>
</tr>
<tr>
<td>36.</td>
<td>Pronephros, mesonephros, and metanephros.</td>
</tr>
<tr>
<td>LECTURE</td>
<td>LAB</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>38. Lymphatic drainage of the abdomen and pelvis. MID-TERM TEST.</td>
<td>Ovary, uterine tube, Uterus.</td>
</tr>
<tr>
<td></td>
<td>Umbilical cord. Placenta.</td>
</tr>
<tr>
<td></td>
<td>Vagina, labium minus.</td>
</tr>
<tr>
<td>41. Clinical anatomy.</td>
<td>Review.</td>
</tr>
<tr>
<td>42. Migration of germ cells, sex determination, development of the gonads.</td>
<td>Review.</td>
</tr>
<tr>
<td>43. Development of the reproductive organs.</td>
<td>Review.</td>
</tr>
<tr>
<td>44. Congenital anomalies of the reproductive system.</td>
<td>Review.</td>
</tr>
<tr>
<td>45. Pregnancy, delivery.</td>
<td>Review.</td>
</tr>
</tbody>
</table>
ANATOMY, HISTOLOGY AND EMBRYOLOGY
Department of Anatomy, Histology & Embryology
Tutor: Prof. Dr. Miklós Réthelyi

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, group of muscles, fasciae, fascial compartments, arteries, superficial and deep veins, nerves, innervation of the muscles and the skin
3. Animal tissues, epithelial cells, simple epithelium
4. Stratified epithelium
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
1. Behaviour in the dissecting room. Bones and joints of the shoulder girdle and the arm. Demonstration: shoulder joint
2. Dissection of the shoulder and elbow joints.
3. Dissection of the joints of the upper extremity. Dissecting of the upper extremity: removal of the skin, fascia brachii and antebrachii
4. Muscles of the shoulder region, flexor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles. Palmar aponeurosis.
5. Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles. Muscles, vessels and nerves
7. Dissection of the shoulder and elbow joints.
8. Dissection of the joints of the upper extremity. Dissecting of the upper extremity: removal of the skin, fascia brachii and antebrachii
9. Muscles of the shoulder region, flexor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles. Palmar aponeurosis.
10. Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles. Muscles, vessels and nerves

Histology lab.
1. Simple epithelium: Simple squamous (mesothel, pleura); simple cuboidal (kidney); simple columnar (gallbladder); pseudostratified (trachea)
2. Stratified epithelium: squamous, non-ceratinizing (esophagus); squamous ceratinizing (skin); columnar male urethra; transitional epithelium (urinary bladder)
3. Glandular epithelium
4. Stratified epithelium
5. Simple epithelium
6. Simple epithelium
7. Stratified epithelium
8. Glandular epithelium
9. Glandular epithelium
10. Glandular epithelium
11. Glandular epithelium
12. Glandular epithelium
13. Glandular epithelium
14. Glandular epithelium
15. Glandular epithelium
16. Glandular epithelium
17. Glandular epithelium
18. Glandular epithelium

Connective tissue, cells
1. Types of the connective tissue
2. Types of the connective tissue
3. Types of the connective tissue
4. Types of the connective tissue
5. Types of the connective tissue
6. Types of the connective tissue
7. Types of the connective tissue
8. Types of the connective tissue
9. Types of the connective tissue
10. Types of the connective tissue
11. Types of the connective tissue
12. Types of the connective tissue
13. Types of the connective tissue
14. Types of the connective tissue
15. Types of the connective tissue
16. Types of the connective tissue
17. Types of the connective tissue
18. Types of the connective tissue

Vertebrae, ribs, sternum
<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20. Abdominal muscles, rectus sheath</td>
<td></td>
<td>SUPPORTING TISSUE. Hya-line cartilage (rib); fibrous cartilage (meniscus); elastic cartilage (epiglottis).</td>
</tr>
<tr>
<td>21. Diaphragm</td>
<td></td>
<td>BONE, BONE FORMATION, Bone, cross and longitudinal sections. Enchondral ossification the mesoderm (digit); intramembranous ossification (skull).</td>
</tr>
<tr>
<td>22. Gametogenesis, fertilization</td>
<td></td>
<td>REVIEW</td>
</tr>
<tr>
<td>23. Implantation, germ layers, embryonic disc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Development and differentiation of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. Knee joint and the muscles acting upon it</td>
<td>Fascia lata, fascia cruris, plantar aponeurosis</td>
<td></td>
</tr>
<tr>
<td>27. Foot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. Early embryonic and placental circulation. Structure of the placenta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. The motor system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31. Muscle tissue I</td>
<td>Completion of the dissection</td>
<td>PLACENTA. UMBILICAL CORD</td>
</tr>
<tr>
<td>32. Muscle tissue II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. Herniae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34. Neural tissue: neurons and supporting cells derived from the neural tube</td>
<td>TEST. Trunk, lower extremity.</td>
<td>MUSCLE TISSUE. Smooth muscles (gut); striated muscle (skeletal muscle); cardiac muscle (heart)</td>
</tr>
<tr>
<td>35. Neural tissue: neurons and supporting cells derived from the neural crest</td>
<td>Skull</td>
<td></td>
</tr>
<tr>
<td>36. Neural tissue: synapses, effectors, Receptors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37. Sphenoid and ethmoid bones</td>
<td>Skull</td>
<td>NEURAL TISSUE. CELLS. Multipolar neurons (spinal cord, autonomous ganglion, cerebral cortex, cerebellar cortex); pseudounipolar neurons (spinal ganglion)</td>
</tr>
<tr>
<td>38. Temporal bone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39. Calvaria, base and interior of the skull</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40. Facial skeleton, orbit</td>
<td>Skull</td>
<td>NERVE FIBERS.</td>
</tr>
<tr>
<td>41. Nasal cavity, paranasal sinuses</td>
<td></td>
<td>GJUAL CELLS.</td>
</tr>
<tr>
<td>42. Oral cavity, pterygopalatine and infratemporal fossae</td>
<td></td>
<td>Peripheral nerve, glial cells (spinal cord, cerebral cortex)</td>
</tr>
<tr>
<td>43. Mandible, temporomandibular joint</td>
<td>Skull</td>
<td>EFFECTORS, RECEPTORS.</td>
</tr>
<tr>
<td>44. Atlantoooccipital and atlantoaxial joints. Suboccipital muscles</td>
<td></td>
<td>Motor end plate, sensory nerve ending.</td>
</tr>
<tr>
<td>45. Development of the skull. Fontanelles</td>
<td>TEST. Skull</td>
<td>Review</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- BLOOD, BONE MARROW: Blood smear, bone marrow smear.
- SUPPORTING TISSUE: Hya-line cartilage (rib); fibrous cartilage (meniscus); elastic cartilage (epiglottis).
- BONE, BONE FORMATION: Bone, cross and longitudinal sections. Enchondral ossification the mesoderm (digit); intramembranous ossification (skull).
## Second Semester

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduction. Significance of the vascular and lymphatic organs in the medical curriculum and in the medical practice</td>
<td>Heart: surface structure, vessels, myocard</td>
<td>VESSELS. Elastic artery (carotid artery); middle size artery and vein, arterioles, venules, capillaries (tongue)</td>
</tr>
<tr>
<td>2. Histology of the vessel wall</td>
<td>Chambers of the heart, valves</td>
<td>LYMPHATIC ORGANS.</td>
</tr>
<tr>
<td>3. Lymphatic organs: lymph node, spleen</td>
<td>Pericard. In situ heart dissection Demonstration of unfixed heart.</td>
<td>Lymph node, spleen</td>
</tr>
<tr>
<td>4. Lymphatic organs: thymus, tonsils</td>
<td>Test. Heart, anatomy and embryoology</td>
<td>HEART. Wall structure, conducting system, DIGESTIVE SYSTEM. Lip, tongue, filiforme, fungiform and valvate papillae.</td>
</tr>
<tr>
<td>5. Surface structures of the heart, anulus fibrosus, myocard</td>
<td>Muscles of the face (demonstration) Tongue, cervical organs on the visceral complex</td>
<td>Foliate papilla (demonstration)</td>
</tr>
<tr>
<td>6. Chambers of the heart, valves</td>
<td>Esophagus, aorta</td>
<td>DIGESTIVE SYSTEM.</td>
</tr>
<tr>
<td>7. Vessels of the heart, conducting system, toponography. Pericard</td>
<td>Abdominal organs, peritoneum.</td>
<td>Tooth development, esophagus</td>
</tr>
<tr>
<td>8. Development of the heart and the pericard I</td>
<td>Hepatoduodenal ligament, mesentery</td>
<td></td>
</tr>
<tr>
<td>9. Development of the heart and the pericard II</td>
<td>Unpaired branches of the abdominal aorta, tributaries of the portal vein</td>
<td></td>
</tr>
<tr>
<td>10. Viscera, introduction. Histological structure of the solid and hollow viscera</td>
<td>Demonstration of the abdominal visceral topography in the cadaver of the second year and in unfixed cadaver. Larynx, trachea</td>
<td></td>
</tr>
<tr>
<td>12. Muscles of mastication. Tongue</td>
<td>Demonstration</td>
<td></td>
</tr>
<tr>
<td>15. Development of the face, malformations</td>
<td>Hepatoduodenal ligament, mesentery</td>
<td></td>
</tr>
<tr>
<td>16. Pharynx, structure of the wall, soft palate</td>
<td>Unpaired branches of the abdominal aorta, tributaries of the portal vein</td>
<td></td>
</tr>
<tr>
<td>17. Infrathyroid muscles, cervical fascia, para- and retropharyngeal space</td>
<td>Demonstration of the abdominal visceral topography in the cadaver of the second year and in unfixed cadaver. Larynx, trachea</td>
<td></td>
</tr>
<tr>
<td>18. Esophagus, stomach: anatomy and histology</td>
<td>Portal vein and tributaries</td>
<td></td>
</tr>
<tr>
<td>19. Development of the foregut</td>
<td>Demonstration</td>
<td></td>
</tr>
<tr>
<td>21. Colon, rectum: anatomy and histology</td>
<td>Hepatoduodenal ligament, mesentery</td>
<td></td>
</tr>
<tr>
<td>22. Liver and biliary apparatus: anatomy</td>
<td>Unpaired branches of the abdominal aorta, tributaries of the portal vein</td>
<td></td>
</tr>
<tr>
<td>23. Liver and biliary apparatus: histology</td>
<td>Portal vein and tributaries</td>
<td></td>
</tr>
<tr>
<td>24. Pancreas: anatomy and histology</td>
<td>Demonstration of the abdominal visceral topography in the cadaver of the second year and in unfixed cadaver. Larynx, trachea</td>
<td></td>
</tr>
<tr>
<td>25. Development of the middle and hindgut</td>
<td>Portal vein and tributaries</td>
<td></td>
</tr>
<tr>
<td>26. Peritoneum</td>
<td>Demonstration of the abdominal visceral topography in the cadaver of the second year and in unfixed cadaver. Larynx, trachea</td>
<td></td>
</tr>
<tr>
<td>27. Cartilages, joints and muscles of the larynx</td>
<td>Portal vein and tributaries</td>
<td></td>
</tr>
<tr>
<td>28. Skeleton of the larynx, laryngeal inlet, rima glottidis</td>
<td>Demonstration of the abdominal visceral topography in the cadaver of the second year and in unfixed cadaver. Larynx, trachea</td>
<td></td>
</tr>
<tr>
<td>29. Trachea, lung: anatomy, Pleura</td>
<td>Portal vein and tributaries</td>
<td></td>
</tr>
<tr>
<td>30. Histology of the lung, Development of the respiratory system</td>
<td>Portal vein and tributaries</td>
<td></td>
</tr>
<tr>
<td>31. Kidney, ureter; anatomy</td>
<td>Portal vein and tributaries</td>
<td></td>
</tr>
<tr>
<td>32. Histology and vascular structure of the kidney</td>
<td>Portal vein and tributaries</td>
<td></td>
</tr>
<tr>
<td>33. Urinary bladder: anatomy and histology</td>
<td>Portal vein and tributaries</td>
<td></td>
</tr>
<tr>
<td>34. Development of the uropoetic system, malformations</td>
<td>Portal vein and tributaries</td>
<td></td>
</tr>
<tr>
<td>Lectures</td>
<td>Dissecting room</td>
<td>Histology lab.</td>
</tr>
<tr>
<td>----------</td>
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<td>---------------</td>
</tr>
<tr>
<td>35. Testis, spermiogenesis, epididymis</td>
<td>Retroperitoneum</td>
<td>Demonstration: ureter</td>
</tr>
<tr>
<td>36. Ductus deferens, spermatic cord, seminal vesicle, prostate, male urethra: anatomy and histology</td>
<td>Pelvic organs.</td>
<td>MALE GENITAL SYSTEM.</td>
</tr>
<tr>
<td>37. Penis: anatomy and histology. Male perineum</td>
<td>Peritoneum in the pelvis.</td>
<td>Testis, epididymis, seminal vesicle, prostate</td>
</tr>
<tr>
<td>38. Ovary and uterine tube: anatomy and histology. Oogenesis.</td>
<td>Pelvic organs, topography.</td>
<td>MALE GENITAL SYSTEM.</td>
</tr>
<tr>
<td>39. Anatomy of the uterus, broad ligament</td>
<td>Perineum</td>
<td>Penis, FEMALE GENITAL SYSTEM.</td>
</tr>
<tr>
<td>40. Histology of the uterus, menstrual cycle</td>
<td>Review</td>
<td>Ovary, uterine tube</td>
</tr>
<tr>
<td>41. Vagina, outer female genital organs. Female perineum</td>
<td>TEST, Urogenital system</td>
<td>FEMALE GENITAL SYSTEM.</td>
</tr>
<tr>
<td>42. Development of the genital organs, bisexuality</td>
<td>Development of the diaphragm</td>
<td>Uterus, vagina, mammary gland</td>
</tr>
<tr>
<td>43. Separation of the body cavities.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44. Development of the major arteries and veins. Fetal circulation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Semester examination (semi-final)

MEDICAL BIOLOGY I.
Tutor: Dr. Valéria László

First Semester

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

**Second Semester**

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

**BASIC IMMUNOLOGY**

**Tutor:** Dr. András K. Fülöp

**Important note:** The course is to be taken by those students who started their studies before the 2009/2010 academic year and did not complete it in their first year of studies. Students starting their studies in the 2009/2010 academic year will take the course in the third year of their studies.

**Second Semester**

Lectures (2 hours/week)

- Significance and process of the immune response
- Cells and receptors in the immune system
- Principles of natural immunity, immunogenetics/genomics and MHC
- Antigen and antigen presentation
- Antigen receptors and their formation
- T lymphocytes and cell-mediated immune response
B lymphocytes and humoral immune response
The complement system
Inflammation and acute phase response
Immune response in infections
Transplantation and tumor immunology
Hypersensitivity reactions
Autoimmunity
Neuroimmunology
Review of immune functions

Notes
The semester is completed with a written exam.
Deadline of claims for exemptions: 28th February
Updated information is available on our web site: www.dgci.sote.hu

MEDICAL PHYSICS AND STATISTICS
Tutors: Dr. István Voszka – Faculty of Medicine, Faculty of Dentistry

First Semester

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

Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture (2.5 hours per week)</th>
<th>Laboratory (2.5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bonds and their significance in macromolecular structure; Boltzmann distribution, examples</td>
<td>UV-dosimetry</td>
</tr>
<tr>
<td>2</td>
<td>Liquid crystals, membranes</td>
<td>Dosimetry</td>
</tr>
<tr>
<td>3</td>
<td>Electronic properties of condensed materials (solids, macromolecules)</td>
<td>Amplifier</td>
</tr>
<tr>
<td>4</td>
<td>Statistics I. Basics of biostatistics Most important distribution functions</td>
<td>Gamma energy determination</td>
</tr>
<tr>
<td>5</td>
<td>Statistics II. Hypothesis testing</td>
<td>Pulse generators (e.g. pacemaker, defibrillator)</td>
</tr>
<tr>
<td>6</td>
<td>Ultrasound properties, generation of ultrasound</td>
<td>Sine wave oscillators (high frequency heat therapy, ultrasound)</td>
</tr>
<tr>
<td>7</td>
<td>Ultrasonography, Doppler methods</td>
<td>Audiology</td>
</tr>
<tr>
<td>8</td>
<td>Magnetic resonance imaging</td>
<td>Isotope diagnostics</td>
</tr>
<tr>
<td>9</td>
<td>Summary of medical imaging methods (CT, SPECT, PET, endoscopy, thermography)</td>
<td>Statistics II. (Statistical inferences)</td>
</tr>
<tr>
<td>10</td>
<td>Basic concepts of Thermodynamics, First law</td>
<td>Flow of fluids. Electric model of vascular circulation</td>
</tr>
<tr>
<td>11</td>
<td>General description of transport phenomena, Onsager’s equation, examples</td>
<td>Electrocardiography</td>
</tr>
<tr>
<td>12</td>
<td>Diffusion; transport across membrane, resting potential</td>
<td>Diffusion</td>
</tr>
<tr>
<td>13</td>
<td>Action potential, properties, interpretation</td>
<td>Sensory function</td>
</tr>
<tr>
<td>14</td>
<td>General characteristics of sensory function, hearing as example</td>
<td>Repetition</td>
</tr>
</tbody>
</table>

MEDICAL CHEMISTRY

Tutor: Dr. András Hrabák

First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures Topic (Introduction to Medical Chemistry)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–4</td>
<td>Chemical equilibrium (electrolytes, acids and bases, ionization equilibrium of water, buffers, solubility product) (Mortimer, pp 412–517)</td>
</tr>
<tr>
<td>4–5</td>
<td>Solutions, osmosis, gases dissolved in water (Mortimer, pp 302–328)</td>
</tr>
<tr>
<td>5–7</td>
<td>Thermochemistry, chemical thermodynamics, chemical kinetics (Mortimer pp 87–114, pp 364–412, pp 517–542)</td>
</tr>
<tr>
<td>7</td>
<td>Complexes (Mortimer 723–730)</td>
</tr>
<tr>
<td>8–9</td>
<td>Inorganic chemistry, nomenclature</td>
</tr>
<tr>
<td>10–14</td>
<td>Organic chemistry (Erdő: manuscript)</td>
</tr>
</tbody>
</table>
Week Practice
1 Introduction, safety rules
2 Acid-base titrations I.
3 Acid-base titrations II.
4 Acid-base titrations III.
5 Conductometric determination of NaCl concentration.
   Titrations based on precipitation.
6 1st Midterm exam.
7 Titration based on complex formation. Double and complex salts.
8 Conductometry. *
9 Spectrophotometry. *
10 Electrochemistry. *
11 Discussion. *
12 2nd Midterm exam.
13 Permanganometric titration.
14 Iodometric titration.

*according to a schedule issued later.

MEDICAL CHEMISTRY
(Biochemistry)

Second Semester

Topics
Amino acids
Proteins 1
Proteins 2–3
Proteins 4–5
Enzymes 1–2
Enzymes 3–4
Enzymes 5
Carbohydrates 1
Carbohydrates 2
Lipids 1–2
Lipids 3 Dr. Tőth
Nucleotides
DNA-RNA 1–2
Easter Holiday
Introduction to
Bioenergetics 1–2
Introduction to
Bioenergetics 3
Bioenergetics 1
Bioenergetics 2–3
Bioenergetics 4–5
Bioenergetics 6–7
Practice
Proteins I.
Proteins II.
Chromatography on columns
Paper and thin layer chromatography
Gel electrophoresis
Electrometric titr. of amino acids
Midterm test I.
Urease study I.
Urease study II.
Discussion
Carbohydrates I.
Carbohydrates II.
Midterm test II.
Lipids
Rewriting of unsuccessful tests

Recommended books for learning:
1. General chemistry – Mortimer: Chemistry
3. Inorganic chemistry – selected chapters in a manuscript edited by Dr. M. Tóth.
4. Practical: Laboratory manual 1.

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. In 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. Dr. László Kalabay  
**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 class size:** 55/180

**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: Dr. Péter Torzsá Tel: 355-8530 e-mail: torzsza@csot.sote.hu  
**Application date:** 30th January  
**Precondition:** Only for students in the 1st year.

**MEDICAL INFORMATICS**

Institute of Development and Higher Education in the field of Medical Informatics  
**Director:** Dr. András Jávor  
**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, biomatematical 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
   EM project portal: Database powered websites. Basic concepts of HTML, PHP, SQL servers

4. (3 hours) EM project portal: Creation of an example PHP file (using basic HTML markups, input form to pass variables to php)

5. (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.

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.)

5. (3 hours) Movie edition.
   Exam: theoretical and practical
FIRST AID
Tutor: Dr. Erzsébet Márton

Topics


BLS (Basic Life Support)

- AED (Automated External Defibrillator), PAD (Public Access Defibrillation)
- BLS + AED (management of situations)
- BLS + AED (Management of situations)


Poisoning. Drugs. Drunkenness.

HUNGARIAN LANGUAGE, TERMINOLOGY – See information before the Study Programs

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

Week 1

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

Week 2

(practicing the things learnt in the previous week)

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

Week 3

(practicing the things learnt in the previous two weeks)

Helping with making the beds of patients unable to move
Helping with changing beds of patients unable to move
Helping with moving active and passive patients in bed
Helping with the patients’ placing in chairs, stretchers and wheelchairs
Helping with the washing of not seriously ill patients, mouth hygiene and nail care
Helping with the dressing and undressing of the patients
Taking temperatures
Practicing how to feel the pulse
Helping with keeping linen cupboards, wardrobes and equipment clean and tidy
Week 4
(practicing the things learnt in the previous 3 weeks)

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

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

#### Second Year

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOANTANA13A</td>
<td>Anatomy, Histology, Embryology III.</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>semi-final</td>
<td>Anatomy, Histology, Embryology II.</td>
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<tr>
<td>AOANTANA23A</td>
<td>Anatomy, Histology, Embryology II.</td>
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<tr>
<td>AOKIKELT_1A</td>
<td>Medical Physiology I.</td>
<td>6</td>
<td>5</td>
<td>11</td>
<td>semi-final</td>
<td>Anatomy, Histology, Embryology II. Medical Physics and Statistics II. Medical Chemistry II.</td>
</tr>
<tr>
<td>AOBIBKM_1A</td>
<td>Medical Biochemistry, Molecular Biology I.</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>semi-final</td>
<td>Medical Chemistry II.</td>
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<tr>
<td>AOMAGSZO_1A</td>
<td>Medical Sociology</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
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<tr>
<td>DOTSITSN_3A</td>
<td>Physical Education III.</td>
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</tbody>
</table>

**Total Number of Credit Points from Compulsory Subjects** 27

<table>
<thead>
<tr>
<th>Obligatory elective subject</th>
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</thead>
<tbody>
<tr>
<td>AOCSABKO_1A</td>
<td>Introduction to Clinical Medicine</td>
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</tbody>
</table>

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

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

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

#### 4th semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOANTANA14A1</td>
<td>Anatomy, Histology, Embryology IV.</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>final#</td>
<td>Anatomy, Histology, Embryology III.</td>
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<tr>
<td>AOHUMANA24A2</td>
<td>Medical Physiology II.</td>
<td>6</td>
<td>5</td>
<td>10</td>
<td>final#</td>
<td>Anatomy, Histology, Embryology III.</td>
</tr>
<tr>
<td>AOKIKELT_2A</td>
<td>Medical Biochemistry, Molecular Biology II.</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>final#</td>
<td>Medical Biochemistry I.</td>
</tr>
<tr>
<td>AOTSITSN_4A</td>
<td>Physical Education IV.</td>
<td>–</td>
<td>1</td>
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<td>Physical Education III.</td>
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</tbody>
</table>

#### Total Number of Credit Points from Compulsory Subjects

21

#### Obligatory elective subject:

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Subject Name</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOHUMKLA_1A</td>
<td>Introduction to Clinical Anatomy</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract.mark</td>
<td>Anatomy, Histology, Embryology III., Introduction to Clinical Med.</td>
</tr>
</tbody>
</table>

### Notes
- 4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory electives and electives after the 3rd year curriculum.
- Total Number of Credit Points from Obligatory elective / Elective Subjects

4

---

1 Department of Anatomy, Histology and Embryology
2 Department of Human Morphology and Developmental Biology
# The grade influences the qualification of the Diploma
LIST OF TEXTBOOKS


Recommended textbooks:

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

First Semester

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

Lectures
1. The significance of the nervous system in the medical curriculum and practice.
2. Development of the telecephalon, Meninges anatomy of the hemispheres, lateral ventricles
5. Blood supply of the brain. Cerebrospinal fluid
6. Differentiation of the neural tube, development of the spinal cord
7. Anatomy of the spinal cord, spinal segment
8. Neuronal architecture of the spinal cord: proprioceptive and withdrawal reflex arches
9. Neuronal architecture of the spinal cord: mesencephalon 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 nucleus (extrapyramidal system) r. supraclavicularis, r. Axillaris
19. Motor pathways
20. Patient demonstration
21. Cerebral cortex
22. Trigeminal nerve
23. Facial nerve
24. Glossopharyngeal, vagus, accessory and hypoglossal nerves
25. Olfactory and gustatory systems
26. Outer and middle coats of the eyeball
27. Lens, chambers of the eye, vitreous body, accommodation
28. Inner coat of the eyeball, retina
29. Outer eye muscles, movement of the eye

Dissecting room
1. Divisions of the brain meninges, arteries and veins of the brain, surface structure of the hemispheres basis cerebris.
4. Lateral ventricles, third ventricle
5. Fourth ventricle

Histology lab.
1. Spinal cord, brain stem, cerebellum
2. Spinal cord, spinal ganglion, medulla oblongata
3. Cross sections of the brain stem. Demonstration: spinal cord
4. Coronal and horizontal sections Cerebellum, cerebral cortex
5. Test. Anatomy of the brain and the spinal cord; nuclei, pathways (tracts), embryology. Regio (r.) frontalis, r. infraorbitalis et buccalis, r. supracavicularis, r. Axillaris
6. R. frontalis, r. infraorbitalis et buccalis, r. Supraclavicularis, r. Axillaris
7. R. parotideomasseterica, r. mediana colli, r. infraclavicularis, r. Deltoida
8. Hypoglossal nerves
9. R. parotideomasseterica, r. mediana colli, r. infraclavicularis, r. Deltoida.
10. Dissection of the eye
11. R. submandibularis, trigonum caroticum, fossa scalenotrachealis. Demonstration: middle and inner ear
<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>30. Protective and lacrimal apparatus of the eye</td>
<td>R. submandibularis, trigonum</td>
<td>Development of the eye</td>
</tr>
<tr>
<td>31. Optic nerve, visual pathway, visual cortex, caroticum, fossa scalenotrahealis.</td>
<td>Demonstration: middle and inner ear</td>
<td></td>
</tr>
<tr>
<td>32. Outer ear, tympanic cavity, auditory ossicles auditory tube</td>
<td>Finishing the dissection of the regions</td>
<td></td>
</tr>
<tr>
<td>33. Bony and membraneous labyrinth</td>
<td>Test, Organs of special senses, regions of the head and the neck, cranial nerves</td>
<td></td>
</tr>
<tr>
<td>34. Vestibular system</td>
<td>In situ dissection of the brain</td>
<td>Endocrine organs. Pituitary, pineal gland, thyroid gland, parathyroid gland</td>
</tr>
<tr>
<td>35. Organ of Corti</td>
<td>In situ dissection of the brain</td>
<td>Endocrine organs. Adrenal gland, pancreas, testis, ovary, placenta</td>
</tr>
<tr>
<td>37. Limbic system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38. Hypothalamo-hypophyseal systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39. Endocrine organs: pituitary, pineal gland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40. Endocrine organs: thyroid gland, parathyroid, adrenal gland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41. Parasympathetic nervous system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42. Sympathetic nervous system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>43. Enteral nervous system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44. Skin and appendages I.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45. Skin and appendages II., mammary gland</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ANATOMY, HISTOLOGY AND EMBRYOLOGY

Second Semester

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topography of the upper extremity, clinical correlations</td>
<td>Regio (r.) nuchae, r. dorsalis scapulae, r. glutea, r. cubiti post., r. carpi dors., r. poplitea, r. Plantaris. Dissection of the back</td>
<td>Review I.</td>
</tr>
<tr>
<td>Topography of the lower extremity (clinical correlates), mechanism of walking</td>
<td>R. nuchae, r. dorsalis scapulae, r. Glutea, r. cubiti post., r. carpi dors., r. Poplitea, r. plantaris. Dissection of the back</td>
<td></td>
</tr>
<tr>
<td>Surface- and sectional anatomy I. Head</td>
<td>R. brachii post., r. antebrachii post., r. dorsi manus, r. femoris post., r. cruris post., retromalleolar regions</td>
<td></td>
</tr>
<tr>
<td>Surface- and sectional anatomy II. Head</td>
<td>R. brachii post., r. antebrachii post., r. dorsi manus, r. femoris post., r. cruris post., retromalleolar regions</td>
<td></td>
</tr>
<tr>
<td>Surface- and sectional anatomy III. Thorax I.</td>
<td>TEST. Dorsal regions, spinal nerves.</td>
<td></td>
</tr>
<tr>
<td>Surface- and sectional anatomy IV. Thorax II.</td>
<td>R. cubiti ant., r. carpi volaris, r. Palmaris, r. genus ant., r. dorsalis pedis, r. Abdominis mediana, r. inguinalis</td>
<td></td>
</tr>
<tr>
<td>Surface- and sectional anatomy V. Abdominal cavity I.</td>
<td>R. cubiti ant., r. carpi volaris, r. Palmaris, r. genus ant., r. dorsalis pedis, r. Abdominis mediana, r. inguinalis</td>
<td></td>
</tr>
<tr>
<td>Surface- and sectional anatomy VI.</td>
<td>R. brachii ant., r. antebrachii ant., r. Subinguinalis, r. femoris ant., r. crus ant. Projection of the thoracic organs into the anterior thoracic wall</td>
<td>Review II.</td>
</tr>
<tr>
<td></td>
<td>R. brachii ant., r. antebrachii ant.,</td>
<td></td>
</tr>
</tbody>
</table>

84
Abdominal cavity II.

Surface- and sectional anatomy VII.
Male pelvic organs and perineum
Dissection of the abdominal organs
Projection of the abdominal organs to the thoracic cavity
Dissection of the organs in the thoracic cavity
Surface- and sectional anatomy VIII.
Female pelvic organs and perineum
Dissection of the abdominal organs
Surface- and sectional anatomy IX.
Skull (brain)
Dissection of the abdominal organs
Intracranial compartments

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

Semester examination (final)

ANATOMY, HISTOLOGY AND EMBRYOLOGY

Third Semester

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


Credits: 8
Lecture: 3 hours/week
Laboratory: 5 hours/week (5 hrs/week anatomy, or 2.5 hrs anatomy and 2.5 hrs histology)
## Detailed weekly curriculum

<table>
<thead>
<tr>
<th>LECTURE</th>
<th>Anatomy</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nervous system - Introduction.</td>
<td>Spinal cord, its blood supply.</td>
<td></td>
</tr>
<tr>
<td>6. Peripheral sensory receptors and peripheral effector nerve endings.</td>
<td>Lateral ventricle, 3rd ventricle, oblique section of the brain, coronal sections of the brain.</td>
<td></td>
</tr>
<tr>
<td>7. Structural organization of the spinal cord. Gray matter.</td>
<td></td>
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</tr>
<tr>
<td>8. White matter of the spinal cord. Pathways of the spinal cord.</td>
<td></td>
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</tr>
<tr>
<td>10. Internal organization of the brain stem.</td>
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<tr>
<td>11. Nuclei of cranial nerves.</td>
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<tr>
<td>12. Diencephalon.</td>
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<tr>
<td>13. Thalamus.</td>
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<tr>
<td>17. The dorsomedial (medial lemniscus) sensory system. Somatosensory cortex.</td>
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<tr>
<td>18. The ventrolateral (spinothalamic) sensory system.</td>
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<tr>
<td>23. Pyramidal tract.</td>
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<td></td>
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<tr>
<td>25. Histology of cerebellar cortex.</td>
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<tr>
<td>27. Reticular formation and its neural connections.</td>
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</tr>
<tr>
<td>28. Autonomic nervous system, I. Thoracolumbar sympathetic system.</td>
<td></td>
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</tr>
<tr>
<td>29. Craniosacral parasympathetic system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. Development of the nervous system, I. Early stage of development, differentiation of the neural tube.</td>
<td>Review (internal organization of the central nervous system, peripheral nerves).</td>
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</tr>
<tr>
<td></td>
<td>Endocrine organs. II. Thyroid and parathyroid gland. Adrenal gland. Pancreas.</td>
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</tbody>
</table>
**LECTURE LAB**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Anatomy</th>
<th>Histology</th>
</tr>
</thead>
<tbody>
<tr>
<td>31. Development of the nervous system, II. Histogenesis, craniocaudal differentiation.</td>
<td>MID-TERM TEST</td>
<td>Eye, orbit dissection.</td>
</tr>
<tr>
<td>32. Development of the nervous system, III. Development of the brain stem and cerebellum.</td>
<td>Eye, orbit dissection.</td>
<td></td>
</tr>
<tr>
<td>33. Development of the nervous system, IV. Development of the telencephalon, basal ganglia, choroid plexus</td>
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<td></td>
</tr>
<tr>
<td>34. Development of the nervous system, V. Neural crest and its derivatives.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36. Development of the eye.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40. Clinical anatomy.</td>
<td>Inner ear.</td>
<td></td>
</tr>
<tr>
<td>41. Clinical anatomy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42. Auditory apparatus, outer ear, middle ear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44. Organ of Corti. Auditory pathway.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45. Development of the auditory apparatus.</td>
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</tbody>
</table>

**Fourth Semester**

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

**Subject:** Regional anatomy of the head, neck, trunk, and body cavities. Gross anatomy of the pharynx, larynx, and peritoneum. Section anatomy.  
**Credits:** 5  
**Lecture:** 1 hour/week  
**Laboratory:** 4 hours anatomy or 2 hours anatomy plus 2 hours histology
### Detailed weekly curriculum

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

<table>
<thead>
<tr>
<th>Topic</th>
<th>Anatomy</th>
<th>Histology</th>
</tr>
</thead>
</table>

MEDICAL PHYSIOLOGY

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

First Semester

Week  Lecture (6 hours per week)


5  Cardiac functions: Biomechanical basis of cardiac functions. Cardiac pump. Signal transduction in the cardiomyocytes.

6  Cardiac cycle. Electrical activity of the heart. Transmembrane potentials. Conduction in cardiac fibers, cardiac excitability, cardiac rhythmicity, electrocardiography, echocardiography.


8  Cardiovascular control mechanisms: Systemic control mechanisms. Control of cardiac output.


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.

Regulation of respiration: Neural and chemical control of respiration. Adaptation of cardiorespiratory system and skeletal muscle to physical exercise.

Whole body metabolism. Gastrointestinal motility and secretions. Innervation of the GI tract. GI hormones. Regulation of GI motility. Regulation of GI secretion: Salivary secretion; Gastric secretion; Exocrine pancreas.


**Practice** (5 hours weekly)

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

**MEDICAL PHYSIOLOGY**

**Second Semester**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture (6 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Formation and excretion of urine. Physiological functions, their significance in the maintenance of the internal milieu and in healthy functioning of the organism. Renal circulation. Glomerular filtration.</td>
</tr>
</tbody>
</table>
of mineralocorticoids and control of their secretion. Effects of adrenal androgens and estrogens. Endocrine regulation of calcium metabolism and the physiology of bone.


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
First Semester
Schedule of the lectures

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intermediary metabolism, citric acid cycle, carbohydrate metabolism - overview. Digestion of carbohydrates. Glycolysis I.</td>
</tr>
<tr>
<td>2</td>
<td>Glycolysis II. Entry of other hexoses into glycolysis. Gluconeogenesis. Regulation of glycolysis and gluconeogenesis.</td>
</tr>
<tr>
<td>3</td>
<td>Pentose phosphate pathway, generation of NADPH2. Metabolism of glycogen. Metabolism of disaccharides. Metabolism of aminosugars</td>
</tr>
<tr>
<td>5</td>
<td>Phospholipid metabolism. Lipoprotein metabolism Cholesterol metabolism and transport. Biosynthesis of steroid hormones. Biosynthesis and biological role of eicosanoids</td>
</tr>
<tr>
<td>6</td>
<td>Degradation of proteins. Catabolism of amino acids I.</td>
</tr>
<tr>
<td>7</td>
<td>Catabolism of amino acids II. Urea cycle Biosynthesis of amino acids</td>
</tr>
<tr>
<td>8</td>
<td>Metabolism of nucleotides I. Metabolism of nucleotides II.</td>
</tr>
<tr>
<td>9</td>
<td>Metabolism of porphyrins. Biotransformation I.</td>
</tr>
<tr>
<td>10</td>
<td>Biotransformation II. Integration of metabolism.</td>
</tr>
<tr>
<td>11</td>
<td>Intermediary metabolism of tissues I. Intermediary metabolism of tissues II.</td>
</tr>
<tr>
<td>12</td>
<td>Regulation of intermediary metabolism in fasting and in well-fed state I.</td>
</tr>
<tr>
<td>13</td>
<td>Regulation of intermediary metabolism in fasting and in well-fed state II. Hormonal effects in the intermediary metabolism</td>
</tr>
</tbody>
</table>

First Semester
Schedule of the practical lessons (experiments and seminars)

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Safety rules for work in the laboratory. Amidolytic activity of trypsin. Substrate specificity of trypsin and chymotrypsin.</td>
</tr>
<tr>
<td>2</td>
<td>Computer-simulated enzyme kinetics</td>
</tr>
<tr>
<td>3</td>
<td>Competitive inhibition of succinate dehydrogenase</td>
</tr>
<tr>
<td>4</td>
<td>Lactic acidosis</td>
</tr>
<tr>
<td>5</td>
<td>Oxidative phosphorylation in mitochondria</td>
</tr>
<tr>
<td>6</td>
<td>Consultation. Midterm exam I.</td>
</tr>
<tr>
<td>7</td>
<td>Allosteric regulation of pyruvate kinase.</td>
</tr>
<tr>
<td>8</td>
<td>Fructose intolerance, McArdle’s disease</td>
</tr>
<tr>
<td>9</td>
<td>Digestion of lipids, role of bile acids. Purification of trypsin by affinity chromatography.</td>
</tr>
<tr>
<td>10</td>
<td>Lipoprotein lipase, carnitine deficiency</td>
</tr>
<tr>
<td>11</td>
<td>Determination of serum cholesterol and triglyceride</td>
</tr>
<tr>
<td>12</td>
<td>Consultation. Midterm exam II.</td>
</tr>
<tr>
<td>13</td>
<td>Determination of serum transaminase and creatine kinase activities</td>
</tr>
<tr>
<td>14</td>
<td>Hereditary hyperammonemias. Vitamin B12 deficiency, methylmalonic academia.</td>
</tr>
</tbody>
</table>
### MEDICAL BIOCHEMISTRY, MOLECULAR BIOLOGY II.

**Second Semester Schedule of the lectures**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Structure of the genome: an overview. Replication of DNA in prokaryotes (principles of the replication process) Special properties of DNA replication in eukaryotes. Repair of DNA and its significance.</td>
</tr>
<tr>
<td>2</td>
<td>Mutations and their consequences. Transcription in prokaryotes, the transcription unit in prokaryotes Transcription in eukaryotes: the structure of the genes, regulatory elements on the DNA, maturation of the primary transcript.</td>
</tr>
<tr>
<td>6</td>
<td>Control of cell cycle</td>
</tr>
<tr>
<td>7</td>
<td>Basic methods in recombinant DNA technology. PCR as a new tool in medical diagnosis</td>
</tr>
<tr>
<td>8</td>
<td>Human genome project</td>
</tr>
<tr>
<td>10</td>
<td>Enzyme linked plasma membrane surface receptors, protein tyrosine kinase receptors, cGMP in signaling. Nuclear receptors, bHLH transcription factors: HIF, Ah receptor</td>
</tr>
<tr>
<td>14</td>
<td>The function of the platelets, activation, adhesion and aggregation. The biochemistry of endothelium. Pathological aspects of hemostatic imbalance.</td>
</tr>
</tbody>
</table>
Second Semester
Schedule of the practical lesson (experiments and seminars)

1 LDH isoenzymes; Acut liver disease
2 Metabolism of xenobiotics; Chronic liver disease
3 Biochemical aspects of physical exercise
4 Determination of blood sugar level
5 Midterm examination I.
6 Na+, K+ ATP-ase activity
7 Signal transduction of insulin
8 Biochemistry of hemostasis
9 Hemostatic abnormalities
10 Practice: Induction of β-galactosidase in E. coli
11 Midterm examination II.
12 Bioinformatics (Electronic database management systems in molecular diagnosis).
13 Recombinant DNA techniques I.
14 Practice/Seminar:: Recombinant DNA techniques II.

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:

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

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

Course requirements, methods of monitoring:

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

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

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

Textbook:

2. Handouts for the lectures will be accesible on the homepage of the Institute of behavioural Sciences: www.magtud.sote.hu.
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 specificitity, synaptic plasticity

Neural crests and placods

Origin of neural crest and placods, flexibility and heterogeneity of neural crest cells.

Myogenesis

Embryonic origin of skeletal, smooth and cardiac muscles. Induction of myogenesis, regulatory factors of myogenesis, regeneration of skeletal muscles

Teratogenesis

Morphogens, morphogenetic period, cancer as an altered development, stem cell therapy, teratogens.

Primordial germ cells (PGC)

Origins, migration, mitosis, differences between male and female PGC, maturations

Fertilization

Acrosome reaction, prevention of polyspermy, activation of egg metabolism

Embryonic induction

Spemann organization center, mosaic and regulative zygotes

Early embryonic development

Cleavage, neurulation, X-chromosome inactivation, parental imprinting

Gastrulation

Differentiation of mesoderm, primary tissue formation

Axis formations in birds and mammals

Symmetry breaking, left-right asymmetry formation.
Organogenesis

2 hours/week, 2 credits

Prof. Dr. Imre Oláh

Department of Human Morphology and Developmental Biology

Axial and paraxial mesoderm
Formation of axial skeleton, somitogenesis, clinical correlations

Segmentation and Homeobox genes
Retinoic acid, gain of function, loss of function

Intermediate mesoderm I.
Development of kidney, clinical correlations

Intermediate mesoderm II.
Development of gonads, sex determination, clinical correlations

Lateral plate mesoderm, splanchnopleura I.
Vasculogenesis, blood formation, hematopoietic stem cell.

Lateral plate mesoderm, splanchnopleura II.
Early development of the heart. Cardiac anlage, cardiac jelly, cardiac skeleton, development of coronary vessels, contribution of neural crest cells, epicardial body, clinical correlations

Lateral plate mesoderm, somatopleura
Development of the limb, evolutionary and ontogenetic aspects, clinical correlations

Branchiogenic arches and their derivatives
Clinical correlations

Prechordal plate as head organizer, AVE-anterior ventral entoderm
Cranial neural crest and head mesoderm, somatic and visceral head and neck, clinical correlations

Development of arteries
Branchiogenic, parietal and visceral segmental arteries, clinical correlations

Epithelio-mesenchymal interactions
Ecto-entoderm --- mesoderm, tooth and lung development, clinical correlations

Neurogenesis
Antero-posterior, and craniosacral regionalization, axon guidance, growth, synapsis formation

Development of eye
Retina, lens

Entoderm formation
Foregut and its derivatives (thymus, thyroid, parathyroid), development of pancreas

Environmental regulation of development
Developmental symbiosis, seasonality and sex, nutritional contribution
# STUDY PROGRAMME

## Third Year

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKORK0R_1A</td>
<td>Pathophysiology and Clinical Lab. Diagnostics I.</td>
<td>2.5</td>
<td>2.5</td>
<td>5</td>
<td>semi-final</td>
<td>basic module</td>
</tr>
<tr>
<td>AOMIKMIIK_1A</td>
<td>Medical Microbiology I.</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>semi-final</td>
<td>basic module</td>
</tr>
<tr>
<td>AOPTPAT11A²</td>
<td>Pathology and Histopathology I.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>semi-final</td>
<td>basic module</td>
</tr>
<tr>
<td>AOBEL1BEL21A²</td>
<td>Internal Medicine I.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>semi-final</td>
<td>basic module</td>
</tr>
<tr>
<td>AOMAGPSZ_1A</td>
<td>Medical Psychology I.</td>
<td>10/sem (0.66)</td>
<td>20/sem (1.33)</td>
<td>1</td>
<td>pract. mark</td>
<td>basic module</td>
</tr>
</tbody>
</table>

Total Number of Credit Points from Compulsory Subjects: 25

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

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

¹ 1st Department of Pathology and Experimental Cancer Research
² 2nd Department of Pathology
³ 1st Department of Internal Medicine
⁴ 2nd Department of Internal Medicine
⁵ 3rd Department of Internal Medicine

# The grade influences the qualification of the Diploma
<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKORKOR_2A</td>
<td>Pathophysiology and Clinical Lab. Diagnostics II.</td>
<td>2.5</td>
<td>2.5</td>
<td>5</td>
<td>final #</td>
<td>Pathophysiology and Clin. Lab. Diagn. I.</td>
</tr>
<tr>
<td>AOMIKMIK_2A</td>
<td>Medical Microbiology II.</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>final #</td>
<td>Medical Microbiology I.</td>
</tr>
<tr>
<td>AOPTKPAT12A</td>
<td>Pathology and Histopathology II.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>final #</td>
<td>Pathology and Histopathology I.</td>
</tr>
<tr>
<td>AOB1BEL1L2A</td>
<td>Internal Medicine II.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>semi-final</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>AOMAGPSZ_2A</td>
<td>Medical Psychology II.</td>
<td>10/sem</td>
<td>20/sem</td>
<td>2</td>
<td>final #</td>
<td>Medical Psychology I.</td>
</tr>
<tr>
<td>AOMAGOET_1A</td>
<td>Medical Ethics (Bioethics)</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>basic module</td>
</tr>
<tr>
<td>A0FRMFRM_1A</td>
<td>Pharmacology, Pharmacotherapy I.</td>
<td>1.5</td>
<td>0.5</td>
<td>2</td>
<td>pract. mark</td>
<td>basic module</td>
</tr>
</tbody>
</table>

Total Number of Credit Points from Compulsory Subjects: 30

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

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

1st Department of Pathology and Experimental Cancer Research
2nd Department of Pathology
1st Department of Internal Medicine
2nd Department of Internal Medicine
3rd Department of Internal Medicine

# The grade influences the qualification of the Diploma.
LIST OF TEXTBOOKS


Recommended textbooks:

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

## Lectures

<table>
<thead>
<tr>
<th>I. Pathophysiology of Circulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart Failure I</td>
</tr>
<tr>
<td>Heart Failure II</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. Pathophysiology of Fluid and Electrolyte Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disturbances in Fluid, Na+ and K+ Balance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>III. Pathophysiology of Acid-Base Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory and Metabolic Disturbances</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IV. Pathophysiology of the Kidney</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Renal Failure</td>
</tr>
<tr>
<td>Chronic Renal Failure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>V. Pathophysiology of Respiration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory Insufficiency</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VI. Pathophysiology of the Peripheral Circulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shock</td>
</tr>
<tr>
<td>Hypertension</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VII. Pathophysiology of Metabolic Disorders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metabolic Disturbances in Diabetes</td>
</tr>
<tr>
<td>Hepatic Insufficiency</td>
</tr>
<tr>
<td>Nutritional Disorders, Obesity</td>
</tr>
<tr>
<td>Disturbances in Protein, Amino Acid and Metabolism Purine Metabolism Disorders</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VIII. Pathophysiology of the Gastrointestinal Tract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastric and Duodenal Ulcer</td>
</tr>
<tr>
<td>Malabsorption-Maldigestion</td>
</tr>
</tbody>
</table>

## Lab

<table>
<thead>
<tr>
<th>The normal electrocardiogram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrhythmias I: Disorders of Impulse Formation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Arrhythmias II: Disorders of Impulse Conduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrhythmias III: Complex Arrhythmias</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ECG Abnormalities in Cardiac Hypertrophy and Metabolic Disorders</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECG Sign of the Abnormalities of Coronary Circulation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ECG Signs and Laboratory Diagnosis of Myocardial Infarction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice, Examples, Exam</td>
</tr>
<tr>
<td>Laboratory Evaluation of Fluid and Electrolyte Disorders</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Laboratory Evaluation of Acid-Base Disorders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory Evaluation of Kidney Diseases Disorders</td>
</tr>
<tr>
<td>Laboratory Evaluation of Hemostatic Disorders</td>
</tr>
<tr>
<td>Laboratory Evaluation of Carbohydrate Disorders</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Laboratory Diagnosis of Hepatobiliary Diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory Evaluation of GI-Tract Function</td>
</tr>
</tbody>
</table>
# PATHOPHYSIOLOGY

**Second Semester**

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IX. Pathophysiology of Hematologic Disorders</strong></td>
<td></td>
</tr>
<tr>
<td>Anemias</td>
<td>Evaluation of the Leukocyte-Monocyte System</td>
</tr>
<tr>
<td>Myeloproliferative Diseases</td>
<td>Evaluation of Erythropoietic System</td>
</tr>
<tr>
<td>Disturbances in Hemostasis</td>
<td>Evaluation of Anemias</td>
</tr>
<tr>
<td><strong>X. Pathophysiology of Lipid Metabolism, Atherosclerosis</strong></td>
<td></td>
</tr>
<tr>
<td>Lipid Abnormalities, Atherosclerosis</td>
<td>Evaluation of Granulocytopenic Disorders</td>
</tr>
<tr>
<td><strong>XI. Pathophysiology of the Immune System</strong></td>
<td></td>
</tr>
<tr>
<td>Inflammation</td>
<td>Hematologic and Immunologic</td>
</tr>
<tr>
<td>Immunodeficiency and Tumor Immunity</td>
<td>Evaluation of Lymphoid Disorders</td>
</tr>
<tr>
<td>Autoimmunity</td>
<td>Hematologic and Immunologic</td>
</tr>
<tr>
<td><strong>XII. Pathophysiology of Endocrine Disorders</strong></td>
<td></td>
</tr>
<tr>
<td>Disturbances in Pituitary Function</td>
<td>Evaluation of Lymphoproliferative Disorders</td>
</tr>
<tr>
<td>Disturbances in Thyroid Function</td>
<td>Tour in a Routine Clinical Laboratory</td>
</tr>
<tr>
<td>Disturbances in Adrenal Gland and Sexual Function</td>
<td></td>
</tr>
<tr>
<td>Metabolic Bone Diseases</td>
<td></td>
</tr>
<tr>
<td><strong>XIII. Pathophysiology of the Nervous System</strong></td>
<td></td>
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<tr>
<td>Motor and Sensory Disturbances</td>
<td></td>
</tr>
<tr>
<td>Disturbances in &quot;Higher&quot; CNS Function</td>
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</tr>
</tbody>
</table>
# First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>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.</td>
</tr>
<tr>
<td>3.</td>
<td>Defence mechanisms of the host against infections. Active and passive immunisation. Vaccines.</td>
</tr>
<tr>
<td>10.</td>
<td>Pathogens of the gastrointestinal tract II: Yersinia (yersiniosis), Shigella (shigellosis), Salmonella (salmonellosis). The enteral fever (Salmonella typhii and paratyphii), as well as Yersinia pestis.</td>
</tr>
<tr>
<td>12.</td>
<td>Acid-fast bacteria: Mycobacterium, Nocardia. Actinomycetes</td>
</tr>
<tr>
<td>14.</td>
<td>Rickettsiales, Chlamydiales, Mycoplasmales</td>
</tr>
</tbody>
</table>
# First Semester

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

### MEDICAL MICROBIOLOGY

# Second Semester

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

1st Dept. of Pathology and Experimental Cancer Research  
**Tutor:** Dr. Gergely Rácz

## First Semester

**Lectures** (14 weeks): (all lectures for the whole class are held at the 2nd Dept. of Pathology), Mo 10:50-12:00, We 8:00-9:10.  
**Autopsy and histology practice** (14 weeks): We 9:30-12:50, absence: more than 3 absences invalidate semester. Missing any half (either histology or autopsy) of the practice is considered an absence.

### Lectures (3 hours per week)

<table>
<thead>
<tr>
<th>1. Introduction</th>
<th>Histopathology practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autopsy demonstration</td>
<td>Nutmeg liver H&amp;E (1)</td>
</tr>
<tr>
<td>Heart failure H&amp;E (7)</td>
<td>Pulmonary edema H&amp;E (2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Cell injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemorrhagic infarction of the lung H&amp;E (4)</td>
</tr>
<tr>
<td>Emolliation of the brain H&amp;E (5)</td>
</tr>
<tr>
<td>Fatty degeneration of the liver H&amp;E (12)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<td>Fatty degeneration of the liver H&amp;E (12)</td>
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</table>

<table>
<thead>
<tr>
<th>4. Inflammation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phlegmone H&amp;E (13)</td>
</tr>
<tr>
<td>Cerebral abscess H&amp;E (14)</td>
</tr>
<tr>
<td>Fibrous pericarditis H&amp;E (15)</td>
</tr>
<tr>
<td>Pseudomembranous colitis (16)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Inflammation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actinomycosis H&amp;E (98)</td>
</tr>
<tr>
<td>Candidiasis PAS (17)</td>
</tr>
<tr>
<td>Aspergillosis (slide demonstration)</td>
</tr>
<tr>
<td>Acute appendicitis H&amp;E (66)</td>
</tr>
<tr>
<td>Oxyuris in appendix H&amp;E (67)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6. Wound healing, regeneration and fibrosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic polyposis sinusitis H&amp;E (18)</td>
</tr>
<tr>
<td>Granulation tissue H&amp;E (19)</td>
</tr>
<tr>
<td>Foreign-body granuloma H&amp;E (20)</td>
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</tbody>
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<thead>
<tr>
<th>7. Immunopathology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dysplasia of the cervical epithelium (CIN) H&amp;E (24)</td>
</tr>
<tr>
<td>In-situ carcinoma of the cervix H&amp;E (25)</td>
</tr>
<tr>
<td>Invasive squamous cell carcinoma of the cervix H&amp;E (26)</td>
</tr>
</tbody>
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<thead>
<tr>
<th>8. Neoplasia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metaplasia (slide demonstration)</td>
</tr>
<tr>
<td>Squamous cell carcinoma of the larynx H&amp;E (10)</td>
</tr>
<tr>
<td>Tubulovillous adenoma of the colon H&amp;E (30)</td>
</tr>
<tr>
<td>Adenocarcinoma of the colon H&amp;E (31)</td>
</tr>
<tr>
<td>Invasive squamous cell carcinoma of the cervix H&amp;E (26)</td>
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<tr>
<th>9. Neoplasia</th>
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<tbody>
<tr>
<td>Chronic abscess (9)</td>
</tr>
<tr>
<td>Foreign-body granuloma H&amp;E (20)</td>
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<tr>
<th>10. Genetic diseases</th>
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<tbody>
<tr>
<td>Dysplasia of the cervical epithelium (CIN) H&amp;E (24)</td>
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<td>In-situ carcinoma of the cervix H&amp;E (25)</td>
</tr>
<tr>
<td>Invasive squamous cell carcinoma of the cervix H&amp;E (26)</td>
</tr>
<tr>
<td>Adenocarcinoma of the colon H&amp;E (31)</td>
</tr>
<tr>
<td>Metastasis in lymph node H&amp;E (36)</td>
</tr>
<tr>
<td>Metastatic carcinoma in the lung (slide demonstration)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>11. Genetic diseases</th>
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</thead>
<tbody>
<tr>
<td>Leimyoma H&amp;E (37)</td>
</tr>
<tr>
<td>Leimyosarcoma (slide demonstration)</td>
</tr>
<tr>
<td>Lipoma H&amp;E (11)</td>
</tr>
<tr>
<td>Liposarcoma (slide demonstration)</td>
</tr>
<tr>
<td>Malignant fibrous histiocytoma H&amp;E (38)</td>
</tr>
<tr>
<td>Immunohistochemistry (slide demonstration)</td>
</tr>
<tr>
<td>Lectures (3 hours per week)</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>14. Environmental and nutritional pathology</td>
</tr>
<tr>
<td>15. Blood vessels</td>
</tr>
<tr>
<td>16. Blood vessels</td>
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<tr>
<td>17. Heart</td>
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<tr>
<td>18. Heart</td>
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<tr>
<td>19. Respiratory system</td>
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<td>20. Respiratory system</td>
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<td>21. Respiratory system</td>
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<tr>
<td>22. Infectious diseases</td>
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<tr>
<td>23. Infectious diseases</td>
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<tr>
<td>24. Infectious diseases</td>
</tr>
<tr>
<td>25. Gastrointestinal tract</td>
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<tr>
<td>26. Gastrointestinal tract</td>
</tr>
<tr>
<td>27. Gastrointestinal tract</td>
</tr>
<tr>
<td>28. Pancreas</td>
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</tbody>
</table>

**PATHOLOGY**

**Second Semester**

<table>
<thead>
<tr>
<th>Lectures (3 hours per week)</th>
<th>Histopathology practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>29. Liver and biliary system</td>
<td>Alcoholic hepatitis H&amp;E (70)</td>
</tr>
<tr>
<td>30. Liver and biliary system</td>
<td>Chronic hepatitis H&amp;E (71)</td>
</tr>
<tr>
<td>31. Liver and biliary system</td>
<td>Liver cirrhosis H&amp;E (72)</td>
</tr>
<tr>
<td>32. Kidney</td>
<td>Hepatocellular carcinoma H&amp;E (73)</td>
</tr>
<tr>
<td>33. Kidney</td>
<td>Cavernous haemangiomata of liver H&amp;E (35)</td>
</tr>
<tr>
<td>34. Kidney</td>
<td>Chronic cholecytitis H&amp;E (74)</td>
</tr>
</tbody>
</table>
Lectures (3 hours per week)  

33. Kidney  
- Chronic pancreatitis H&E (75)  
- Acute hemorrhagic necrotising pancreatitis H&E (76)  
- Pancreatic pseudocyst (slide demonstration)  
- Adenocarcinoma of pancreas H&E (77)  
- Islet cell tumor of pancreas (slide demonstration)  

34. Urinary tract  
- Diabetic nodular glomerulosclerosis  
- (Kimmelstiel-Wilson) H&E (78)  
- Glomerulonephritis H&E (79)  
- End stage kidney H&E (80)  
- Acute rejection in transplanted kidney H&E (22)  

35. Male genital system  
- Acute pyelonephritis H&E (81)  
- Renal cell carcinoma H&E (83)  
- Normal adrenal cortex (slide demonstration)  
- Wilms’s tumor H&E (84)  
- Transitional cell carcinoma H&E (28)  

36. Gynecologic pathology  
- Adenocarcinoma of prostate H&E (87)  
- Seminoma H&E (88)  
- Embryonal carcinoma (slide demonstration)  
- Teratoma H&E (89)  

37. Gynecologic pathology  
- Chronic pyelonephritis H&E (82)  
- Nodular hyperplasia of the prostate H&E (85)  
- Renal cell carcinoma H&E (86)  
- Endometriosis (slide demonstration)  

36. Gynecologic pathology  
- Acute pyelonephritis H&E (81)  
- Renal cell carcinoma H&E (83)  
- Normal adrenal cortex (slide demonstration)  
- Wilms’s tumor H&E (84)  
- Transitional cell carcinoma H&E (28)  

40. Blood and lymphoid organs  
- Placenta retention H&E (90)  
- Exauterine 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)  

41. Blood and lymphoid organs  
- Chronic cervicitis H&E (123)  
- 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 cystadenomacarcinoma (slide demonstration)  

42. Blood and lymphoid organs  
- Borderline serous papillary cystadenoma of the ovary H&E (126)  
- Serous papillary cystadenocarcinoma of the ovary (slide demonstration)  
- Granulosa cell tumor (slide demonstration)  
- Fibrocystic disease of the breast H&E (101)  

43. Blood and lymphoid organs  
- Peri- and intracanalicular fibroadenoma of the breast H&E (33)  
- Phyllid 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)  
- 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**
- Non Hodgkin lymphoma (low grade) H&E (107)
- Non Hodgkin lymphoma (high grade) H&E (108)
- Tonsillar lymphoma (slide demonstration)
- MALT lymphoma (slide demonstration)
- Hodgkin lymphoma H&E (109)
- Hodgkin lymphoma histologic types (slide demonstration)

**49. Bones and joints**
- Colloid goiter H&E (110)

**50. Bones and joints**
- 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)

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

**52. Eye**
- Verruca vulgaris H&E (100)
- Naevus pigmentosus H&E (39)
- Malignant melanoma H&E (40)
- Metastatic melanoma (slide demonstration)
- Bowen’s disease (slide demonstration)
- Capillary haemangioma of the skin H&E (34)

**53. Skeletal muscle**
- Purulent meningitis H&E (117)

**54. Nervous system**
- Meningioma H&E (119)
- Glioblastoma multiforme H&E (120)
- Schwannoma H&E (121)
- Neuroblastoma H&E (122)
- Ganglioneuroblastoma (slide demonstration)
- Paraganglioma (slide demonstration)

**55. Nervous system**
- Review

**56. Nervous system**
- Review

**57. Clinicopathologic conference**

Semifinal Exam: Autopsy demonstration on the last autopsy practice will be graded 1 to 5. This grade, if not 1, will be added to the scores of written test. Written test is composed of 100 Qs (true-false, simple choice, problem solving, combination, multiple choice, relations, medical term, assay, scores are 0-65:1; 66-73:2; 74-83:3; 84-89:4; 90-105:5). Further details available in the semifinal exam protocol provided one month before examination period.
Pathology and Histopathology
2nd Department of Pathology
Head of Department: Prof. Dr. József Timár
Tutor: Dr. András Kiss

Index
Lectures
List of textbooks
Histopathology practices
Slides for the histopathology exam
List of oral questions
General information
Lectures, practices, competition
Consultation, Examinations - Semifinal
Examinations - Final
Schedule
Schedule for the academic year

Lectures
1st Semester - 2009

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture</th>
<th>Topic</th>
</tr>
</thead>
</table>
| 09.07  | Dr. Timár | Introduction
History of pathology, its significance in medicine. Health and sickness. -
Clinicopathology - Demonstration of establishing diagnosis from biopsy specimen to the pathological report and therapeutic suggestion. |
| 09.09  | Dr. Timár | Cell injury
Reversible cell injury (hydropic swelling, atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia, intracellular storage).
Irreversible cell injury (necrosis, apoptosis, ischemic cell injury, external agents, calcification, hyaline, aging). |
| 09.14  | Dr. Schaff | Hemodynamic disorders
Basic notions in hemodynamics. Hemorrhage, active and passive hyperemia.
| 09.16  | Dr. Timár | Inflammation I.
| 09.21  | Dr. Schaff | Inflammation II:
Chronic inflammation, fibrosis, scarring. Granulomatous inflammations: (tuberculosis, syphilis, etc.) |
| 09.23  | Dr. Kiss | Infectious diseases
Diseases caused by viruses (tick-borne viruses, pox, variola, herpes, CMV, EBV, rubella, variella, mumps, influenza), Rickettsiae, Spirochetes.
Bacterial (tularaemia, pertussis, legionella, brucellosis, listeriosis, clostridial infections (tetanus, botulism), Streptococci) Actinomycosis. Mycobacteria (tbc, leprosy). Protozoal (malaria, toxoplasmosis, amebiasis) |
<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture No.</th>
<th>Topic</th>
<th>Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>09.28</td>
<td>M. 7</td>
<td>Immunopathology. Constituents of the immune system. Hypersensitive reactions. Allergy. Transplantation. Immunodeficiency. AIDS. Infections of immunodeficient individuals.</td>
<td>Dr. Tímár</td>
</tr>
<tr>
<td>09.30</td>
<td>W. 8</td>
<td>Immunopathology Autoimmune diseases. Etiology. Monosystemic diseases (e.g. ch. Athrophic gastritis, myasthenia gravis Basedow dis., Hashimoto thyroiditis, Addison dis., insulin dependent diabetes mellitus, sclerosis multiplex) and Oligo-polysystemic diseases (e.g. SLE, Sjögren's sy, RA, scleroderma, dermatomyositis)</td>
<td>Dr. Tímár</td>
</tr>
<tr>
<td>10.05</td>
<td>M. 9</td>
<td>Neoplasia I. Causes of neoplasia. Epidemiology. Chemical, physical and biological carcinogenesis. Tumor prevention.</td>
<td>Dr. Schaff</td>
</tr>
<tr>
<td>10.07</td>
<td>W. 10</td>
<td>Neoplasia II. Molecular mechanisms of tumor development: protooncogenes, oncogenes, tumor suppressor genes, growth factors, tumor associated inherited genetic disorders</td>
<td>Dr. Tímár</td>
</tr>
<tr>
<td>10.12</td>
<td>M. 11</td>
<td>Neoplasia III. Tumor growth, tumor progression, metastasis.</td>
<td>Dr. Tímár</td>
</tr>
<tr>
<td>10.19</td>
<td>M. 13</td>
<td>Neoplasia V. Prognostic factors in tumor pathology. Staging and grading of tumors. TNM. Handling of surgical biopsy material.</td>
<td>Dr. Kulka</td>
</tr>
<tr>
<td>10.21</td>
<td>W. 14</td>
<td>Neoplasia VI. - Clinical Pathology Outlines of tumor therapy: chemo-, radio- and surgical therapy</td>
<td>Dr. Dank</td>
</tr>
<tr>
<td>10.28</td>
<td>W. 16</td>
<td>Methods of diagnostic pathology: Diagnostic parameters, requirements, which guide the clinical protocols. Molecular diagnostics of tumors. Targeted therapy.</td>
<td>Dr. Kiss</td>
</tr>
<tr>
<td>11.02</td>
<td>M. 17</td>
<td>Environmental and nutritional pathology Smoking, alcoholism, drugs, iatrogenic injuries. Environmental chemical and physical factors. Obesity, protein malnutrition, vitamins.</td>
<td>Dr. Kerényi</td>
</tr>
<tr>
<td>11.11</td>
<td>W. 20</td>
<td>The heart I. Congenital heart diseases. Ischemic heart disease. Heart failure.</td>
<td>Dr. Glasz</td>
</tr>
<tr>
<td>11.16</td>
<td>M. 21</td>
<td>The heart II. Rheumatic heart disease. Inflammatory diseases of the endocardium and myocardium. Cardiomyopathies. Systemic diseases involving the heart.</td>
<td>Dr. Glasz</td>
</tr>
</tbody>
</table>
### 2nd Semester - 2009

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.30. M. 25.</td>
<td>Dr. Schaff</td>
<td><strong>Gastrointestinal tract I.</strong>&lt;br&gt;Esophagus (anatomy and developmental disorders, inflammation, trauma, tumors). Stomach (congenital abnormalities, inflammations, peptic ulcer, neoplasms)</td>
</tr>
<tr>
<td>12.09. W. 28.</td>
<td>Dr. Timár</td>
<td><strong>Clinicopathology:</strong>&lt;br&gt;Cases are presented which illustrate the complexity of diagnostic procedures used in pathology.</td>
</tr>
<tr>
<td>02.03. W. 32.</td>
<td>Dr. Schaff</td>
<td><strong>Liver and biliary system II.</strong>&lt;br&gt;Alcoholic liver disease, toxic liver injury. Hemochromatosis. Vascular disorders. Neoplasms.</td>
</tr>
<tr>
<td>02.08. M. 33.</td>
<td>Dr. Schaff</td>
<td><strong>Liver and biliary system III.</strong>&lt;br&gt;Gallbladder and bile ducts (congenital anomalies, cholecystitis, cholelithiasis, choledangiitis, neoplasms).</td>
</tr>
<tr>
<td>02.10. W. 34.</td>
<td>Dr. Székely</td>
<td><strong>Pancreas I.</strong>&lt;br&gt;Pathology of the exocrine pancreas: Developmental abnormalities, inflammations, tumors of the exocrine pancreas. Diabetes mellitus.</td>
</tr>
<tr>
<td>02.15. M. 35.</td>
<td>Dr. Székely</td>
<td><strong>Endocrinology I.</strong>&lt;br&gt;Pathology of the endocrine pancreas: Diabetes mellitus.</td>
</tr>
<tr>
<td>02.17. W.</td>
<td>Dr. Székely</td>
<td><strong>TMD Conference</strong></td>
</tr>
<tr>
<td>Date</td>
<td>Lecture</td>
<td>Topic</td>
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<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>03.01.</td>
<td>Dr. Timár</td>
<td>Kidney II. Tubulointerstitial diseases, Hydronephrosis, Lithiases, Tumors of the kidney.</td>
</tr>
<tr>
<td>03.03.</td>
<td>Dr. Székely</td>
<td>Urinary tract. Kidney transplantation, Congenital abnormalities of the urinary tract, Inflammations, Urinary bladder (malformations, inflammations, tumors). Urethra.</td>
</tr>
<tr>
<td>03.08.</td>
<td>Dr. Székely</td>
<td>Male genital system. Diseases of the epididymis, testis, prostate, penis and scrotum.</td>
</tr>
<tr>
<td>03.17.</td>
<td>Dr. Schaff</td>
<td>Gynecologic pathology I. Precancerous lesions of the cervix, Cervix carcinoma, Endometrial hyperplasias, Benign and malignant tumors of the endometrium.</td>
</tr>
<tr>
<td>03.22.</td>
<td>Dr. Schaff</td>
<td>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, Ovarian diseases.</td>
</tr>
<tr>
<td>03.24.</td>
<td>Dr. Kulka</td>
<td>Breast I. Symptoms and diagnosis of breast diseases. Malformations, Benign symptomatic lesions (inflammations, fibrocystic disease, epithelial dysplasia and its significance, benign tumors)</td>
</tr>
<tr>
<td>04.05.</td>
<td>Dr. Kulka</td>
<td>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.</td>
</tr>
<tr>
<td>04.07.</td>
<td>Dr. Székely</td>
<td>Cytopathisms - cancer screening - Clinicopathology. 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).</td>
</tr>
<tr>
<td>04.12.</td>
<td>Dr. Székely</td>
<td>Hemopoetic system. Normal function (bone marrow, lymph nodes, spleen), Morphology and immunologic evaluation, Disorders of platelets and coagulation, Anemias, polycytemia, Neutrophilia, Proliferative disorders of mast cells, Monocytosis, Sinus histiocytosis, Benign disorders of lymphoid cells.</td>
</tr>
<tr>
<td>04.14.</td>
<td>Dr. Timár</td>
<td>Dean’s Days Clinicopathology – Case reports.</td>
</tr>
<tr>
<td>04.19.</td>
<td>Dr. Székely</td>
<td>Blood and lymphoid organs I. Chronic myeloproliferative syndromes (CML, myelofibrosis, thrombocytopenia), Acute myeloproliferative syndromes (acute leukaemia), Lymphocytic leukaemia, Disorders of the spleen.</td>
</tr>
<tr>
<td>04.21.</td>
<td>Dr. Székely</td>
<td>Blood and lymphoid organs II. Lymphomas (Hodgkin, non-Hodgkin), Metastatic tumors in bone marrow and lymph nodes.</td>
</tr>
<tr>
<td>04.26.</td>
<td>Dr. Arató</td>
<td>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.</td>
</tr>
</tbody>
</table>
04.28. W. 52. Lecture
Dr. Schaff
Nervous system I.

05.03. M. 53. lecture
Dr. Schaff
Nervous system II.
Demyelinating diseases. Neurodegenerative diseases. Pathology of the eye and ear. Metabolic diseases

05.05. W. 54. lecture
Dr. Schaff
Nervous system III.

05.10. M. 55. lecture
Dr. Tímár
Skin

05.12. W. 56. lecture
Dr. Tímár
Childhood Tumors

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

Recommended literature
4. Zalatnai A 500 Practice Questions about Pathology (Semmelweis Univ. of Medicine)
6. Székely E: Practice on Histopathology I-II. (Semmelweis Univ. of Medicine)- video

Histopathology practices and slides for the final examination
1. practice
   - Nutmeg liver H&E
   - Fatty degeneration of the liver H&E
   - Pulmonary edema H&E
   - Haemosiderin in alveolar macrophages H&E
   - Haemosiderin in alveolar macrophages Prussian blue

2. practice
   - Thromboembolism – organising thrombus (H&E)
   - Hemorrhagic infarction of the lung H&E
   - Anemic infarction of the kidney H&E
## 3. practice
- Acute appendicitis H&E
- Fibrinous pericarditis H&E
- Fistula - Chronic abscess
- Granulation tissue H&E
- Foreign-body granuloma H&E
- Candidiasis PAS

## 4. practice
- **DIAGNOSTIC METHODS IN PATHOLOGY – HANDLING and SAMPLING of SURGICAL BIOPSY MATERIAL**

## 5. practice
- HPV infection in cervix – LSIL H&E
- Squamous cell metaplasia of the cervix H&E
- In-situ carcinoma of the cervix - HSIL H&E
- Invasive squamous cell carcinoma of the cervix H&E

## 6. practice
- Squamous cell papilloma H&E
- Squamous cell carcinoma of the larynx H&E
- Tubulovillous adenoma and adenocarcinoma of the colon H&E
- Metastasis in lymph node H&E
- Liver metastases of colorectal carcinoma

## 7. practice
- Leiomyoma H&E
- Leiomyosarcoma (slide demonstration)
- Lipoma H&E
- Lipesarcoma (slide demonstration)
- Rhabdomyosarcoma H&E
- Capillary haemangioma of the skin H&E

## 8. practice
- **DIAGNOSTIC METHODS IN PATHOLOGY – IMMUNOHISTOCHEMISTRY**

## 9. practice
- Benign nephrosclerosis H&E
- Coronary-sclerosis H&E
- Myocardial infarction, early H&E
- Myocardial infarction, old H&E
- Endocarditis H&E

## 10. practice
- IRDS H&E
- Bronchopneumonia H&E
- Lobar pneumonia H&E (slide demonstration)
- Miliary tuberculosis in lung H&E
- Tuberculotic lymphadenitis H&E

## 11. practice
- Small cell carcinoma of the lung H&E
- Squamous cell carcinoma of the lung
- Adenocarcinoma of the lung
- Mesothelioma H&E
- Pneumoconiosis H&E
<table>
<thead>
<tr>
<th>Practice</th>
<th>Histological Findings</th>
</tr>
</thead>
</table>
| 12. practice | Mixed tumor of the parotid gland H&E  
Squamous cell carcinoma of the oesophagus  
Chronic peptic ulcer H&E  
Chronic gastritis H&E (45), Giemsa  
Signet ring cell carcinoma of the stomach H&E |
| 13. practice | Villous atrophy in small intestine  
Ulcerative colitis H&E  
Crohn’s disease H&E  
Pseudomembranous colitis |
| 14. practice | Organ Demonstration |
| 15. practice | Alcoholic hepatitis H&E  
Viral hepatitis – HCV/HBV H&E  
Liver cirrhosis H&E  
Hepatocellular carcinoma H&E  
Cavernous haemangioma of liver H&E |
| 16. practice | Colloid goiter H&E  
Hashimoto thyroiditis (slide demonstration)  
Follicular adenoma of the thyroid gland H&E  
Follicular carcinoma (slide demonstration)  
Papillary carcinoma of the thyroid gland H&E  
Carcinoid H&E  
Adrenal cortical adenoma (normal) H&E |
| 17. practice | Chronic pancreatitis H&E  
Acute pancreatitis H&E  
Adenocarcinoma of pancreas H&E  
Islet cell tumor of pancreas H&E |
| 18. practice | Acute purulent pyelonephritis H&E  
End stage kidney H&E  
Renal cell carcinoma H&E  
Transitional cell carcinoma H&E |
| 19. practice | Nodular hyperplasia of the prostate H&E  
Adenocarcinoma of prostate H&E  
Seminoma H&E  
Non-seminoma / Embrional carcinoma H&E |
| 20. practice | Extrauterine gravidity H&E  
Endometrial hyperplasia H&E  
Endometriosis  
Endometrium carcinoma H&E |
21. practice
Mucinous cystadenoma of the ovary H&E
Serous papillary cystadenoma of the ovary H&E
Serous papillary cystadenocarcinoma of the ovary
Teratoma / Dermoid cyst H&E

22. practice
Fibrocystic disease of the breast H&E
Peri- and intracanalicular fibroadenoma of the breast H&E
Phylloid tumor H&E
Intraductal carcinoma H&E
Invasive ductal carcinoma H&E
Invasive lobular carcinoma H&E

23. practice
Normal bone marrow H&E
Reactive lymph node H&E
Leukemic bone marrow H&E
Hodgkin lymphoma H&E
Non Hodgkin lymphoma (high grade) H&E
Metastasis in lymph node H&E

24. practice
DIAGNOSTIC METHODS IN PATHOLOGY – MOLECULAR PATHOLOGY

25. practice
Purulent meningitis H&E
Encephalitis H&E
Meningeoma H&E
Glioblastoma multiforme H&E
Brain metastasis H&E

26. practice
Basocellular carcinoma – Krompecher tumor H&E
Verruca vulgaris H&E
Naevus pigmentosus H&E
Malignant melanoma H&E
Solar keratosis H&E

27. practice
Osteosarcoma H&E
Neuroblastoma H&E
Wilms tumor H&E
Medulloblastoma H&E

28. practice
Repetition
List of oral questions

A

2. Morphologic reaction to persistent stress (Atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia).
5. Chemical (vasoactive) mediators in inflammation.
6. The role of neutrophil leukocytes in inflammation.
7. Chronic and granulomatous inflammation.
8. Vascular patterns of inflammation (origin and types of exudate).
10. Lymphocytes and macrophages in inflammation
11. Extracellular matrix.
12. Repair and wound healing.
13. Regeneration and healing in different tissues.
15. Types of hypersensitivity.
16. Immune reaction to transplanted organs.
17. Immunodeficiencies (congenital, acquired).
18. Autoimmunity.
20. Clinically important malformations.
21. Syndromes linked to chromosomal abnormalities.
22. Autosomal dominant disorders.
23. Autosomal recessive disorders.
25. Diseases of infancy and childhood.
27. Edema and related disorders of water and electrolytes.
28. Embolism and thrombosis.
29. Shock.
30. Smoking.
31. Alcoholism.
32. Drug abuse and iatrogenic drug injury.
33. Environmental chemical agents.
34. Environmental physical agents. Radiation.

2nd Semester

36. Acute pancreatitis.
37. Chronic pancreatitis.
39. Inflammatory glomerular lesions of the kidneys.
40. Vascular diseases of the kidneys.
41. Diseases of the urinary bladder and urethra.
42. Non-neoplastic disorders of the testis and epididymis.
43. Infectious disorders of the female genital tract.
44. Pathology of the cervix uteri (except tumors).
45. Pathology of placenta and gestational trophoblastic disease.
46. Non neoplastic diseases of the breast.
47. Anemias and disorders of hemostasis.
48. Pathology of the spleen.
49. Pathology of the pituitary gland and the hypothalamus.
50. Non-neoplastic lesions of the thyroid gland.
51. Pathology of the parathyreoid gland.
52. Pathology of the thymus and pineal gland.
53. Diseases affecting the epidermis.
54. Inflammatory diseases of the skin and diseases of dermal connective tissue.
55. Pathology of the oral cavity.
56. Disorders of growth and maturation of the skeleton.
57. Infectious diseases of the bones.
58. Metabolic bone disease.
59. Non tumorous lesions of the joints.
60. Noninflammatory lesions of skeletal muscles.
61. Circulatory disorders of the central nervous system.
62. Inflammatory diseases of the central nervous system.

B

1. Classification of neoplasms.
2. Cytological and histological characteristics of malignancy.
4. Invasion and metastasis.
5. Grading and staging of cancer.
6. Physical and chemical carcinogenesis.
7. Viral carcinogenesis.
11. Heredity and cancer.
12. Epidemiology of cancer.
15. Tumors of blood vessels and heart.
16. Pathology of larynx and trachea.
17. Primary lung cancer.
22. Neoplasms of colon.
23. Viral diseases.
24. Diseases caused by mycoplasma, chlamidia, rickettsiae and spirochetes.
26. Diseases caused by bacteria (cholera, shigellosis, E.coli infection, yersiniosis, campylobacter, brucellosis, listeriosis).
27. Diseases caused by bacteria (clostridial diseases, diphtheria, rhinoscleroma, Klebsiella, granuloma inguinale, phagedenic ulcer, noma).
29. Diseases caused by mycobacteria.
30. Diseases caused by protozoans.
31. Diseases caused by fungi.
32. Diseases caused by nematodes.
33. Diseases caused by trematodes, cestodes, arthropods.
34. Opportunistic infections.

2nd Semester

37. Neoplasms of the liver.
38. Neoplasms of the biliary tract and gallbladder.
39. Tumors of the kidney.
40. Diseases of the renal pelvis and ureter.
41. Testicular neoplasms.
42. Pathology of the prostate, penis and scrotum.
43. Pathology of the vulva and vagina.
44. Pathology of the body of the uterus and endometrium.
45. Benign and malignant breast tumors, premalignant lesions.
46. Chronic myeloproliferative syndromes.
47. Acute myeloproliferative syndromes.
48. Lymphocytic leukemias and malignant disorders of the mononuclear phagocyte system.
51. Neoplastic lesions of the thyroid gland.
52. Pathology of the adrenal medulla and paraganglia.
53. Benign and malignant tumors of melanocytic origin in the skin.
54. Benign and malignant tumors of the skin (other than melanocytic).
55. Pathology of the salivary glands.
56. Paget’s disease and benign bone tumors.
57. Malignant tumors of the bones.
58. Tumors and tumorlike lesions of the joints.
59. Tumors of the central nervous system.
60. Tumors of the uterus.
61. Tumors of childhood.
1. Atherosclerosis.
2. Hypertensive vascular and heart disease.
4. Aneurysms and diseases of the veins.
7. Rheumatic and other “hypersensitivity” diseases of the heart.
8. Inflammatory, nutritional, endocrine and metabolic diseases of the heart.
15. Pneumoconiosis.
16. Restrictive, infiltrative or interstitial lung disease.
17. Diseases of the pleura.
18. Diseases of the pulmonary vasculature.
20. Pathology of esophagus (except congenital disorders and tumors).
22. Peptic ulcer disease.
25. Pathology of the appendix.

**2nd Semester**

27. Bilirubin metabolism and jaundice.
30. Chronic hepatitis.
31. Alcoholic liver disease.
32. Etiology of cirrhosis. Primary biliary cirrhosis. Hemochromatosis.
33. Inheritable disorders associated with cirrhosis.
34. Portal hypertension. Vascular disorders of the liver.
35. Toxic liver injury.
37. Cholelithiasis.
38. Cholecystitis, cholesterosis and cholangitis.
39. Noninflammatory lesions of the kidneys associated with nephrotic syndrome.
40. Renal diseases associated with systemic disorders.
41. Tubulointerstitial diseases of the kidneys.
42. Pathology of the fallopian tube and the ovaries.
43. Benign disorders of the lymphoid cells.
44. Pathology of the adrenal cortex.
45. Diabetes.
46. Amyloidosis.
47. Diseases affecting the basement membrane zone of the skin.
48. Pathology of the nose and paranasal sinuses.
49. Pathology of the nasopharynx.
51. Inflammatory and metabolic diseases of skeletal muscles.
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 hours 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 om 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 19-22, November 23-27; March 22-26 and April 19–24). 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 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 form 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 2009 / 2010 is ending with the lectures of the Gastrointestinal Tract.

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. Similarily, 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.

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Points</th>
</tr>
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<tbody>
<tr>
<td>0–60 pts</td>
<td>1</td>
</tr>
<tr>
<td>61–70 pts</td>
<td>2</td>
</tr>
<tr>
<td>71–80 pts</td>
<td>3</td>
</tr>
<tr>
<td>81–90 pts</td>
<td>4</td>
</tr>
<tr>
<td>91× pts</td>
<td>5</td>
</tr>
</tbody>
</table>

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 assays.

a/ True-false: You must decide if the given statement is true or not. For example:
The eagle is a bird.
A: True B: False (Mark: A)

b/ Simple choice: Only 1 answer is correct out of 5 possibilities. For example:
Select the country in which pyramids are found:
A: Netherlands
B: Egypt
C: Hungary
D: Cyprus
E: Greece (Mark: B)
c/ Problem-solving simple choice.
For example:
Jane has four children. Betty is the oldest, her mother was 18 when she was born. Tom is 2 years younger than Bobby and 5 years older than the youngest child, Mark. Bobby was born 3 years later than Betty. Mark was born 2 years ago. How old is Jane now?
A: 28
B: 18
C: 23
D: 30
E: 35  
(Mark: D)

d/ Combination (simple choice with multiple choice pattern).
You have four or five possible answers and 5 combinations. Mark the only letter covering the correct answers.
For example:
The natural habitant 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.

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

After the test writing examinees are required to take the **histology** part of the final. Two slides from the exam pool are given to the student and the examinee should describe the organ (if there is one present on the side) and the histological findings. Finally, correct diagnosis should be given. The Histology part can not be examined by the tutor of the student.

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

Finally, **theoretical topics** are to be discussed.

The final mark will be decided by the exam board of the institute based on the marks received on the practical and theoretical parts of the final!!

Retake exams: Students who have failed the exam on one occasion can retake it not earlier than 4 days after the first trial (exam days are not included). Example: In case the failure was on Tuesday the earliest next exam can be taken the following week on Tuesday, however, those who faile 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 cabin to the right, at the end of the corridor take a left turn ). However, it should be kept in mind that the final mark is not merely the mathematical average of the given grades! Additional factors, for example your midterm grades, your general performance during the academic year (evaluated by your tutor), the point scores of your written test, the competition results, etc. are also taken into consideration. Serious mistakes or “clear spots” in your knowledge may significantly affect the final mark or even result in a failing.

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

Schedule

Lectures

<table>
<thead>
<tr>
<th></th>
<th>I. semester</th>
<th>II. semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>9:30–10:40</td>
<td>10:50–12:00 **</td>
</tr>
<tr>
<td>Wednesday</td>
<td>8:00–9:10</td>
<td>8:00–9:10 **</td>
</tr>
</tbody>
</table>

Practices

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

** preliminary data

Tutors

Group 1  Dr. Attila KOVÁCS / Dr. György ILLYÉS
Group 2  Dr. András KISS / Dr. Kató SZÉNÁS
Group 3  Dr. Hajnalka GYORFFY / Dr. Anna SZENTE
Group 4  Dr. Janina KULKA / Dr. Julia CRISTOFARI
Group 5 (EM6)  Dr. Eszter SZÉKELY / Dr. Magdolna KARDOS / Dr. Tamás SZÉKELY

Responsible tutor: Dr. András KISS

SEMMELEWÍS UNIVERSITY / FACULTY OF MEDICINE
Schedule for the academic year of 2009/2010

1st semester: September 07. – December 11, 2009
Official holidays: October 23. – National Holiday

Examination period: December 14, 2009 – January 22., 2010

2nd semester: February 01. – May 14., 2010
Official holidays: February 17–18. (Semmelweis Student Research Competition), 2010
March 15. National Holiday (Saturday) 2010
March 29. – April 05. (Spring Vacation) 2009
April 13. (Monday) – Easter Monday 2010
May 01. (Friday) – Labor Day 2010
June 01. (Monday) Whit Monday 2010

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 17. – June 30., 2010
August 16. – August 27., 2010

Prof. Dr. József Timár
Head of Department
INTERNAL MEDICINE
1st Dept. of Internal Medicine
3rd Dept. of Internal Medicine
Tutor: Prof. Dr. Ferenc Szalay, Dr. Katalin Keitai, 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.
Fever. Taking the temperature. The types of fever curves.
The main symptoms of pulmonary disease. Cough, sputum production, hemoptysis, dyspnea, wheezing, cyanosis and chest paint.
Physical diagnosis of the common pleural and pulmonary syndromes.
Examination of the heart. Inspection and palpation of the precordial region. Evaluation of the apical impulse. Percussion of the heart. ECG. The heart sounds (normal and pathological findings).
Murmurs (Normal and pathological findings).
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).
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)
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)


**Practice Ward rounds** (4 hours per week)

Examination of patients with the following endocrine diseases: Diabetes insipidus, inappropriate secretion of ADH, acromegaly, hyperprolactinemia, Cushing’s hyperthyroidism, hypothyroidism, thyroiditis, goiter, solitary thyroid nodule, Addison’s disease, Cushing’s syndrome, Conn’s syndrome, adrenogenital syndromes, phaeochromocytoma, parathyroid hyperfunction, parathyroid hypofunction, hyper- and hypocalcaemic states, gonadal diseases, hirsutism, carcinoma of the breast, carcinoid syndrome, diabetes mellitus, diabetic ketoacidosis, complications of diabetes mellitus, hypoglycemic disorders, anorexia nervosa, gout, alcoholism, vitamin deficiencies, metabolic and respiratory acidosis, metabolic and respiratory alkalosis, and inborn errors of metabolism.
MEDICAL PSYCHOLOGY
General Medicine, 3rd year Medical Students
Institute of Behavioral Sciences

Code: AOMAGPSZ_1A
2009/2010

1st Semester

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

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

Participation and making up for absences:
Participation list will be recorded at the end of every lecture and every seminar. Content of the lectures may appear in the exams. Maximum number of absences in a semester is 3. Course at the end of the first semester will conclude with a term mark (practice mark), based on classroom activity and/or paper. Making up for absences by writing an essay discussed with the course leader may serve to receive the signature needed to absolve the course. The second semester will conclude with a final/comprehensive exam.

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

MEDICAL PSYCHOLOGY
General Medicine, 3rd year Medical Students
Institute of Behavioral Sciences

2009/2010

2nd Semester

Code: AOMAGPSZ_2A

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

<table>
<thead>
<tr>
<th>Week 1.</th>
<th>LECTURE</th>
<th>Psychotherapeutic methods</th>
<th>Dr. György Purebl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 2.</td>
<td>LECTURE</td>
<td>Altered states of consciousness and suggestive communication in medical practice (II.)</td>
<td>Gábor Suhai</td>
</tr>
<tr>
<td>Week 3.</td>
<td>LECTURE</td>
<td>Stress and illness</td>
<td>Prof. Dr. Mária Kopp</td>
</tr>
<tr>
<td>Week 4.</td>
<td>LECTURE</td>
<td>Behavioral interventions</td>
<td>Dr. Adrienn Stauder</td>
</tr>
<tr>
<td>Week 5.</td>
<td>LECTURE</td>
<td>Intellect, Cognitive state, Thought processes, and Perception</td>
<td>Dr. Róbert Bódizs</td>
</tr>
<tr>
<td>Week 6.</td>
<td>SEMINAR</td>
<td>Depression and mood disorders</td>
<td></td>
</tr>
<tr>
<td>Week 7.</td>
<td>SEMINAR</td>
<td>Anxiety and medical illnesses</td>
<td></td>
</tr>
<tr>
<td>Week 8.</td>
<td>SEMINAR</td>
<td>Somatization and Dissociative disorders</td>
<td></td>
</tr>
<tr>
<td>Week 9.</td>
<td>SEMINAR</td>
<td>Eating disorders</td>
<td></td>
</tr>
<tr>
<td>Week 10.</td>
<td>SEMINAR</td>
<td>Personality disorders</td>
<td></td>
</tr>
<tr>
<td>Week 11.</td>
<td>SEMINAR</td>
<td>Sleep and sleep disturbances</td>
<td></td>
</tr>
<tr>
<td>Week 12.</td>
<td>SEMINAR</td>
<td>Human sexuality in health and disease, sexual disorders, HIV/AIDS, and treatment considerations.</td>
<td></td>
</tr>
<tr>
<td>Week 13.</td>
<td>SEMINAR</td>
<td>Addiction, alcohol, nicotine and illicit substance abuse</td>
<td></td>
</tr>
<tr>
<td>Week 14.</td>
<td>SEMINAR</td>
<td>Behaviour change and psychotherapy.</td>
<td></td>
</tr>
</tbody>
</table>
Participation and making up for absences:
Participation list will be recorded at the end of every lecture. Maximum number of absences in a semester is 3. A signature will be given with the prerequisite of participation. Making up for absences by writing an essay discussed with the course leader may serve to receive the signature needed to absolve the course. The course will conclude with a written final examination taken in the examination period.

Course Textbook:


Recommended text books:
Fadem B: Behavioural Science. Harwal, 2nd ed., 1994,

Course Director: Dr. Piroska Balog, clinical psychologist
NET 20th floor, room 2011
Tel: 210-2930/56403, e-mail: balopir@net.sote.hu
Further information: www.behsci.sote.hu
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)
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-maleficience.
The principle of beneficience.
The principle of justice.
Arguments against „principalism”.

4. week (Practices)
The concept of health and disease.
Naturalistic definitions of health.
The medical model of defining health.
Normativist definitions of health.
Some questions of psychiatric ethics.
5. week (Lecture)
Informed consent.
Simple consent and paternalism in medicine.
The emergence of the doctrine of informed consent.
Standards for information disclosure for patients.
When is informed consent not necessary?
Standards of competence and incompetence.
The right to refuse medical treatment.
Some psychological and communicational aspects of informed consent.

6. week (Practices)
Information disclosure to terminally ill patients. Telling the truth to patients.
The history of information disclosure to terminally ill patients.
Pros and cons for lying to terminally ill patients.
The weaknesses of the arguments in favour of lying.
The dying process according to E. Kübler-Ross.
How to communicate the bad news to terminally ill patients.
The physician’s relationship with the relatives of the deceased patient.

7. week (Lecture)
Justice in Health Care I. Ethical questions of macroallocation.
Higher and lower level macroallocational problems.
The role of personal responsibility in maintaining health.
The principles and practice of rationing in contemporary health care systems. (Soft and hard rationing.)
Medical ethics and medical economics. Ethical questions of cost-benefit and cost effectiveness analysis. The QALY.
The problem of right to health care. (The libertarian, the liberal and the socialist views about the right to health care.)
The role of the market and that of the state in the health care system.
Ethical problems of financing health care. (Fee-for-service, capitation, fixed salary, DRG-system, etc.)
Setting health care priorities in Oregon.
Attempts to define a just health care system.

8. week (Practices)
Ethical questions of reproductive medicine.
Abortion.
Artificial insemination from donor.
In vitro fertilization, surrogate motherhood.
Ethical questions of genetic counseling.
Ethical questions of embryo experimentation.

9. week (Lecture)
Justice in Health Care II. Ethical questions of microallocation. Moral dilemmas in the allocation of scarce medical resources.
The concept of microallocation.
Ethical analysis of various selection criteria. (Medical benefit, psychological ability, supportive environment, social value criterion, resources required criterion, age, ability to pay, random selection, personal responsibility for the illness, etc.)
10. week (Practices)
Ethical questions of animal experimentation.
History of the thinking about the moral status of animals.
The philosophical significance of the Darwinian conception of nature.
The views of Peter Singer: antispeciesism.
The views of Tom Regan: animal rights.
Ethical questions of experimentation on animals on the basis of a moderate animal protectionist’s view.
Critical anthropomorphism.
Alternatives to animal experimentation.

11. week (Lecture)
Euthanasia and the withholding of life-sustaining treatment
Definitions.
The sanctity of life versus the quality of life doctrine.
Is there any difference between active and passive euthanasia?
Refusal of life sustaining treatment by competent and incompetent patients.
Possibilities to extend the autonomy of patients: living will, durable power of attorney, substituted judgement, etc.
The concept of medically futile treatment.
Ethical problems of the treatment of handicapped newborns. (The debate about the treatment of spina bifida babies, the Baby Doe case, the legal situation, etc.)

12. week (Practices)
Ethical questions of human experimentation.
Possible forms of experimentation on humans.
Contradiction between the two roles of the physician. (Healer and scientist.)
The ethics of Randomized Controlled Clinical Trials. (RCT)
Randomization and prerandomization.

13. week (Lecture)
Ethical questions of organ- and tissue transplantation.
Some problems of justice concerning kidney transplantation and chronic haemodialysis.
Ethical questions of transplantation from living kidney donors.
The concept of death.
Ethical questions of organ harvesting from the dead.
The debate about the market of organs.
Ethical questions of using embryo- or foetal tissue in human therapy.
Ethical problems of using anencephal newborns as organ donors.

14. week (Practices)
The rights of patients.
The role of patient’s rights in the transformation of the paternalistic physician-patient relationship.
Moral versus legal rights.
A list of basic rights of patients.
Mechanisms to ensure the realizations of patient’s rights. (Patient’s rights advocates, ombudsman, hospital ethics committees, institutional review boards, arbitration, etc.)
Course Faculty:
József Kovács, MD, PhD, (Head of the Department of Bioethics), 210-2930/56350; e-mail: kovjozs@net.sote.hu
Ágnes Dósa, MD, JD, PhD e-mail: dosaagi@yahoo.com
Imre Szebik, MD, PhD e-mail: szebimre@net.sote.hu
Jeno Lorincz, MD, JD e-mail: lorjen@net.sote.hu

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

List of questions

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

Textbook:
ISBN: 1-4020-1460-0
PHARMACOLOGY AND PHARMACOTHERAPY
Tutor: Dr. Júlia Timár

Second semester

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

Code: A0FRMF RM_1,2,3_A
Total credits for the 3 semesters: 10
Course Director: Prof. Dr. Klára Gyíres
Curriculum:

Pharmacology and Pharmacotherapy (three semesters)

Topic of Pharmacology and Pharmacotherapy I (Year 3, 2009/2010, second semester):

Cancer chemotherapy – Basic pharmacology of cancer chemotherapeutic drugs. Drugs affecting the immune system.
Vitamins.


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


Problem based medical physiology

Course Director: Prof. Dr. László Hunyadi M.D., Ph.D., D.Sc., Head of the Department of Physiology

Lecturers: Professor László Hunyady M.D., Ph.D., D.Sc.
Professor Péter Enyedi M.D., Ph.D., D.Sc.
Péter Várnai M.D., Ph.D., associate professor
Miklós Geiszt M.D., Ph.D., associate professor
Gábor Czirják M.D., Ph.D., assistant professor

Credits: 4

Programme:
The primary purpose of this course is the synthesis of the theoretical and practical knowledge of the students. The thematic of the course includes various clinical and non-clinical practical problems (e.g. acclimatisation). The students will receive questions related to a specific problem and they have usually one week to find the proper answer in available electronic and printed information sources. Problem solving is based on the discussion of the students with directions from the instructors. This course requires the active participation of the students. The role of the instructor is to determine the thematics of the course and to provide guidance to the discussions.

Thematics:
1. Physiologic principles of circulatory problems I.
2. Physiologic principles of circulatory problems II.
3. Physiologic principles of circulatory problems III.
4. Physiologic principles of respiratory problems I.
5. Physiologic principles of respiratory problems II.
6. Physiology of acclimatisation.
7. Dysfunctions of kidneys I.
8. Dysfunctions of kidneys II.
9. Immune cells and blood coagulation.
10. Physiologic principles of the regulation of food intake.
11. Dysfunctions of neuroendocrine system I.
12. Dysfunctions of neuroendocrine system II.
13. Dysfunctions of central nervous system I.
14. Dysfunctions of central nervous system II.
Requirement and attendance

Requirement: Medical Physiology (AOKIKELT2A)

In case of an over-application selection will be made on the base of the exam achievement.

Condition of the sign: participation at min. 75% of the lessons. Replacement of an absence is not possible.

Absence: Certification of the absence from the lessons is not required. Absence from the exam should be certificated in three weekdays (medical certificate).

Semester requirement: Recitation: every week, oral or written. Details will be given on the first lesson.

End-semester evaluation: Condition of the sign: participation at min. 75% of the lessons. A practical mark will be given.

Mark: Weekly results plus the oral exam grade.

Exam sign up: On the last week, personal.

Written subject-matter of instruction: the discussable themes were selected by the lecturers of the Department of Physiology, and are given to the students every week. The necessary subject-matter of instruction will be published on the home page of the Department of Physiology. Use of data bases in the Central Library of the University (e.g. PubMed) is required.

COMPULSORY SUMMER PRACTICE (4 weeks)

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. The summer practice is offered in two blocks: July 1-31, or August 1-31. Registration for the practice will take place directly at the designated institutions. Proof of practices completed internationally must be submitted latest at the time of registration for the 4th year. The aims of the compulsory summer practice are as follows:

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

### OBLIGATORY ELECTIVE SUBJECTS

#### 1st semester

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKOZTOR_1A</td>
<td>History of Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract, mark</td>
<td>can be taken exclusively from the 3rd year</td>
</tr>
<tr>
<td>AOHUMFBI_1A</td>
<td>Developmental Biology I.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract, mark</td>
<td>can be taken exclusively from the 2nd year</td>
</tr>
<tr>
<td>AOKONK088_1A</td>
<td>Information Retrieval Science in Library</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>pract, mark</td>
<td>–</td>
</tr>
</tbody>
</table>

#### 2nd semester

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKOZTOR_1A</td>
<td>History of Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract, mark</td>
<td>can be taken exclusively from the 3rd year</td>
</tr>
<tr>
<td>AOHUMKLA_1A</td>
<td>Introduction to Clinical Anatomy</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract, mark</td>
<td>Anatomy, Histology, Embryology III.</td>
</tr>
<tr>
<td>AOHUMFBI_2A</td>
<td>Developmental Biology II.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract, mark</td>
<td>Developmental Biology I.</td>
</tr>
<tr>
<td>AOKONK088_1A</td>
<td>Information Retrieval Science in Library</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract, mark</td>
<td>–</td>
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</tbody>
</table>
### ELECTIVE SUBJECTS

#### 1st semester

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOVELT101_1A</td>
<td>Problem based medical physiology</td>
<td>2,5</td>
<td>–</td>
<td>4</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
</tr>
<tr>
<td>AOTDKTDK?_A</td>
<td>Work within the union of research students (TDK munka)</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOSMAG139_1A</td>
<td>Jewish Medical Ethics I.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOKU0HE_1A</td>
<td>History of Medical Professionalism</td>
<td>2,5</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>A00VMOKM_1A</td>
<td>Basics of Medical Chemistry</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
</tbody>
</table>

#### 2nd semester

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOSMAG139_2A</td>
<td>Jewish Medical Ethics II.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Jewish Medical Ethics I.</td>
</tr>
<tr>
<td>AOTDKTDK0_1A</td>
<td>Work within the union of research students (TDK munka)</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AO0KCAR_1A</td>
<td>Clinical Cardiovascular Physiology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
</tr>
</tbody>
</table>
**STUDY PROGRAMME**

**Fourth Year**

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOFRMFRM_2A</td>
<td>Pharmacology and Pharmacotherapy II.</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>semi-final</td>
<td>Pharmacology and Pharmacotherapy I.</td>
</tr>
<tr>
<td>AOZKZOZ_1A</td>
<td>Public Health I.</td>
<td>1</td>
<td>1.5</td>
<td>2</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AOARKAR_1A</td>
<td>Cardiology</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
<td>Internal Medicine II.</td>
</tr>
<tr>
<td>AOB1BEL13A1</td>
<td>Internal Medicine III.</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>semi-final</td>
<td>Internal Medicine II.</td>
</tr>
<tr>
<td>AOB1SEB_1A</td>
<td>Surgery I.</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AOFULFUL_1A</td>
<td>Otorhinolaryngology (either)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AOBORBOR_1A</td>
<td>Dermatology (or)</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AOPULPUL_1A</td>
<td>Pulmonology (either in the 1st or in the 2nd semester)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
<td>Internal Medicine II.</td>
</tr>
<tr>
<td>AOSZBFOG_1A</td>
<td>Oral Surgery and Dentistry</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AORADRAD_1A</td>
<td>Radiology</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
</tbody>
</table>

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

**Obligatory elective / Elective subjects**

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

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

#### 8th semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADFRMFRM_3A</td>
<td>Pharmacology and Pharmacotherapy III.</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>final#</td>
<td>Pharmacology and Pharmacotherapy II.</td>
</tr>
<tr>
<td>AOKOZKOZ_2A</td>
<td>Public Health II.</td>
<td>1</td>
<td>1.5</td>
<td>3</td>
<td>semi-final#</td>
<td>Public Health I.</td>
</tr>
<tr>
<td>AOB1BEL14A</td>
<td>Internal Medicine IV.</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>semi-final#</td>
<td>Internal Medicine III.</td>
</tr>
<tr>
<td>AOB1BEL24A</td>
<td>Internal Medicine IV.</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>semi-final#</td>
<td>Internal Medicine III.</td>
</tr>
<tr>
<td>AOSB1SEB_2A</td>
<td>Surgery II.</td>
<td>2</td>
<td>2.5</td>
<td>4</td>
<td>pract.mark</td>
<td>Surgery I.</td>
</tr>
<tr>
<td>AOFULFUL_1A</td>
<td>Otorhinolaryngology (either)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final#</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOBORB1R_1A</td>
<td>Dermatology (or)</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>semi-final#</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOPULPUL_1A</td>
<td>Pulmonology (either in the 1st or in the 2nd semester)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
<td>Internal Medicine III.</td>
</tr>
<tr>
<td>AORTORT_1A</td>
<td>Orthopaedics</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final#</td>
<td>Surgery I.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Obligatory elective / Elective subjects</th>
</tr>
</thead>
</table>

*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. The grade influences the qualification of the Diploma
LIST OF TEXTBOOKS


Recommended textbooks:

2. Lynn S. Bickley: Bates’ Guide to Physical examination and history taking
3. Tulassy Z. (Ed): A belgyógyászat alapjai (I.-II.)
4. Internet links for Internal Medicine
14. Fitzpatrick’s Dermatology in General Medicine
   Editor: Freedberg, Irwin M.; Eisen, Arthur Z.; Wolff, Klaus; Austen, K. Frank; Goldsmith, Lowell A.; Katz, Stephen I.
15. full-text online access: http://gateway.ut.ovid.com/gx1/ovidweb.cgi?New+Database=Single O&S=IDNJHKIDNGILPL00
16. Shimizu’s Textbook of Dermatology – accessible online also
17 Clinical Dermatology

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


23 W. E. Erkonen, W. L. Smith: Radiology 101: the basics and fundamentals of imaging, 2nd ed, Lippincott
   Williams & Wilkins, 2004. ISBN 0781751985, 9780781751988

   0674012798, 9780674012790
PHARMACOLOGY AND PHARMACOTHERAPY
Tutor: Dr. Júlia Timár

First Semester

Lectures (1.5 hours)  Practices (2.5 hours)

Code: AOFMFRM_1,2,3_A
Total credits for the 3 semesters: 10
Course Director: Prof. Dr. Klára Gyires

Curriculum:

Pharmacology and Pharmacotherapy (three semesters)

Topic of Pharmacology and Pharmacotherapy II (Year 4, 2009/2010, first semester):

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

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

Absence justification: Medical certificate is accepted

There are no obligatory midterms

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

Written test: scores.
Final exam consists of three parts. The grade will be decided after the oral part of the exam, taken into consideration the results of the preceding two parts (see below).
Exam types:
1st semester. Written test
2nd semester. Semi-final, oral
3rd semester. Final exam which consists of three parts. 1. Preceding exam from toxicology and prescription writing. 2. Written test from clinical pharmacology. 3. Oral exam.

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

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

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


PHARMACOLOGY AND PHARMACOTHERAPY

Second Semester

Lectures (2 hours) Practices (2 hours)

Code: AOFRMFPM_1,2,3_A
Total credits for the 3 semesters: 10
Course director: Prof. Dr. Klára Gyires

Curriculum:

Pharmacology and Pharmacotherapy (three semesters)


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

Absence justification: Medical certificate is accepted

There are no obligatory midterms

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

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

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

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

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

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

Public Health
Institute: Department of Public Health
Location: NET building, 1089 Budapest, Nagyvárad tér 4., 13th, 14th, 19th and 21st floors.

Academic coordinator for EM4 Public Health:
Dr. András Terebessy
NET 13th floor, room 1314
Tel.: 061 210-2930, extension 56313
Email: terand@net.sote.hu

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

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

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

Other recommended sources:
- 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.
## 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.  
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.
Tubulopathies. Interstitial nephritis.

Acute and chronic renal failure. Diagnosis and treatment. Dialysis treatment, kidney transplantation.
Acute volume and electrolyte disorders.
Systemic lupus erythematoses (SLE).
Autoimmune haematological diseases.
Rheumatoid arthritis
Autoimmune vasculitis. Periarteritis nodosa, Henoch-Schönlein purpura, Wegener’s granulomatosis, giant cell arteritis, temporal arteritis, Takayasu arteritis, Buerger disease.
Spondyloarthopathies. 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, Car 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.


Competition – Written test

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

SURGERY

Tutor: Dr. Péter Kokas

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. Artifical 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.
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 leus
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. (etiolo, 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 tonsillec- tomy.
- Anatomy and physiology of the larynx. Disorders.
- Infections of the larynx and their management.
- Dyspnoe and suffocation with upper airway origin.
- Conicotomy and tracheotomy.
- Tumors of the larynx and their therapy.
- Rehabilitation of patients after total laryngectomy.
- Diseases of the trachea and the oesophagus.
- Foreign bodies. Medial and lateral neck masses.

Practice (2 hours per week)
- Clinical examinations.
- Diagnostical methods of the ear.
- Evaluation of different types of perforations of the tympanic membrane. Cadaver bone practice.
- Routine audiology. Uning fork practice.
- Operating theatre. Video.
- Examination of the vestibular system. ENG. CCPG.
- Evaluation of different otological cases.
- Anterior and posterior rhinoscopy. Clinical management of the epistaxis.
- X-ray photos of the paranasal sinuses.
- Operating theatre. Video.
- Advanced examination of the pharynx.
- Directoscopy, fiberoscopy.
- Peritonsillar abscess. Dangers of the tonsillec- tomy.
- Tonsillec- tomy. Operating theatre.
- Direct and Indirect of the voice.
- Laryngoscopy. Videostroboscopy.
- Emergency management of suffocation.
- Oesophagoscopy, bronchoscopy.
- Case reports. Palpation and investigation of patients with different neck masses.
**ORAL SURGERY AND DENTISTRY**
Tutor: **Dr. Zsolt Németh**

**First Semester**

*Lectures (2 hours per week)*
- Introduction to Oral and Maxillofacial Surgery.
- Benign tumors of the maxillofacial region
- Haemangiomas of the maxillofacial region, Salivary glands
- Malignant tumors of the maxillofacial region
- Maxillofacial traumatology
- Dental anesthesia, Extraction of the teeth General anesthesia in the maxillofacial surgery
- Periodontal diseases. Oral medicine
- Infections of dental origin
- Minor oral surgery Dentaoalveolar 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
- Caniology and endodontics
- Consultation

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

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

Credits: 4

**First Semester - half class**

**Second Semester - half class**

*Lectures: 1,5 hours/week; practices: 2,5 hours/week*

*Objectives of the course:*
- Morphology, structure, physiology and general pathology of the skin. Bacterial, viral and other infections of the skin. Sexually transmitted diseases (STD). Dermatoallergology.
- Psoriasis. Skin symptoms of autoimmune diseases. Skin symptoms of vascular diseases.
The goal of the training:

a. Knowledge of diagnostics, etiopathogenesis 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, drug eruptions, bullous diseases, allergic skin diseases, autoimmune 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.

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)
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)
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.

ORTHEPEDICS
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.
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).


Consultation.

ORTHOPEDICS

Practices
Fixation, relief of weight bearing, plaster splints, plaster bandages. Examination of patients. Examination of the diseases and deformities of the spine, malposture (Calves deformity, spondylarthrosis).
Preparation of plaster splints, bandages. Examination of patients with lumbago, ischias syndrome, spondyloysis, 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.
Preparation of hip spica.
Examination of patients with osteoarthritis of the hip. Examination of contractures of the hip. Demonstration of Roentgenograms.
Examination of patients with recurrent dislocation of the patella, Osteoarthritis, tuberculous arthritis of the knee. Punction of the knee joint. Methods of fixation of this joint, preparation of plaster bandage.
Examination of patients with diseases and deformations of the neck, upper extremity. Torticollis, cervicobrachial syndrome, periarthritis of the shoulder, tuberculosis of the shoulder joint. Demonstration of Roentgenograms. Application of the methods of hand and arm fixation.
Examination of patients with congenital clubfoot and flatfoot. Therapy. Application of the methods of foot and lower leg fixation. Demonstration of the methods of gymnastics and physiotherapy.

RADIOLOGY
Dept. of Radiology and Oncotherapy
www.radi.sote.hu
Tutor: Dr. Péter Magyar

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)
Practices
(Must-see-images: image collection on our website)

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

ELECTIVE SUBJECTS
Detailed programs see in the 5th year of Medicine!

COMPULSORY SUMMER PRACTICE
(4 weeks) at a Department of Surgery
Surgical practice in summer: 4 weeks’ general surgery.

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.
## STUDY PROGRAMME

### Fifth Year

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOB1AEL1SA</td>
<td>Internal Medicine V.</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>semi-final</td>
<td>Internal Medicine IV.</td>
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<tr>
<td>AOB1B2E2SA</td>
<td>Surgery III.</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>Surgery II.</td>
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<tr>
<td>AONO1SZU_1A</td>
<td>Obstetrics and Gynaecology I.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Surgery II.</td>
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<tr>
<td>AOGY1GE1A</td>
<td>Paediatrics I.</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>semi-final</td>
<td>Internal Medicine IV.</td>
</tr>
<tr>
<td>AOPSIEM_1A</td>
<td>Psychiatry I.</td>
<td>1.5</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
<td>Internal Medicine IV.</td>
</tr>
<tr>
<td>AONEUNSU_1A</td>
<td>Neurology I.</td>
<td>2</td>
<td>1.5</td>
<td>3</td>
<td>pract. mark</td>
<td>Internal Medicine IV.</td>
</tr>
<tr>
<td>AOGG6G5_1A</td>
<td>Forensic Medicine I.</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOAANEAN1A</td>
<td>Anaesthesiology and Intensive Therapy</td>
<td>1.5</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>Surgery II.</td>
</tr>
<tr>
<td>AOTITRA_1A</td>
<td>Traumatology</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>semi-final</td>
<td>Surgery I.</td>
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<tr>
<td>AOZISZE1A</td>
<td>Ophthalmology</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>semi-final#</td>
<td>Surgery I.</td>
</tr>
</tbody>
</table>

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

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

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

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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

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
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<tbody>
<tr>
<td>AOBL1BEL16A</td>
<td>Internal Medicine VI.</td>
<td>1</td>
<td>3</td>
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<td>semi-final</td>
<td>Internal Medicine V.</td>
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<td>AOBL3BEL36A</td>
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<tr>
<td>AONO1SZU_2A</td>
<td>Obstetrics and Gynecology II.</td>
<td>2</td>
<td>1 week/sem.</td>
<td>4</td>
<td>semi-final</td>
<td>Obstetrics and Gynec. I</td>
</tr>
<tr>
<td>AOGY1GYE12A</td>
<td>Paediatrics II.</td>
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<td>3</td>
<td>5</td>
<td>pract. mark</td>
<td>Pediatrics I.</td>
</tr>
<tr>
<td>AOGY2GYE22A</td>
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<td></td>
<td></td>
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<tr>
<td>AOPSIELM_2A</td>
<td>Psychiatry II.</td>
<td>1.5</td>
<td>2</td>
<td>4</td>
<td>pract. mark</td>
<td>Psychiatry I.</td>
</tr>
<tr>
<td>AONEUNEU_2A</td>
<td>Neurology II.</td>
<td>2</td>
<td>1.5</td>
<td>4</td>
<td>semi-final</td>
<td>Neurology I.</td>
</tr>
<tr>
<td>AOGG8G5_2A</td>
<td>Forensic Medicine II.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final#</td>
<td>Forensic Medicine I.</td>
</tr>
<tr>
<td>AAGAMESO0_1A</td>
<td>Emergency Medicine and Prehospital Emergency Care</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>Internal Medicine III.</td>
</tr>
<tr>
<td>AOUPOURO_1A</td>
<td>Urology</td>
<td>1</td>
<td>2.5</td>
<td>3</td>
<td>semi-final#</td>
<td>Pre-clinical module</td>
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<tr>
<td>AOCSCASA_1A</td>
<td>Family Medicine in Daily Practice</td>
<td>2</td>
<td>5*2/sem.</td>
<td>2</td>
<td>pract. mark</td>
<td>Internal Medicine V.</td>
</tr>
</tbody>
</table>

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

**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
LIST OF TEXTBOOKS

12. Lindsay, Bone, Callender: Neurology and Neurosurgery Illustrated. Churchill Livingstone

Recommended textbooks:

4. Silver, Kempe Bryn and Fulginiti’s Handbook of Pediatrics. Appleton and Lange. ISSN 0440-192
10. Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers
12. Weiner- Lewitt: Neurology of House Officer, Williams and Wilkins
INTERNAL MEDICINE

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 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 hemia*
The surgery of endocrin organs*
No lecture
The surgery of breast*
No lecture
Vascular surgery. (To be announced later)**
No lecture
Cardiac 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: Dr. Gyula Richard Nagy
Dr. József Gábor Joó

First Semester

Lectures (2 hours/week)

Second Semester

Lectures (2 hours/week)

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.
LECTURES IN PEDIATRICS 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 pediatrics. Newborn physiology
Nutrition of infants. The care of the healthy baby
Presenting symptoms. Methods of pediatric diagnosis Inborn errors of metabolism
Diseases of the respiratory tract
Renal diseases in childhood
Psychomotor development of the child.
Mental retardation
Fluid and electrolyte disturbances.
Care of the child with diarrhea
Malnutrition. Chronic malabsorption disorders
SIDS
Seizures during infancy and childhood.
Status epilepticus
Congenital heart diseases
Disturbances of the lipid metabolism

PEDIATRICS

First Semester

Practice
The Pediatric Interview and History
The Pediatric Physical Examination
The Status of the Physical Findings
The Growth and Development of Infants
The Growth and Development of Children
Nutrition of Infants
Nutrition of Toddlers
Nutrition of Children
Genetic disorders and genetic counseling
Diagnostic Procedures (venipuncture, urine collection, gastric aspiration etc.)
Therapeutic procedures (administration of fluids, intravenous route, spinal tap, etc.)
Reanimation, monitoring of the critically ill child
EEG
ECG
X-ray
PEDIATRICS
Second Semester

Location: I. Department of Pediatrics, Budapest, Bokay J. u. 54. I. floor

TOPIC

Collagen-vascular (autoimmune) diseases
Leukemia, Haemophilia, Malignant tumors
Diseases of the neuromuscular and skeletal systems
Surgical diseases of childhood, Acute and recurrent abdominal pain
Infectious diseases immunization
Meningitis, encephalitis. Differential diagnosis of the headache
Urinary malformations/infections. Urolithiasis.
Hypertension
Obstructive (wheezo) 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. Zsolt Unoka

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

180
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

<table>
<thead>
<tr>
<th>Week</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–4</td>
<td>Schizophrenia, schizotypal and delusional disorders</td>
</tr>
<tr>
<td>5–6</td>
<td>Personality disorders</td>
</tr>
<tr>
<td>7–8</td>
<td>Alcohol/substance abuse and dependency</td>
</tr>
<tr>
<td>9</td>
<td>Gerontopsychiatry</td>
</tr>
<tr>
<td>10</td>
<td>Clinical psychology in psychiatry</td>
</tr>
<tr>
<td>11–12</td>
<td>Emergency psychiatry/crisis intervention</td>
</tr>
<tr>
<td>13</td>
<td>Cognitive and behavior therapy</td>
</tr>
<tr>
<td>14</td>
<td>Consultation /Questions and answers/; one/semester</td>
</tr>
</tbody>
</table>

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).
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.
ANAESТЕSIOLOGY AND INTENSIVE THERAPY
Tutor: Dr. András Lorx

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

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practice (2 hours per week)</th>
</tr>
</thead>
</table>

## Legal aspects of trauma.

## Immediate care and major incidents. Bandaging

## Thermal injuries.

## Monitoring of cardiovascular functions, mechanical ventilation

## Pediatric trauma.
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.
Lacrimal gland diseases.
The uvea and its diseases.
Disturbances of ocular circulation.
"Medical", retina (vascular diseases, macular disorders) and "surgical" retina (retinal detachment).
Ocular manifestations of systemic diseases. The vitreous and its disorders.
Pediatric ophthalmology. Strabismus, amblyopia.
Diseases of the optic nerve and optic pathways.
Pupillary reactions.
Tumours of the eye.
Modern diagnostic and imaging techniques in ophthalmology.
Trauma of the eye and adnexa.
The role of the general practitioner in the management of eye diseases.
Multiple choice questions. Diagnostics (slides).
Demonstration material: slides, handouts, videotapes, case studies.

OPHTHALMOLOGY

First Semester

Practice:
Anatomy of the eye and adnexa. Dissection of a pig’s eye.
General notions on the examination of an eye patient.
The normal ophthalmological status.
Functions of the eye. Determination of visual acuity (distant, near). Refractive errors of the eye.
Retinoscopy.
Correction of visual refractive errors. Prescription of glasses. Javal-Schiötz ophthalmometer.
Corneal topography. Contact lenses. Photorefractive keratectomy.
Visual field, colour vision, examination of dark adaptation, critical flicker fusion frequency.
Tonometry.
External examination of the eye (diffuse light, focal illumination, slit lamp), exposing the palpebral
fissure, eversion of the eyelids. Differential diagnosis of the red eye.
Ophthalmoscopy I.
Red reflex. Direct and indirect ophthalmoscopy. Examination of the pupil.
Ophthalmoscopy II.
Fluorescein angiography. Scanning laser ophthalmoscopy.
Surgical management of cataract. Ultrasound biometry. Planning of the refractive power of IOL.
One - day surgery.
The glaucoma patient, screening and follow-up. Antiglaucomatous interventions.
Surgery of the vitreous body.
Ophthalmoscopy III. Pediatric ophthalmology. The examination of concomitant squint and its

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: Dr. Róbert Debreczeni
Tel.: 210-0330, Fax: 210-1368

Office hours at the Department of Neurology:
Monday 13,00-14,00
Friday 10,00-12,00

Responsible Secretary: Andrea Kovács (Andi)

Exams: At the end of the first semester tutors conduct a practical examination.
At the end of the second semester the semi-final exam consists of a practical (testing the
neurological examination skills at the bedside) and a written theoretical part. Passing the practical
exam is the prerequisite of taking the written exam. The written exam includes simple and multiple
choice questions, slide presentation, patient and/or case presentation. The questions are based on
the matter of neurology lectures. On event of failing either part of the exam the earliest possible
retake is after 10 days. The retake theoretical exam is an oral exam. At the exam students must
present their index book and in case of retake the permission from the Office of Dean.
Official textbooks for 5th year:
3. Lindsay, Bone, Callender: Neurology and Neurosurgery Illustrated. Churchill Livingstone

Other suggested books:
2. Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers

1st Semester

Week | Lecture title
--- | ---
1. | Basic principles of neurological diagnosis. The anamnisis. The connection between symptoms, localization and causes of neurological diseases.
2. | Patient examination I. Cranial Nerves (part 1).
3. | Patient examination III. Motor system (part 1)
4. | Patient examination IV. Motor system (part 2)
5. | Patient examination II. Cranial Nerves (part 2)
6. | Patient examination V. The sensory system
7. | The cortex
8. | The spinal cord. The peripheral nervous system.
10. | The cerebellum
12. | Inflammatory disorders, AIDS.
13. | Tumors of the nervous system
14. | Neuroradiology (CT, MRI, angiography)

Week | Practice
--- | ---
1. | Basic principles of neurological diagnosis. The anamnisis. The connection between symptoms, localization and causes of neurological diseases.
2. | Assessment of the paresis. Examination of muscle tone and trophy.
3. | The mono- and polysynaptic reflexes. The pyramidal signs. The upper and lower motoneuron lesion.
5. | Examination of the I. and II. Cranial nerve. The visual fields.
7. | The V cranial nerve.
8. | The facial nerve palsy.
10. | Examination of the sensory system.
11. | The coordination. The cerebellar functions (neo-, paleo-, and archicerebellum).
12. Examination of the spine and spinal cord. The vegetative functions. 
   Signs of meningeal irritation.
13. The brainstem syndromes. The reticular activating system. 
14. Practical exam 

2nd Semester

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, subarachnoid bleeding and vascular malformations
10. | Dementia
11. | Neuromuscular diseases. Encephalopathies
12. | Genetic abnormalities in neurologic disorders
13. | Written semifinal exam

Week | Practice
---|---
1. | Diagnostic procedures I.: EEG, evoked potentials, EMG, Doppler, CSF
2. | Diagnostic procedures II.: Neuroradiology, X-ray, CT, MRI, etc.
4. | Hyperkinesia and dystonia.
7. | Memory dysfunction, dementia.
8. | The cognitive functions
10. | Examination of muscle disorders.
11. | Examination of polyneuropathies.
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
   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
<table>
<thead>
<tr>
<th>No.</th>
<th>Topic</th>
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<tbody>
<tr>
<td>9.</td>
<td>Diagnosis of polyneuropathies</td>
</tr>
<tr>
<td>10.</td>
<td>Emergency in neurology</td>
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<tr>
<td>11.</td>
<td>Traumatic CNS diseases</td>
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<tr>
<td>12.</td>
<td>Diagnosis of dementia</td>
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<tr>
<td>13.</td>
<td>Multiple sclerosis: signs and diagnosis</td>
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<td>14.</td>
<td>Intracranial tumors</td>
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<td>15.</td>
<td>Spinal tumors</td>
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<td>16.</td>
<td>Disorders of the nervous system due to alcoholism</td>
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<td>17.</td>
<td>Myasthenia gravis</td>
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<td>18.</td>
<td>Guillain-Barre syndrome</td>
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<td>19.</td>
<td>Encephalopathies</td>
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<td>20.</td>
<td>The motor neuron diseases</td>
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<tr>
<td>21.</td>
<td>Muscular dystrophies</td>
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</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Content</th>
<th>Responsible speciality</th>
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</thead>
<tbody>
<tr>
<td>Emergency patient evaluation – ABCDE approach and it’s patophysiological and clinical background.</td>
<td>Together P:45 + E/I:45</td>
</tr>
<tr>
<td>CPR I. The chain of survival, Pathophysiology of resuscitation, BLS/AED, Out-of-hospital CPR.</td>
<td>Together P:60 + E/I:30</td>
</tr>
<tr>
<td>CPR II, ALS, In-hospital CPR, Postresuscitation life support (PLS).</td>
<td>E/I: 90</td>
</tr>
<tr>
<td>C, Differential diagnosis of chest pain in the field and in the ED. Process of ACS management from first responder to definitive treatment. Pulmonary embolism, Aortic dissection.</td>
<td>Together P:30 + E/I:60</td>
</tr>
</tbody>
</table>
C. Circulatory failure, hypotension, heart failure, hypertensive crisis. Pathophysiology, differential diagnosis, treatment in the field and in the ED. Peri-arrest arrhythmias.


Differential diagnosis and treatment of acute and chronic pain in the field and in the ED. Pain syndromes. Pain management, analgo-sedation, narcosis. Causes and management of fever on-the-scene and int he ED.


Prehospital and ED care of trauma and polytrauma.

Military and disaster medicine I.
Military and disaster medicine II.
Toxycology I. General principles of toxycology. Recognition and treatment of common poisonings.

Children in the field and in the ED. Emergency pediatrics.

Practices (15×45 min + 2x12 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 (Kőtvölgyi Hospital)
ED: Emergency Department of Szt. Imre Hospital
Prehospital and Emergency Medicine (PEM) – Compulsory elective subject
Dept. of Anesthesiology and Intensive Therapy
Tutor: Dr. András Lorx

Program and topics

2 credit

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

Second Semester

Week
1–2  Introduction.
    Family Medicine in general
    Activity of the general practitioners
    Primary Health care.
3–4  Special features of the family medicine
    Continuous observation
    Quick diagnosis
    Primary medical care.
5–6  Prevention in primary care
    Rehabilitation
    Health education, health promotion
7–8  Hypertension in daily practice
    Pain in chest. Differential diagnosis
    Pain in belly. Differential diagnosis.
9–10 Diabetes mellitus in daily practice.
    Appreciation, closing of the course.

Antibiotic therapy - infectology obligatory elective subject

Obligatory elective subject for medical students already trained in microbiology, pharmacology and basic clinical subjects.
The subject gives an overview on the basic principles and practice of antimicrobial therapy. The antibiotics represent one of the most important classes of drugs that are prescribed practically in all branches of clinical medicine. It seems easy to use them and that is why we abuse them. Discussing the most important clinical features of the frequent infections, the subject shows the optimal approach to patients with infections diseases and antimicrobial treatment.
The first two lessons discuss the specific features of antimicrobial therapy, the basic principles of empiric treatment and the pharmacokinetic/pharmacodynamic concept that substantiates the application of antimicrobials in term of choice, dosage and combination. The following seven lectures deal with the specific features of the most important infections, such as respiratory tract infections, urinary tract and intraabdominal infections, endocarditis, meningitis, sepsis. Obviously, the lecturers bring into focus the considerations concerning antibiotic therapy. In the second half of the course, some of the nosocomial infections, infections of immunocompromised hosts and zoonoses are discussed, followed by the problems of antibiotic prophylaxis and antibiotic policy.
The course is organized only in the first semester.

Course director: Prof. Dr. Endre Ludwig.

The venue of course: Szent László Hospital
1097 Budapest, Gyáli út 5-7. Building N. 19 Lecture Room
**2009-2010. 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.


Tropical diseases. HIV and AIDS.


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

**ELECTIVE SUBJECTS**

(basic/pre-clinical/clinical modules) – curricula

It is compulsory to choose one subject each semester in the 4th and 5th academic years.

**BASICS OF MEDICAL CHEMISTRY**

Department of Medical Chemistry, Molecularbiology and Pathobiochemistry

Lecture 1: Basics of atomic and molecular structure, periodic table, bondings. (Müllner)

Lecture 2: Chemical equations, stoichiometry, reaction types. Acids, bases, salts. (Müllner)


Lecture 5: Consultation: preparation for the 1st midterm. Focused on calculations: ionization, pH, buffers, solubility product. (Hrabák)


Lecture 7: Electrochemistry. Oxidation and reduction, redox systems in the living cells. (Csala)

Lecture 8: Calculations in electrochemistry and thermochemistry. (Ambrus)

Lecture 9: A short summary of inorganic chemistry. Metals and non-metals. Complexes. (Dóczi)
VALUE OF ULTRASONOGRAPHY IN THE CLINICAL DIAGNOSTICS

(Lecturer: Dr. Ágnes Szebeni M.D., D. Sc.)

1. a) Basic physics of medical ultrasound
   b) Demonstration of the ultrasound laboratory; technique of ultrasound scanning.
2. a) Sonography of the liver, the spleen, the gallbladder and the bile ducts.
   b) Patient demonstrations and training
3. a) Sonography of the pancreas and the lymph nodes.
   b) Patient demonstrations and training
4. a) Invasive sonography (US guided biopsies and punctures, endosonography, intraoperative sonography).
   b) Videodemonstrations.
5. a) Urogenital sonography.
   b) Patient demonstrations and training
6. a) Small part scanning.
   b) Patient demonstrations and training
7. a) Vascular sonography
   b) Patient demonstrations and training
CLINICAL IMMUNOLOGY
Lecturer: Prof. Dr. Péter Gergely

First Semester

Introduction to clinical immunology
Immunity to infection
Immune deficiencies
Lymphoproliferative disorders
Immunology of HIV disease
Allergic diseases. Food allergy
Skin diseases of immunopathological origin. Allergic skin diseases.
Lung diseases of immunopathological origin. Bronchial asthma and allergic rhinitis.
Tumor immunology.
Autoimmune diseases; Systemic autoimmune diseases.
Transplantation: Kidney transplantation. Bone marrow transplantation.
Immunology laboratory investigations. Immunomodulation: immunosuppression and immunostimulation.

Important: Presence at the 75% of the lectures is compulsory. Doctor’s certificate is required to justify absence.

Handouts will be distributed.

Recommended textbook:
Clinical Immunology (Brostoff, Scadding, Male, Roitt), Gower

INTRODUCTORY LECTURES OF TRADITIONAL CHINESE MEDICINE

The topics:
1. Chinese way of thinking about medicine – Introductory lecture
2. Basic principles in Chinese anatomy and physiology (Yin-yang, Chi, meridian, points, cun, etc.) – 1 lecture
3. The twelve meridians and their points (locations and indications) – 6 lectures
4. The rules of the point selections – 2 lectures
5. The five-element theory, future trends in research and in the clinical use – 1 lecture
library informatics - medical literature research

Lecturer: Dr. Livia Vasas PhD. General Director – Central Library

Institute: Semmelweis University Central Library
Duration: One semester, 30×45 minutes (7×4 lessons)

SUGGESTED SEMESTER 1-10.

<table>
<thead>
<tr>
<th>Exam-form</th>
<th>Practical mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit-value</td>
<td>3 credit-points</td>
</tr>
<tr>
<td>Minimum/maximum group-size</td>
<td>8/30</td>
</tr>
<tr>
<td>The aim of the subject: Teaching students how to search in medical literature sources</td>
<td></td>
</tr>
<tr>
<td>Thematic Medical e-catalogues, e-books, e-libraries, databases (Ovid/PubMed/Web of Science), MD Encyclopaedia, Web (WHO), Scientometry (IF, Citation)</td>
<td></td>
</tr>
<tr>
<td>Application: Judit Batiz: Tel.: 459-1500/55263;</td>
<td></td>
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<tr>
<td>Application deadline: 31st August – 4th September, 2009</td>
<td></td>
</tr>
<tr>
<td>Precondition There isn’t.</td>
<td></td>
</tr>
</tbody>
</table>

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,
   - http://www.medbioworld.com/
   - http://www.lib.uiowa.edu/hardin/md/index.html; BioSites
   - http://gelen.library.ucsf.edu/biosites/
   - to make a link collection from a declared subject- **Homework**

200
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. Thesauri 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 Pharmacopoeias: 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 rsystalline records
(from Science Direct, Web of Science, OVID Medline, PubMed and e-journals hosted by Highwire)
creating own records
search facilities within our records and from PubMed;
data handling: spell checking, filtering duplicates
Homework: create your own database by collecting records
9. E-journals
e-journals – main concepts: fulltext and its formats, e-journal types:
Online only or with existing Print edition. Free medical journals:
http://www.freemedicaljournals.com/; Online First publishing, DOI code

**Introduction of Host systems:** Sciencedirect, SpringerLink, Ingenta, Cross Ref system and linking in fulltext articles

**Homework:** collect 10 e-journals from own speciality

**Information retrieval practical lesson**
- sample searching (database, journal searching)
- Consultation on search methods and results. Reference Manager, e-journals, databases etc.
- 6 samples

**Homework**

**Impact factor (JCR)**

**Homework discussion**
- calculating impact factor and its role by measuring scientific publications

**List of Journals with IF:** Journal Citation Report and its editions.

**Searching an exact data in JCR,** handling data: sorting and filtering journals

**Web of Science and its sections**
- general searching in the database model searching—guided

**Homework:** bibliographic searching on an exact author

**Citation analysis**

**Homework discussion**
- meaning of Citation analysis and its role by measuring scientific works

**Preparing the citation analysis:**
- Web of Science database cited reference search

**Saving references in the official format, special rules of the method:**
- self-citation, Identification of records

**Homework:** analysis of a professor. (in print)

**Scientometric practical lesson**
- calculating Impakt rystal and making citation analysis of given publication’s list

**Correction and discussion on main rules**

**Information retrieval practical lesson**

**Homework discussion**
- model searching on 6 samples — Bibliographic search, statistic search and Internet search for multimedia materials are included.
- consultation on the search methods and results, which was the proper search strategy.

Summary of the course, consultation

**Exam:** 2 electronic tests during the semester, renewal opportunity for each tests.

**Proposed grade or exam test during the exam period.**
INTRODUCTION TO CLINICAL ANATOMY

This elective course is for medical students having finished successfully three semesters in Anatomy.
Course Director: Prof. Dr. Tibor Wenger

Time and location: Every second year in spring semester 2 hours weekly in the lecture hall of the Department of Human Morphology and Developmental Biology (district 9, Túzoltó u. 58.)
Exam: written
Value of the course: 2 credit points
Subject:
The proposed subjects are the followings (the order is subject to possible changes).

- General introduction, surface anatomy.
- Slide anatomy I-II.
- Application of slide anatomy in CT and MRI pictures.
- Psychiatric neuroanatomy.
- Neuroanatomy and cannabis.
- Anatomical relations of the endoscopy pictures, particularly in lesser pelvis.
- Anatomical changes in hypertonia.
- Applied anatomy in family medicine and daily practice.
- Special anatomical relations in premature and newborn children.
- Anatomical changes during pregnancy.
- Anatomical bases of the traditional eastern medicine.

CLINICAL GENETICS

1st Dept. of Obstetrics and Gynecology

First Semester

The fundamentals of classical genetics
Polygenic inheritance, multifactorial determination
General cytogenetics
Basic principles of embryology and teratology
Clinical molecular genetics
Amniotic fluid cell culture for cytogenetic analysis
Alpha-fetoprotein (AFP)
Genetic amniocentesis
Pathology of multiple pregnancy
Genetic counseling
General aspects of decision making regarding the fate of pregnancy
Elements of phenotype analysis
Embryopathology and fetal pathology
Sphingolipidoses
Mucopolysacharidoses and mucolipidoses
Disorders of carbohydrate metabolism
Diseases of amino acid metabolism
Haemophilia and other bleeding disorders. Congenital immunodeficiencies. Congenital hypothyroidism. Cystic fibrosis
Hereditary muscular and neurological diseases
Congenital disturbances of ossification
Neural tube defects (NTDs). Hydrocephalus. Other craniospinal malformations
Thoracic and abdominal malformations
Cystic kidney disease. Obstructive uropathies
Down syndrome. Further autosomal trisomies
Duplication and deficiency (deletion) syndromes
Fragile X mental retardation syndrome (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.
Respiratory Disorders of Newborns.
Ventilation of the Neonate.
Cardiac Diseases of Newborns.
Surgical Diseases of Newborns.
Metabolic Problems of Newborns.
Parhophysiology of Body Fluids. Fluid and Electrolyte Management.
Neonatal Neurology.
Infections of the Newborns. Prevention and Treatment.
Neonatal Radiology.
Follow up of High-risk Newborns.

CLINICAL ENDOCRINOLOGY
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:
- 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.
- Pancreatitís chronica.
- Appendicitis, diverticulitis, sigmoiditis, typhlitis.
- Surgical infections.

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.
10. Dermatologic manifestations of hematological diseases and hematological symptoms of dermatologic diseases.
11. Immunocytopenias.
14. Infectious complications of hematological diseases

TROPICAL MEDICINE: PREVENTION, EPIDEMIOLOGY AND TREATMENT

Lecturer: Dr. Ágnes Axmann

Second Semester

Topic
1. Influence of the tropical climate on the human health. Pretravel examination and prevention: vaccines linked to international travel.
2. Malaria: one of the most important imported diseases from the Tropics: chemoprophylaxis, epidemiology, clinical course and treatment. Problems of drug-resistance.
4. The most important viral diseases: Dengue, yellow fever, Lassa, Ebola, and Marburg virus infections: how to avoid them?
5. Other protozoal diseases of great importance: leishmaniasis, sleeping sickness and intestinal protozoal infections. What is the real impact?
6. Imported warm diseases: schistosomiasis and intestinal parasitosis. Varms affecting the skin: filarial infection, guinea worm, tumbu fly lesion, creeping eruption or larva migrans syndrome.
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.

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

Exam requirement: written test

Textbook:

CLINICAL CARDIOVASCULAR PHYSIOLOGY

AOKIKCAR_1A

Elective course for medical students in the 3rd, 4th and 5th years.
The purposes of the course are:
To refresh and extend – in selected topics – the basic knowledge related to normal and pathological functions of the human circulatory system.
To integrate the latest scientific results related to different organization levels – from molecular physiology to system physiology – of the cardiovascular system.
To discuss and demonstrate measurement principles and techniques, as well as physiological and pathophysiological mechanisms related to the application of modern non-invasive cardiovascular diagnostic procedures in the clinical practice.

Program:
1. Biomechanical background of normal and pathological cardiovascular functions.
2. Hemodynamics of cerebral aneurisms
3. Recent results in control of cerebral blood supply, physiological and clinical aspects
4. Clinical physiology of the microcirculation
5. Age related changes in the vascular system, role of sexual hormons
6. Coronary circulation, possibilities of pharmaco-physiological interventions
7. Pathophysiology of chronic venous insufficiency
8. Role of endothelial mechanisms in clinical symptoms
9. Duplex ultrasonic investigation of large vessel function: measurement of vessel wall elasticity, Doppler-indexes, study of veins
10. Ultrasonic investigation of the human heart: theoretical background; 2D-, M-, Doppler-mode, color Doppler imaging, echocardiography; diagnostics of valve insufficiency and coronary diseases

Students who meet the following criteria will receive 2 credit points: regular attendance of classes and successful written exam. Material for the exam includes lecture topics and textbooks suggested by the lecturers. Further information is available on this web page: www.elet2.sote.hu

MEDICINAL, EPIDEMIOLOGICAL, AND SOCIAL ASPECTS OF DRUG ABUSE
Department of Pharmacology and Pharmacotherapy
Course director: Prof. Dr. Susanna Fürst

Second semester

Code: AOFRMKAB_1A
Credit: 2

Topics:


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

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


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


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.


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
2009/2010
Department of Family Medicine
Director: Prof. Dr. László Kalabay
Location: Kútögyi 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. András Jávor
Tutor: Dr. Mariann Szabó Dinya

2 hours/week

THEMES
Data, information, knowledge and decision in the medicine and health care
Classification and coding systems, ICD-10
Informatics in the prevention
Networking
WEB 2.0 and the health care system
Signal analysis and image processing
Standards in the medical informatics
Information systems in the health care
The electronic patient record
Knowledge management
Data security in the health systems. Digital signatures
Informatics of the primary health care and drug management
Health care financing and informatics
Health and health care statistics
Telemedicine
JEWISH MEDICAL ETHICS I-II
Institute of Behavioral Sciences
Director: Prof. Dr. Ferenc Túry
Course Director: Rabbi Baruch Oberlander

Credit: 4 credits (2 credits for each semester; I and II)

Attendance at 75% of lectures is compulsory. Missed lectures cannot be made up for. In case of missing more than 25% of lectures (3 lectures) a note from a healthcare professional is required.

Semester grade requirement: A written report (paper) based on list of topics and recommended reading material.

Successful completion of semester I is the prerequisite of signing up for semester II.

List of textbooks:

Obligatory: Handouts given during lectures

Fred Rosner: Pioneers in Jewish Medical Ethics, Jason Aronson, New Jersey, 1997
Rabbi Moshe Tendler–Fred Rosner: Practical Medical Halachah, Association of Orthodox Jewish Scientists, New Jersey 1990
Fred Rosner: Medicine and Jewish Law II, Jason Aronson, New Jersey, 1993

Semester I.

1-2. Lecture: The religious orders and the duty of saving a life
3-4. Lecture: Doctors and God – The function of healing and prayer in Jewish ethics
5-6. Lecture: Euthanasia – The questions of death and dying in society
7-8. Lecture: Smoking and use of light drugs from the aspect of Judaism
9-10. Lecture: Medical malpractice in the light of Jewish law and ethics
11-12. Lecture: The possibilities for artificial insemination in Jewish law
13-14. Lecture: The advantages, disadvantages and conditions of cloning

Semester II.

1-2. Lecture: Genetics and Jewish law – What rights do we have over our gene pool?
3-4. Lecture: Genetics and Jewish law – The problem of the gene manipulated food products
5-6. Lecture: Siamese twins – The question of valuation between two living persons
7-8. Lecture: Parasolvency – What is the best method to compensate the doctor?
9-10. Lecture: Contraception in Jewish law
11-12. Lecture: Permitted and prohibited methods of organ transplantation
13-14. Lecture: The questions of DNA identification in Jewish law
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:

Attendance at 75% of lectures is compulsory.

Semester requirement: test, plus written/oral exam.

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**CLINICAL ONCOLOGY**

- elective for students in the 4th and 5th year

2 hours/week, 2 credits

2nd Department of Internal Medicine
Course Director: **Prof. Dr. Lidia Sréter**

Basic principles of clinical application of chemotherapy, principles of immunotherapy and endocrine therapy.
Cancer prevention: tobacco dependence and its treatment, chemoprevention, role of surgery in cancer prevention.
Cancer screening: principles, gastrointestinal, gynecologic, breast, lung.
Specialized techniques in cancer management: vascular access, interventional radiology, RFA photodynamic therapy, molecular imaging and functional imaging of cancer.
Cancer of head and neck: molecular epidemiology, treatment and rehabilitation.
Cancer of the lung: molecular biology, NSCLC, SCLC.
Cancer of esophagus and stomach: stage directed multimodality treatment.
Pancreatic cancer: clinical presentation, evaluation, treatment of resectable and advanced diseases.
Cancer of the liver: etiology, screening populations, clinical management, systemic therapy, regional therapy, radiotherapy.
Cancer of unknown primary site: histologic types of CUPS, management of CUPS.
Immunosuppression related malignancies: AIDS, transplantation, chemotherapy.

The lecturers of the elective are the oncologists of Semmelweis University.
### OBLIGATORY ELECTIVE AND ELECTIVE SUBJECTS – SCHEDULE OF THE CLINICAL MODULE

#### OBLIGATORY ELECTIVE SUBJECTS

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOSZLABI_1A</td>
<td>Antibiotic Therapy and Infectology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>ADANEINT_2A</td>
<td>Anesthesia and Intensive Care</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Exclusively for the 5th year</td>
</tr>
</tbody>
</table>

#### ELECTIVE SUBJECTS

**1st semester**

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOVELT101_1A</td>
<td>Problem based medical physiology</td>
<td>2,5</td>
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<td>4</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
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<tr>
<td>AOSMAG155_1A</td>
<td>Sleep Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pathophysiology and Clin. Lab., Diagnostics final</td>
</tr>
<tr>
<td>AOKIKLKE_1A</td>
<td>Clinical Physiology of Respiration and Respiratory Diseases</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Physiology final</td>
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<tr>
<td>AOPTKONL_1A</td>
<td>Clinical oncology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>AOND1KLG_1A</td>
<td>Clinical Genetics</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>A0IMMKIM_1A</td>
<td>Clinical Immunology</td>
<td>2</td>
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<tr>
<td>A0INFMED_1A</td>
<td>Health Informatics</td>
<td>2</td>
<td>–</td>
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<tr>
<td>A0MMSTCM_1A</td>
<td>Traditional Chinese Medicine</td>
<td>2</td>
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<tr>
<td>A0BMKULT_1A</td>
<td>Ultrasonography</td>
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<td>–</td>
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<td>Pre-clinical module</td>
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<tr>
<td>A0KJOHE_1A</td>
<td>Jewish Medical Ethics I.</td>
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<tr>
<td>A0KMHE_1A</td>
<td>History of Medical Professionalism</td>
<td>2</td>
<td>–</td>
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<td>pract. mark</td>
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<tr>
<td>Subject Code</td>
<td>Subject</td>
<td>Lectures</td>
<td>Practicals</td>
<td>Credit Points</td>
<td>Examination</td>
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<tr>
<td>AOFRMKAB_1A</td>
<td>Medicinal, Epidemiological, and Social Aspects of Drug Abuse</td>
<td>2</td>
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<td>AOKIKCAR_1A</td>
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<td>Pre-clinical module</td>
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<tr>
<td>AOSB2SSB_1A</td>
<td>Emergency in Surgery</td>
<td>2</td>
<td>–</td>
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<td>pract. mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>AOBL1CSS_1A</td>
<td>Family Surgery</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Surgery I.</td>
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<tr>
<td>AOGY1NEO_1A</td>
<td>Neonatology</td>
<td>2</td>
<td>–</td>
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<td>pract. mark</td>
<td>Pre-clinical module</td>
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<td></td>
<td>Prehospital and Emergency Medicine</td>
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<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>It can be taken only in the 10th semester.</td>
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<td>AOSZLTRP_1A</td>
<td>Tropical Medicine</td>
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<tr>
<td>AOSMKULT_1A</td>
<td>Ultrasoundography</td>
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<td>–</td>
<td>2</td>
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<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Jewish Medical Ethics I.</td>
</tr>
</tbody>
</table>
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. Külvölgyi 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: Prof. Dr. Péter Kupcsulik
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 Szabó

Pediatrics

1st Department of Pediatrics
Budapest VIII., Bókay J. u. 53. Phone: 334-3186
Head of the Department: Prof. Dr. Thvadar 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 Richard 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: Dr. Róbert Debreczeni

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. Annamária Rihmer

Family Medicine in Daily Practice

Department of Family Medicine
Budapest XII., Kútöngyői út 4. Phone: 325-1100
Head of the Department: Prof. Dr. László Kalabay
Tutor: Dr. Péter Torzsa

Prehospital Emergency Medicine

National Ambulance Service
Budapest XIII., Róbert Károly krt. 77. Phone: 344-3737
Director: Dr. Gábor Göbl
Tutor: Dr. Erzsébet Márton
STUDY PROGRAM

<table>
<thead>
<tr>
<th>Internship</th>
<th>Required number of weeks</th>
<th>Credits</th>
<th>Examination</th>
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<td>AOBEL1BEL6SA</td>
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<td>AOBEL2BEL6SA</td>
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<td>AOBEL3BEL6SA</td>
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<tr>
<td>AOSB1SEB6SA</td>
<td>Surgery</td>
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<td>9</td>
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<tr>
<td>AOSB2SEB6SA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOSB3SEB6SA</td>
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<td></td>
<td></td>
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<tr>
<td>AOTRATRAGSA</td>
<td>(2 weeks Traumatology)</td>
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<tr>
<td>AOGY1GYE6SA</td>
<td>Pediatrics</td>
<td>8</td>
<td>8</td>
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<tr>
<td>AOGY2GYE6SA</td>
<td>Pediatrics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOGY3GYE6SA</td>
<td>1 week Infectology</td>
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<tr>
<td>AON015ZN6SA</td>
<td>Obstetrics and Gynecology</td>
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<td>AON016IDG6SA</td>
<td>Neurology</td>
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<td>AOPSIEM6SA</td>
<td>Psychiatry</td>
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<td>4</td>
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<td>AOC5AC6OGSA</td>
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<td>practical course grade</td>
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<tr>
<td>AOBMSMENGSA</td>
<td>Prehospital Emergency Medicine</td>
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<td>signature</td>
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<tr>
<td>Total:</td>
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<td>43</td>
<td>39</td>
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</table>

# The grade influences the qualification of the diploma.

Important note concerning the 6th year rotation

Concerning our shared responsibility to maintain high academic standards at Semmelweis University, it is stated that:

Students are allowed to spend their clinical rotation in their home or any other foreign country (except for Neurology and two weeks of Pediatrics) on the condition that they present prior to their clinical training appropriate and sufficient information about the hospital they intend to work in. The documents have to be approved by the relevant Clinical Departments of Semmelweis University.

The documents should include the following information:
- University affiliation of the hospital
- Clinical departments functioning in the hospital
- Clinical training programs established in the hospital
- Number of inpatients and outpatients cared for per year
- Letter of acceptance, with official hospital letter head, name and signature of the hospital officer who is responsible for education and clinical training of students

These rules should be adhered to in order to keep in high esteem the diploma issued by Semmelweis University.

Professor Dr. Mark Kollai
Academic Program Director
INTERNAL MEDICINE

- To be present for at least 6 hours per day (30 hours per week).
- 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
Diagnostics of fractures
Principles of treatment of fractures
Diagnostics of hand injuries
General principles of the management of hand injuries
Management of major traumas (head, thoracic, abdominal, spinal and skeletal injuries)

The oral examination in surgery includes one question of traumatology.

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

<table>
<thead>
<tr>
<th>Topic</th>
<th>Tutor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pediatric Oncology</td>
<td>Prof. Dr. Schuler</td>
</tr>
<tr>
<td>2. Epilepsy</td>
<td>Prof. Dr. Kálmánchey R.</td>
</tr>
<tr>
<td>3. Pediatric Endocrinology</td>
<td>Dr. Halász. Z.</td>
</tr>
<tr>
<td>4. Hypertension Disturbances of the lipid metabolism</td>
<td>Dr. Szamosi T.</td>
</tr>
<tr>
<td>5. Nutrition and Feeding</td>
<td>Dr. Tomsits E.</td>
</tr>
<tr>
<td>6. Disturbance in Sexual Differentiation</td>
<td>Prof. Dr. Sólyom</td>
</tr>
<tr>
<td>7. X-ray Diagnosis</td>
<td>Dr. Rudas G.</td>
</tr>
<tr>
<td>8. Diabetes Mellitus</td>
<td>Dr. Hoszú É.</td>
</tr>
<tr>
<td>9. Abdominal Pain (diff. dg.)</td>
<td>Dr. Hajmássy Zs.</td>
</tr>
<tr>
<td>10. Asthma Bronchiale</td>
<td>Dr. Németh Á.</td>
</tr>
<tr>
<td>11. Newborn Infant: Respiratory Disorders</td>
<td>Dr. Pataki M.</td>
</tr>
<tr>
<td>12. Diseases of the Urinary Tract Obstructive Bronchitis</td>
<td>Dr. Visy M.</td>
</tr>
<tr>
<td>13. Genetic counselling</td>
<td>Prof. Dr. Fekete Gy.</td>
</tr>
<tr>
<td>14. Congenital Heart Diseases and the Treatment in Infanithood</td>
<td>Dr. Szabolcs J.</td>
</tr>
</tbody>
</table>

Students who get preliminary permission from the Head of the Department to do the internship abroad are supposed to complete 2 weeks (out of the 8) at the Department of Pediatrics of Semmelweis University.

OBSTETRICS AND GYNECOLOGY

Essential Requirements in Obstetrics

- Prenatal care (anamnesis, lab tests, screening during pregnancy, obstetrical examinations, Leopold’s manoeuvres)
- Cardiotocography (NST, OCT)
- Ultrasonography (evaluation)
- Abnormal pregnancy (diagnosis and therapy), intercurrent diseases (diabetes, heart diseases, renal diseases). Preeclamptic toxemia, hypertension, twins, hemorrhages, abortions
- Normal labor
  - fetal and maternal monitoring, management of the stages of labor (examinations during labor)
- Abnormal labor
  - breech delivery, transverse lie (diagnosis)
- Obstetric operations (assistance at labor and delivery)
- Postnatal care
  - Evaluation of the premature, dysmature and eutrophic newborns
- Fundamentals of neonatal management
- Essential Requirements in Gynecology
- Gynecologic anamnesis
– Gynecologic examinations (to be carried out)
  – vaginal examination
  – colposcopy – cytology (basic knowledge, how to take a PAP smear)
  – examination of the breast
– Gynecologic operations (assistance)
  – Bartholin abscess, cyst
  – D and C
  – abdominal hysterectomy
  – vaginal hysterectomy
  – colporrhaphy
– Postoperative management (basic knowledge)
– Outpatient clinics (to take part in the office work of outpatient clinics for gynecology, genetic counseling, adolescent gynecology, menopause, endocrinology, etc.)
– Bleeding disorders
– Cervical, corporal, ovarian, vulvar cancer (etiology, screening, diagnosis, therapy)
– Inflammation of the genital tract (PID)
– Urinary incontinence
– Contraception

NEUROLOGY
General information

Tutor: Dr. Róbert Debreczeni
Tel.: 210-0330, Fax: 210-1368

Office hours at the Department of Neurology:
Monday 13.00-14.00
Friday 10.00-12.00

Responsible Secretary: Andrea Kovács (Andi)

Rotation periods: set by the English Secretariat, but for individual changes one might apply at the Department of Neurology. To ease the scheduling of other VIth 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 night duty (no sleep in). Students’ activity in the wards, at the Outpatient Clinic and during duty, and also the case report is evaluated by the student’s tutor on an assessment sheet. The assessment form and the case report must be presented at the final exam. During the training period two days of absence are allowed.

Final examination
One can register for the exam only through the Neptun-system. The final examination consists of:
1. practical part: neurological examination skills, decision making, tested at the bedside;
2. theoretical part: 3 theoretical questions.

Examinations start at 10 a.m. Students must present their index book, assessment form, case report and in case of retake the permission from the Office of Dean.

On event of failing the earliest possible retake is 10 days later.
Official textbooks:
1. Arányi Zs., Kamondi A., Kovács T., Szirmai I.: Investigation of neurological patients
3. Lindsay, Bone, Callender: Neurology and Neurosurgery Illustrated. Churchill Livingstone

Other suggested books:
2. Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers

6th year Medical Student Clinical Neurology Learning Objectives

Neurologic History and Examination
1. Perform a competent history, noting the following factors:
   A. Establish the onset, progression and character of the disorder identifying all related symptoms.
   B. Perform a standard neurologic review of symptoms with regard to personality, memory, headaches, pain, seizures, impairments of consciousness, vision, hearing, language function, swallowing, coordination, gait, weakness, sensory alterations, sphincter disturbance, and involuntary movements.
2. Perform a neurologic examination
   A. Perform a screening mental status examination to include:
      level of consciousness assessment, and aphasia assessment.
   B. Examine for meningismus, straight leg raising maneuver.
   C. Cranial nerve examination
   D. Motor examination including: tone, strength and bulk, pronator drift, abnormal movements.
   E. Perform a reflex examination (muscle stretch reflexes, superficial reflexes, pathologic reflexes)
   F. Coordination examination including finger-to-nose- test, heel-to-shin test, rapid alternating movements.
   G. Gait examination: stance and Romberg test, gait, tandem gait, ability to rise from sitting, toe walking and heel walking.
   H. Perform sensory examination including primary modalities (pain, temperature, position, vibration) and secondary/cortical modalities (stereognosis, graphesthesia, double simultaneous stimulation).
3. 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 nystagmus 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, liquorhrea.

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 motoneuron lesion
6. Types and crystalline of aphasia
7. Classification of unconscious conditions
8. Examination of the unconscious patient
9. Unconsciousness due to metabolic origin
10. Emergency in Neurology
12. Traumatic intracranial bleeding
13. Trauma of the spine and spinal cord
14. Clinical syndromes of impaired circulation of the internal carotid artery
15. Clinical syndromes of impaired circulation of the vertebro-basilar system
16. Emergency in cerebrovascular disorders
17. Diagnostic procedures in cerebrovascular disorders.
19. Intracerebral bleedings.
20. Diagnosis, treatment and prognosis of subarachnoid hemorrhage
21. Status epilepticus
22. Meningitis, encephalitis
23. Multiple sclerosis
24. Signs of brain tumors
25. Signs of tumors of the spine and spinal space
26. Brain edema
27. Diagnostic criteria of dementia
28. Diagnosis of Parkinson’s disease
29. Wernicke-Korsakow syndrome
30. Guillain-Barre syndrome
31. Disturbance of micturition and defecation
32. Myasthenia gravis

2nd series
1. Neurological causes of impaired visual acuity. Visual field defects.
2. Ocular movement and gaze disorders
3. Disorders of the vestibular system.
5. Syndromes of pons and mesencephalon lesions
6. The muscle tone control
7. Neuropathological basis of sensory disturbances
9. Gait disorders
10. Symptoms of frontal lobe damage
11. Symptoms of temporal lobe damage
12. The limbic system
13. Symptoms of parietal lobe damage
14. Symptoms of occipital lobe damage
15. Cerebral dominance (functional brain asymmetry)
16. Classification of aphasia
17. Agnosia, apraxia, alexia, agraphia
18. The basal ganglia
19. Disorders of the thalamus
20. Localisation of memory disturbances
21. Imaging techniques (angiography, CT, MR, PET, SPECT)
22. Ultrasound examination of the cerebral vessels

231
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. Prior-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 lumbarosacral 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. Cranio-cervical 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
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 Göbl

Syllabus

During the 2 weeks (70 hours) practice students will join the staff of an ALS (Advanced Life Support) Unit. They will experience the acute, in-field presentation of emergencies, occasionally urgencies, as well as the special viewpoints of interhospital transfer.

Goal of the ambulance practice is to gain insight into
- Patient’s assessment in the prehospital setting (primary and secondary survey)
- Recognition of critically ill condition and the emergent interventions required (airway management, CPR, IV line, volume substitution, pain relief, etc).
- Recognition of several emergencies (ACS, stroke, hypertensive emergencies, bronchial asthma, poisoning, psychiatric disorders, etc).
- Patient’s mobilization, immobilization, special viewpoints of extrication
- Monitoring patient en route to the hospital, transportation trauma.

The certification of the practice should contain the
- Period of time spent at the ambulance station
- List of cases the student participated at
- Signature of the local director of the Ambulance Service

Note: Absence in 25% of practice time is possible, however informing the coordinator in advance and discussion of the new term of the practice are required.

Mode of certifying absences: oral

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 a university clinic or teaching hospital preferably in their native countries, in order to enable them to arrange their future employment after graduation. However, students must pay the full tuition fee and all final examinations must be taken at Semmelweis University.

Please see the “Important Note” after the Study Program!

Students who cannot pay the whole tuition fee in one sum have to ask for permission in writing from the Academic Program Director, to pay in two parts, in which case the first part will be due until July 31, 2009 and the second by the end of December, 2009.

Students who only complete the compulsory 6 weeks (two weeks of Pediatrics and four weeks of Neurology) 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, 2009. 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. Israeli students have to have the Dean’s signature on all certificates issued by hospitals affiliated to Ben-Gurion, Technion, The Hebrew and Tel-Aviv Universities. Tel Hashomer Hospital is an exception, there the Director of the Hospital has to sign instead of the Dean. However, if Tel-Aviv University insists that you register through them, you have to do it, as per the agreement between our Dean and the Israeli Deans. 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, 2010! For the August exam latest until July 15, 2010 and for the November exam latest until October 15, 2010!
- that you have to leave your lecture book at the English Secretariat after each Final Examination (because the secretaries need it to do the administration, you will not loose or forget it abroad, etc.)
## STUDY PROGRAMME

### First Year

#### 1st semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Creditcode</th>
<th>Examination</th>
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<tr>
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<tr>
<td>Anatomy, Histology, Embryology I.</td>
<td>C9L3P6</td>
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<td>Medical Physics and Statistics I.</td>
<td>C5L2P2,5</td>
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<tr>
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<td>C7L4P5</td>
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</tr>
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<td>Medical Biology I.</td>
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<tr>
<td>Physical Education I.</td>
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#### 2nd semester

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<tr>
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<tr>
<td>Anatomy, Histology, Embryology II.</td>
<td>C9L3P6</td>
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<td>C5L2P2,5</td>
<td>final#</td>
<td>Medical Physics and Statistics I.</td>
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<td>Medical Chemistry II.</td>
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<tr>
<td>Medical Biology II.</td>
<td>C3L1P2</td>
<td>semifinal</td>
<td>Medical Biology I.</td>
</tr>
<tr>
<td>General Dental Materials</td>
<td>C1L1P0</td>
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<td>Medical Chemistry I.</td>
</tr>
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<td>Preventive Dentistry I.</td>
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<tr>
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<td>pract.mark</td>
<td>Hungarian Medical Terminology I.</td>
</tr>
<tr>
<td>First Aid</td>
<td>C0L0P1</td>
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<tr>
<td>Physical Education II.</td>
<td>C0L0P1</td>
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<td>Physical Education I.</td>
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<td><strong>Obligatory Elective</strong></td>
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<tr>
<td>Medical Informatics</td>
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**compulsory summer pract.**

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<td>Dental Laboratory Practice (summer, 2 weeks)</td>
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<tr>
<td>Nursing Practice (summer, 2 weeks)</td>
<td>60’</td>
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**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/weeks)

P= Practice (hours/weeks)
LIST OF TEXTBOOKS

12. Tóth: Concise Inorganic Chemistry for Medical Students. (SOTE) (Bp.)
13. Laboratory Manual I-II. (Bp.)
14. Hrabák: Selected Collection of Chemical Calculations (SOTE) (Bp.)
15. Sasvári: Bioorganic Compounds (Bp.) SOTE

Recommended textbooks:

5. Sasvári-Muller: Bioorganic Compounds 4 köt. (Bp.)
First Semester

Lectures: 3 hours per week
Laboratory: 6 hours per week, 4 hours Anatomy, 2 hours Histology

Lectures | Dissecting room | Histology lab.
--- | --- | ---
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 |  | SIMPLE EPITHELS: Simple squamous (mesothel, pleura); simple cuboidal (kidney); simple columnar (gallbladder); pseudostratified (trachea) STRATIFIED EPITHELIA: squamous, non-keratinizing (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); Muscles, vessels and nerves reticular fibers (liver); differential staining of the fibers (skin); ground substance (umbilical cord) CELLS. Various types of cells
3. Animal tissues, epithelial cells, simple epithelium |  |  
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 | Dissection of the shoulder and elbow joints. |  
8. Bones and joints of the hand | Dissection of the joints of the upper extremity. Dissecting of the upper extremity: removal of the skin, fascia brachii and antebrachii |  
9. Giandular epithelium |  |  
10. Muscles of the hand | Muscles of the shoulder region, flexor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles. Palmar aponeurosis. |  
11. Connective tissue, cells |  |  
12. Connective tissue: fibers; types of the connective tissue |  |  
13. Blood, hematopoesis | Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles. |  
14. Supporting tissue |  |  
15. Bone formation |  |  
16. Vertebræ, sacrum, vertebral column | TEST. Upper extremity |  
17. Superficial and deep muscles of the back |  |  

ANATOMY, HISTOLOGY AND EMBRYOLOGY
Department of Anatomy, Histology & Embryology
Tutor: Prof. Dr. Miklós Réthelyi
<table>
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<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
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</thead>
<tbody>
<tr>
<td>18. Thorax, pectoral and intercostal muscles</td>
<td>Vertebrae, ribs, sternum</td>
<td>(scar tissue); mast cells peri-(neum); fat cells (tongue, skin). CONNECTIVE TISSUE, TYPES. Mesenchyme umbilical 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 cartilage (epiglottis).</td>
</tr>
<tr>
<td>20. Abdominal muscles, rectus sheath</td>
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<td></td>
</tr>
<tr>
<td>21. Diaphragm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Implantation, germ layers, embryonic disc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Development and differentiation of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Hip joint and the muscles acting upon it</td>
<td>Knee joint, joints of the foot. Flexor muscles of the thigh</td>
<td>TEST. Epithelial, connective and supporting tissues.</td>
</tr>
<tr>
<td>27. Foot and calf, muscles of the sole.</td>
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</tr>
<tr>
<td>28. Neurulation, Folding of the embryo. Fetal membranes</td>
<td></td>
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</tr>
<tr>
<td>29. Early embryonic and placental circulation. Structure of the placenta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. The motor system</td>
<td>Completion of the dissection</td>
<td>PLACENTA, UMBILICAL CORD</td>
</tr>
<tr>
<td>31. Muscle tissue I.</td>
<td></td>
<td>MUSCLE TISSUE. Smooth muscles (gut); striated muscle (skeletal muscle); cardiac muscle (heart)</td>
</tr>
<tr>
<td>32. Muscle tissue II.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. Herniae</td>
<td></td>
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</tr>
<tr>
<td>34. Neuronal tissue: neurons and supporting cells derived from the neural tube</td>
<td></td>
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</tr>
<tr>
<td>35. Neuronal tissue: neurons and supporting cells derived from the neural crest</td>
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</tr>
<tr>
<td>36. Neuronal tissue: synapses, effectors, receptors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37. Sphenoid and ethmoid bones</td>
<td></td>
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<tr>
<td>38. Temporal bone</td>
<td></td>
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</tr>
<tr>
<td>39. Calvaria, base and interior of the skull</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40. Facial skeleton, orbit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41. Nasal cavity, paranasal sinuses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42. Oral cavity, pterygopalatine and infratemporal fossae</td>
<td></td>
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</tr>
<tr>
<td>43. Mandible, temporomandibular joint</td>
<td></td>
<td></td>
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<tr>
<td>44. Atlantooccipital and atlantoaxial joints. Suboccipital muscles</td>
<td></td>
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</tr>
<tr>
<td>45. Development of the skull. Fontanelles</td>
<td>TEST, Skull</td>
<td></td>
</tr>
</tbody>
</table>

243
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.
10. Viscera, introduction. Histological structure of the solid and hollow viscera
11. Suprhyoid muscles. Muscles of facial expression, Oral cavity,
12. Muscles of mastication. Tongue
14. Development and histology of the teeth
15. Development of the face, malformations
16. Pharynx, structure of the wall, soft palate
17. Infrathyroid 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
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

Dissecting room
1. Heart: surface structure, vessels, myocard
2. Chambers of the heart, valves
4. Esophagus, aorta
5. Abdominal organs, peritoneum. Hepatodudodenal ligament, mesentery
6. Unpaired branches of the abdominal aorta, tributaries of the portal vein
7. Demonstration of the abdominal visceral topography in the cadaver

Histology lab.
1. VESSELS. Elastic artery (carotid artery); middle size artery and vein, arterioles, venules, capillaries (tongue)
2. LYMPHATIC ORGANS. Lymph node, spleen
3. Thymus, palatine tonsil, lingual tonsil.
4. Digestive system. Lip, tongue, filiforme, fungiform and vallate papillae. Foliate papilla (demonstration)
5. Digestive system.
6. Salivary glands (parotid, submandibular, sublingual); tooth (demonstration)
7. Digestive system.
8. Esophagus, stomach, liver, digestive system.
9. Stomach, cardia, pylorus
10. Digestive system.
11. Duodenum, jejunum, ileum, colon, appendix
12. Digestive system.
13. Test. Lymphatic organs, vessels, heart, digestive system
14. Respiratory system.
15. Larynx, trachea, lung. Demonstration: embryonal lung
PREVENTIVE DENTISTRY I.
Department of Conservative Dentistry
Lecturer: Prof. Dr. Ida Nyárasdy

Second Semester

Week Lectures (1 hour/week)

The first eight weeks – lectures

1st week: About the dentistry and prevention – introducing lecture
2nd week: The two widespread dental diseases
3rd week: Oral hygiene
4th week: Fluoride-prevention
5th week: Prevention in the different target-groups
6th week: Basics of dietetics
7th week: Smoking
8th week: Introduction into dentistry

After these lectures: 2 × 2.5 hours practices – at schools

14th (last week) – lecture: questioner; practical course grade
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

FIRST AID
Course director: Dr. Gábor Göbl
Tutor: Dr. Imre Engelbrecht

Second Semester

Topics
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.
Fainting. Shock. Allergy
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. András Jávor
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

**Practicals**

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 Bemmelen: 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.
BASIC MODULE

Faculty of Dentistry
2nd year
## STUDY PROGRAMME

### Second Year

#### 3rd semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compulsory</td>
<td>C28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anatomy, Histology, Embryology III.</td>
<td>C8L3P5</td>
<td>semifinal</td>
<td>Anatomy, Histology, Embryology II.</td>
</tr>
<tr>
<td>Medical Biochemistry I.</td>
<td>C6L4P3</td>
<td>semifinal</td>
<td>Medical Chemistry II.</td>
</tr>
<tr>
<td>Medical Physiology I.</td>
<td>C11L6P5</td>
<td>semifinal</td>
<td>Anatomy, Histology, Embryology II, Medical Chemistry II, Medical Physics and Statistics II.</td>
</tr>
<tr>
<td>Odontotechnology I.</td>
<td>C3L1P2</td>
<td>pract.mark</td>
<td>General Dental Materials</td>
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<tr>
<td>Physical Education III.</td>
<td>C0L0P1</td>
<td>signature</td>
<td>Physical Education II.</td>
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<tr>
<td><strong>Total Credit</strong></td>
<td><strong>C28</strong></td>
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</table>

#### 4th semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compulsory</td>
<td>C30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anatomy, Histology, Embryology IV.</td>
<td>C5L1P4</td>
<td>final#</td>
<td>Anatomy, Histology, Embryology III.</td>
</tr>
<tr>
<td>Medical Biochemistry II.</td>
<td>C6L4P3</td>
<td>final#</td>
<td>Medical Biochemistry I.</td>
</tr>
<tr>
<td>Medical Physiology II.</td>
<td>C10L6P5</td>
<td>final#</td>
<td>Medical Physiology I.</td>
</tr>
<tr>
<td>Odontotechnology II.</td>
<td>C5L0P5</td>
<td>pract.mark</td>
<td>Odontotechnology I.</td>
</tr>
<tr>
<td>Conservative Dentistry and Endodontics, Pre-clinical I.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Odontotechnology I.</td>
</tr>
<tr>
<td>Physical Education IV.</td>
<td>C0L0P1</td>
<td>signature</td>
<td>Physical Education III.</td>
</tr>
<tr>
<td><strong>Total Credit</strong></td>
<td><strong>C30</strong></td>
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</tbody>
</table>

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

4. A.Newbrun: Cariology Quintessence. ISBN 0867152052

Recommended textbooks:

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

First Semester

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

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The significance of the nervous system in the medical curriculum and practice.</td>
<td>Divisions of the brain meninges, arteries and veins of the brain, surface structure of the hemispheres basis cerebris.</td>
<td></td>
</tr>
<tr>
<td>2. Development of the telecephalon, Meninges anatomy of the hemispheres, lateral ventricles</td>
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<tr>
<td>3. Development and anatomy of the diencephalon.</td>
<td>Demonstration: dura maters, sinuses</td>
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<tr>
<td>4. Development and anatomy of the brain stem and cerebellum. Fourth ventricle</td>
<td>Lateral ventricles, third ventricle</td>
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<tr>
<td>5. Blood supply of the brain. Cerebrospinal fluid</td>
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<tr>
<td>6. Differentiation of the neural tube, development of the spinal cord</td>
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<tr>
<td>7. Anatomy of the spinal cord, spinal segment</td>
<td>Brain stem, fourth ventricle, cerebellum</td>
<td>Spinal cord, brain stem, spinal cord, spinal ganglion, medulla oblongata, mesecephalon</td>
</tr>
<tr>
<td>8. Neuronal architecture of the spinal cord: proprioceptive and withdrawal reflex arches</td>
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<tr>
<td>9. Neuronal architecture of the spinal cord: autonomous reflex arch, spinal pathways</td>
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<tr>
<td>10. Nuclei and pathways in the brain stem i.</td>
<td>Cross sections of the brain stem.</td>
<td>Demonstration: spinal cord</td>
</tr>
<tr>
<td>11. Nuclei and pathways in the brain stem ii.</td>
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</tr>
<tr>
<td>12. Nuclei and pathways in the brain stem iii.</td>
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</tr>
<tr>
<td>13. Microscopic structure and connections of the thalamic nuclei</td>
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<tr>
<td>14. Sensory pathways</td>
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<tr>
<td>15. Neural correlates of the pain sensation</td>
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<tr>
<td>16. Cerebellar cortex</td>
<td>Test. Anatomy of the brain and the spinal cord; nuclei, pathways (tracts), embryology, Regio (r.)frontalis, r. infraauralis et buccalis, r. supravaginalis, r. Auraris</td>
<td></td>
</tr>
<tr>
<td>17. Cerebellar pathways</td>
<td>R. frontalis, r. infraauralis et buccalis, r. supravaginalis, r. Auraris</td>
<td></td>
</tr>
<tr>
<td>18. Structure and connections of the basal nuclei (extrapyramidal system)</td>
<td>r. parotideomasseterica, r. mediana colli, r. infracervicalis, r. deltoida</td>
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<tr>
<td>19. Motor pathways</td>
<td></td>
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<tr>
<td>20. Patient demonstration</td>
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<tr>
<td>21. Cerebral cortex</td>
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<tr>
<td>22. Trigeminal nerve</td>
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<tr>
<td>23. Facial nerve</td>
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<tr>
<td>24. Glossopharyngeal, vagus, accessory and hypoglossal nerves</td>
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<tr>
<td>25. Olfactory and gustatory systems</td>
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<tr>
<td>26. Outer and middle coats of the eyeball</td>
<td>R. parotideomasseterica, r. mediana colli, r. infracervicalis, r. deltoida.</td>
<td></td>
</tr>
<tr>
<td>27. Lens, chambers of the eye, vitreous body, accommodation</td>
<td>Dissection of the eye</td>
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</tr>
</tbody>
</table>
### Lectures

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

Second Semester

Lectures: 1 hour per week
Laboratory: 4 hours per week

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Topography of the upper extremity, clinical correlations</td>
<td>Regio (r.) nuchae, r. dorsalis scapulae, r. glutea, r. cubiti post., r. carpi dors., r. poplitea, r. Plantaris. Dissection of the back</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Topography of the lower extremity (clinical correlates), mechanism of walking</td>
<td>R. nuchae, r. dorsalis scapulae, r. glutea, r. cubiti post., r. carpi dors., r. poplitea, r. Plantaris. Dissection of the back</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Surface- and sectional anatomy I. Head</td>
<td>R. brachii post., r. antebrachii post., r. dorsalis manus, r. femoris post., r. cruris post., retromalleolar regions</td>
<td>Review I.</td>
</tr>
<tr>
<td>4</td>
<td>Surface- and sectional anatomy II. Head</td>
<td>R. brachii post., r. antebrachii post., r. dorsalis manus, r. femoris post., r. cruris post., retromalleolar regions</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Surface- and sectional anatomy III. Thorax I.</td>
<td>TEST. Dorsal regions, spinal nerves. R. cubiti ant., r. carpi volaris, r. palmaris, r. genus ant., r. dorsalis pedis, r. abdominis mediana, r. inguinalis</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Surface- and sectional anatomy IV. Thorax II.</td>
<td>R. cubiti ant., r. carpi volaris, r. palmaris, r. genus ant., r. dorsalis pedis, r. abdominis mediana, r. inguinalis</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Surface- and sectional anatomy V. Abdominal cavity I.</td>
<td>R. brachii ant., r. antebrachii ant., r. Subinguinalis, r. femoris ant., r. cruris ant. Projection of the thoracic organs into the anterior thoracic wall</td>
<td>Review II.</td>
</tr>
<tr>
<td>8</td>
<td>Surface- and sectional anatomy VI. Abdominal cavity II.</td>
<td>R. brachii ant., r. antebrachii ant., r. subinguinalis, r. femoris ant., r. cruris ant. Dissection of the organs in the thoracic cavity</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Surface- and sectional anatomy VII. Male pelvic organs and perineum</td>
<td>Projection of the abdominal organs to the anterior abdominal wall. Dissection of the abdominal organs</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Surface- and sectional anatomy VIII. Female pelvic organs and perineum</td>
<td>Mediastinum, hilum of the lung. Celiac trunk, superior and inferior mesenteric arteries, portal vein</td>
<td>Review III.</td>
</tr>
<tr>
<td>11</td>
<td>Surface- and sectional anatomy IX. Skull (brain)</td>
<td>Mediastinum, hilum of the lung. Celiac trunk, superior and inferior mesenteric arteries, portal vein</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Intracranial compartments</td>
<td>TEST. Ventral regions, thoracic and abdominal cavities. Pelvic organs, internal iliac artery, pelvic venous plexus, Retropertitoneum</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Presentation of the research activity of the Department of Anatomy</td>
<td>Pelvic organs, internal iliac artery, pelvic venous plexus, Retropertitoneum</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Review of the embryology: circulatory and digestive organs</td>
<td>Orbit, tympanic cavity. Perineum</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Review of the embryology: respiratory and urogenital organs</td>
<td>Orbit, tympanic cavity, nasal cavity, pharynx, Perineum</td>
<td>TEST. Pelvic organs, perineum</td>
</tr>
</tbody>
</table>

Semester examination (final)
CONSERVATIVE DENTISTRY AND ENDODONTICS
Tutor: Dr. Júlia Nemes

Second Semester

Phantom-course (Pre-clinical laboratory course)

**Lecture** (1 hour/week)
Introduction to operative dentistry

Clinical dental anatomy, histology.
Occlusion
Cariology: the lesion (macromorphology, enamel caries, dentinal caries, advanced carious lesion). Fundamentals in cavity preparation (nomenclature/caries, cavity from, cavity classification/)
Steps in cavity preparation by Black.
Cutting instruments and mechanical and biological considerations.
Class V. Facial Cavity preparation for amalgam and Tooth-Colored Material.
Class II. Cavity preparation for Amalgam.
Class III. Cavity preparation for Tooth-Colored Material.
Class IV. Disto-Incisal Cavity Preparation for Tooth-Colored Material.
Class II. Cavity preparation for Tooth Colored Material. Tunnel preparations for proximal Restorations.
Class II. Cavity preparations for Gold (metal) inlay and gold onlay restorations.
Class I, IV, V, VI. Cavity preparation for gold inlay restorations
Cavity preparations for Composit resin and porcelain inlay restorations.
Pin-retained restorations (type of pins, Indications and contraindications).
Preparation for Porcelain Veneers.

**Manual training** (3 hours per week)
Introduction to practice: general
Department’s policy. Rules of the house.
Distribution of instruments.
Handing over of instruments.
Discussion of drilling methods
Drilling practice I.
Drilling practice II.

Drilling practice III. Practical exam
Grinding of extracted carious human teeth
Black’s class I. and V. cavity preparation for plastic restoration.

Preparation of class II. Cavities (I.)
Preparation of class II. cavities. (II.)
Preparation of class III. and IV. cavities
Cavity preparation by modified Black’s principles. Practical exam
Class I. and V. cavity preparation for inlay
Class II. cavity preparation for metal inlay
Class II. inlay cavity preparation.

Practical exam
Complete of the works.

**Note:** The maximum number of absences in a semester is 3.
During the semester 3 midterm examinations should be passed.
Practical course grade.
ODONTOTECHNOLOGY
Dental Technology
Lecturer: Dr. Péter Kivovics D.M.D.

First Semester

Lectures (1 hour/week)

- History of Dental Technology
- Dental technician as the member of the dental team
- Placement of the dental technology in dentistry
- Types of the prosthetic appliances
- Impression and casting, types of casts
- Types and use of articulators I.
- Types and use of articulators II.
- Setting up teeth at complete denture
- Processing dentures
- Impression and casting at fixed restorations
- Metal casting for fixed restorations
- Porcelain fused to metal restorations
- Metal free fixed restorations
- Casting of metal based removable partial dentures
- Consult

Practice (2 hours/week)
Topics: construction of upper and lower complete denture
Examination: practical course grade

Second Semester

Lecture: –

Practice (5 hours/week)
Examination: Practical course grade.

See all the other detailed curricula at General Medicine, 2nd year
PRE-CLINICAL MODULE

Faculty of Dentistry
3rd year
### STUDY PROGRAMME

#### Third Year

<table>
<thead>
<tr>
<th>6th semester</th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>subjects</td>
<td>Creditcode</td>
<td>Examination</td>
<td>Prerequisites</td>
</tr>
<tr>
<td>Compulsory</td>
<td>C32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conservative Dentistry and Endodontics, Pre-clinical II.</td>
<td>C4L1P3</td>
<td>semifinal</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>General and Oral Microbiology</td>
<td>C4L2P2</td>
<td>final #</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>General and Oral Pathophysiology</td>
<td>C4L2P2</td>
<td>final #</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>Oral and Maxillofacial Surgery, Pre-clinical course</td>
<td>C2L0P2</td>
<td>pract. mark</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>Oral Pathology I.</td>
<td>C2L2P0</td>
<td>semifinal</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>Pathology I.</td>
<td>C5L3P2</td>
<td>semifinal</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>Preventive Dentistry II</td>
<td>C3L1P2</td>
<td>pract. mark</td>
<td>BASIC MODULE</td>
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</table>

**Total Credit C32**

<table>
<thead>
<tr>
<th>6th semester</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>subjects</td>
<td>Creditcode</td>
<td>Examination</td>
<td>Prerequisites</td>
</tr>
<tr>
<td>Compulsory</td>
<td>C31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conservative Dentistry and Endodontics I.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
<td>Conservative Dentistry, Pre-clinical II.</td>
</tr>
<tr>
<td>Internal Medicine I.</td>
<td>C4L2P2</td>
<td>pract. mark</td>
<td>General and Oral Pathophysiology</td>
</tr>
<tr>
<td>Oral and Maxillofacial Surgery I.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
<td>Oral and M. Surgery, Pre-clinical</td>
</tr>
<tr>
<td>Oral Biology</td>
<td>C5L3P2</td>
<td>final #</td>
<td>General and Oral Pathophysiology</td>
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<td>Oral Pathology II.</td>
<td>C3L2P1</td>
<td>final #</td>
<td>Oral Pathology I.</td>
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<tr>
<td>Pathology II.</td>
<td>C3L1P2</td>
<td>final #</td>
<td>Pathology I.</td>
</tr>
<tr>
<td>Prosthodontics I.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
<td>Prosthodontics, Pre-clinical Course</td>
</tr>
<tr>
<td>Radiation Protection</td>
<td>C2L1,SP1</td>
<td>semifinal</td>
<td>BASIC MODULE</td>
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<tr>
<td>Preventive Dentistry III</td>
<td>C1L1P0</td>
<td>final #</td>
<td>Preventive Dentistry II</td>
</tr>
<tr>
<td>Hungarian Dental Terminology II.</td>
<td>C2L0P4</td>
<td>final</td>
<td>Hungarian Dental Terminology I.</td>
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</table>

**Total Credit C31**

**compulsory summer practice**

Dento-Alveolar practice (summer, minimum 1 week) 30’ hours signature

**Explanation**

*15 credits* should be gained from the *elective subjects* during the 5-year studies

# The grade influences the qualification of the diploma

C= Credit point  
L= Lecture (hours/week)  
P= Practice (hours/week)
### ELECTIVE

<table>
<thead>
<tr>
<th>Semester</th>
<th>Subjects</th>
<th>Credit code</th>
<th>Examination</th>
<th>Prerequisites</th>
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<tr>
<td>3</td>
<td>Hungarian Medical Terminology III.</td>
<td>C2L0P4</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology II.</td>
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<tr>
<td>4</td>
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<td>pract. mark</td>
<td>Hungarian Medical Terminology III.</td>
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<td>Developmental Biology I.</td>
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<td>pract. mark</td>
<td>Developmental Biology I.</td>
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<tr>
<td>4</td>
<td>Developmental Biology II.</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>Developmental Biology I.</td>
</tr>
<tr>
<td>5</td>
<td>Traditional Chinese Medicine</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>for 3rd, 4th and 5th year students</td>
</tr>
<tr>
<td>1</td>
<td>TDK Work within the Union of Research Students</td>
<td>C1L1P0</td>
<td>pract. mark</td>
<td>for 3rd, 4th and 5th year students</td>
</tr>
<tr>
<td>7</td>
<td>Anesthesiology and Intensive Therapy</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>4th and 5th year students</td>
</tr>
<tr>
<td>7</td>
<td>Antibiotic Therapy and Infectology</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>4th and 5th year students</td>
</tr>
<tr>
<td>8</td>
<td>Clinical Endocrinology</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>for 4th and 5th year students</td>
</tr>
<tr>
<td>8</td>
<td>Tropical Medicine</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>4th and 5th year students</td>
</tr>
<tr>
<td>8</td>
<td>Ultrasonography</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>4th and 5th year students</td>
</tr>
<tr>
<td>8</td>
<td>Medical, Epidemiological and Social Aspect of Drug Abuse</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>for 4th and 5th year students</td>
</tr>
<tr>
<td>1</td>
<td>Library Informatics</td>
<td>C3L2P0</td>
<td>pract. mark</td>
<td>for all students</td>
</tr>
<tr>
<td>1</td>
<td>History of Medicine</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>for all years</td>
</tr>
<tr>
<td>8</td>
<td>Clinical Hematology</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>for 4th and 5th year students</td>
</tr>
<tr>
<td>1</td>
<td>Jewish Medical Ethics I-II.</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>For all students</td>
</tr>
<tr>
<td>8</td>
<td>Health Informatics</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>4th and 5th year students</td>
</tr>
</tbody>
</table>

### LIST OF TEXTBOOKS

8. A. Newbrun: Cariology Quintessence. ISBN 0-867152052

Recommended textbooks:
First Semester

**Lectures** (2 hours per week)
- Regulation of blood pressure in hypertension. Risk factors and definitions in hypertension. Processes leading to elevation in blood volume and total peripheral resistance. Consequences of hypertension.
- Lipid metabolism. Absorption and metabolism of lipids. Regulatory and endocrine effect of WAT.
- Atherosclerosis. Risk factors and epidemiological aspects. Various theories for the development of atherosclerosis (lipid theory, connective tissue theory, immune theory, thrombogene theory, response to injury etc.)

**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
- Proteins, malnutrition astric function


Acute and chronic complications and oral side of diabe tes. (Oral manifestations in diabetes.)

Pain sensation: central and oral mechanisms.

Pathophysiology of malignancies.


Salt and water metabolism

Lipid metabolism. Atherosclerosis

Diabetes

Clinico-chemical assays for endocrine disorders

Molecular laboratory diagnostic (Prof. Varga)

Acid base analysis

Note: The maximum number of absences in a semester is 3

More than 3 absences invalidate the semester

ORAL PATHOLOGY

1st Department of Oral, Dental and Maxillofacial Surgery

Lecturer: Prof. Dr. Zsuzsa Suba

First Semester

Lecture

Developmental disturbances in number of teeth. Developmental disturbances in shape and size of teeth.

Developmental disturbances in structure of the teeth.

Growth disturbances of teeth. Premature eruption, delayed eruption.

Disturbances of situation of the teeth. Impacted and embedded teeth. Lobodontia.

Developmental disturbances of the jaws and the temporomandibular joint.

Developmental anomalies of the face and soft oral tissue.

Developmental disturbances of the salivary glands. Etiology of malformations.

Discoloration of the teeth. Dental plaque. Dental calculus.


Hypercementosis. Resorption of the teeth.

Diseases of the pulp. Periapical lesions.


Homoiotransplantation.

Inflammation of the oral mucosa and tongue. Halitosis (Stink of the mouth.)

Cysts of jaws.
Cysts of the oral floor, neck and salivary glands.
Focal infection. Diseases of the jaws.
Physical, heat, chemical and electrical injuries of oral and paraoral structures.
Diseases of microbial origin of oral and paraoral structures.
Diseases of the blood and blood forming organs.
Injury from inorganic chemicals and disturbances of metabolism of oral and paraoral structures.
Avitaminosis. Mucocutaneous disorders.
Diseases of accessory nasal sinus. Diseases of the temporomandibular joint.
Diseases of the nerves and muscles, facial hemihyperplasia and 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.
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

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

Second Semester

Lectures (1 hour per week) Practices (2 hours per week)

Urinary tract and male reproductive system
Gynecologic pathology. Vulva, Cervix, Body of uterus and endometrium
Fallopian tube, Ovary, Placenta and neonatal pathology.
Gestational throphoblastic disease.
Pathology of the breast.
Disorders of the mononuclear phagocyte system. Acute and chronic myeloproliferative syndromes.
Endocrine system.
Head and neck pathology.
Bones and joints, skeletal muscles.
Nervous system. Trauma. Circulatory and inflammatory diseases.
Demyelinating and metabolic diseases.
Tumors of the nervous system. Peripheral nervous system.
Pathology of the skin.
Clinicopathological conference

AUTOPSY
AUTOPSY
AUTOPSY
AUTOPSY
AUTOPSY
AUTOPSY
HISTOLOGY
AUTOPSY
HISTOLOGY
AUTOPSY
AUTOPSY
HISTOLOGY

SEMESTER EXAMINATION (SEMIFINAL)

The semifinal examination at the end of the first semester will be a written test. Three different times for the test writing can be chosen. Students are requested to announce the time they have chosen to the tutor of the 1st Institute of Pathology and Experimental Cancer Research until mid–December. Students who have failed the exam on one occasion can retake the exam on the next test-writing day, at least one week from the first trial.

Note: Lectures will be held in the lecture hall of the 1st Institute of Pathology and Experimental Cancer Research.

Autopsy and Histopathology practices will be held in the 1st Institute of Pathology and Experimental Cancer Research. During the histopathology exercises 100 slides will be studied. The list of slides will be available at the beginning of the semester.

The maximum number of absences in a semester is 3.
More than 3 absences invalidate the semester.
During the semester two midterm examinations should be passed.
GENERAL AND ORAL MICROBIOLOGY
Department of Medical Microbiology
Program Director and tutor: Prof. Dr. Károly Nagy
Tutor: Dr. Zsuzsanna Csukás

First Semester

**Lectures** (2 hours per week)
Introduction to microbiology. General bacteriology (morphology, physiology and cultivation of bacteria) Bacterial genetics. Infections and diseases (pathogenesis of bacterial infection, virulence, importance of biofilm formation). Specific and non-specific host defences. Active and passive immunization.
Sterilization and disinfection. Antibacterial chemotherapy (mode of actions, resistance, side effects).
Gram-positive facultative and obligate anaerobic cocci. Gram-negative facultative anaerobic, microaerophilic and obligate anaerobic cocci and cocobacilli.
Gram-positive aerobic and anaerobic rods.
Gram-positive spore-forming rods.
Gram-negative facultative anaerobic rods.
Gram-negative anaerobic rods.
Mycoplasma.
Rickettsia, Chlamydia.
Mycobacteria.
Protozoa (general characterization and the most important human pathogenic protozoa).
Helminths (general characterization and the most important human worms).
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 cocobacilli
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)
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)

More than 3 semester absences invalidate the semester.

CONSERVATIVE DENTISTRY AND ENDOdontics
Tutor: Dr. Julia Nemes

First Semester

Phantom-course (Pre-clinical laboratory course)

**Lectures** (1 hour/week)

Amalgam and tooth color restorations (indications and contraindications, mixing amalgam, mercury hygiene, silicate cement, acrylic resin, composite resin).
Amalgam restorations (indications; contraindications; inserting cement bases; mixing amalgam; mercury hygiene, finishing and polishing restoration).
Tooth-colored restorations (acrylic resin, acid etch technique, matrices for composite resins, reading bonding, agent along with either self-curing or light-activated composite resin, insertion of composite resins, finishing composite resin, glanzing the restoration).
The rubber dam.
Direct gold restorations (inlay).
Indirect inlay-onlay restorations.
The dental pulp. Diagnosis of pulpal damage.
Endodontic morphology and access cavities.

**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.
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

CONSERVATIVE DENTISTRY AND ENDODONTICS

Second Semester

Lectures (1 hour/week) Practices (3 hours/week)
Rules of clinical practice. Registrations of case history Clinical practice
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 Clinical practice
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 Clinical practice
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

During the second semester students have to make:
3 amalgams fillings
3 esthetic fillings
15 hours assistance

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester Practical course grade
**PREVENTIVE DENTISTRY II**  
Department of Conservative Dentistry  
Lecturer: **Prof. Dr. Ida Nyárasdy**

### First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (1 hour/week)</th>
<th>Practices (2 hours/week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>Strategy for prevention of periodontal diseases.</td>
<td>Possibilities of prevention in orthodontic anomalies /HPK Orthodontic and Dental Department/</td>
</tr>
<tr>
<td>7.</td>
<td>Oralhygiene</td>
<td>Effect of alimentation in baby-and childhood on development of mandibula and maxilla and on the formation of parafunction</td>
</tr>
<tr>
<td>8.</td>
<td>Fluorides</td>
<td>Demonstration of oral hygiene /HPK Orthodontic and Dental Department/</td>
</tr>
<tr>
<td>9.</td>
<td>Collective and individual fluoride-prevention /sugar-substitutes, rysta-possibilities/</td>
<td>Clinical infection control</td>
</tr>
<tr>
<td>10.</td>
<td>Other possibilities in caries prevention /sugar-substitutes, rysta-possibilities/</td>
<td>The role of trace elements and vitamins in maintaining oral health</td>
</tr>
<tr>
<td>11.</td>
<td>Fissure-sealant</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Caries incipient and remineralisation</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Prevention of iatrogen traumas; infection control</td>
<td>Caries diagnostic 2, definition of saliva – secretion, pH measurement</td>
</tr>
</tbody>
</table>
### PREVENTIVE DENTISTRY III
Department of Conservative Dentistry
Lecturer: **Prof. Dr. Ida Nyárasdy**

#### Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Prevention in the intrauterine life to the age of three</td>
</tr>
<tr>
<td>2.</td>
<td>Integrated preventive dentistry – orthodontics</td>
</tr>
<tr>
<td>3.</td>
<td>Oral hygiene – toothpastes</td>
</tr>
<tr>
<td>4.</td>
<td>Environmental dangers</td>
</tr>
<tr>
<td>5.</td>
<td>Dental public health programs. Primary and secondary prevention in screening program for oral cancer</td>
</tr>
<tr>
<td>6.</td>
<td>Integrated preventive dentistry – preventive fillings</td>
</tr>
<tr>
<td>7.</td>
<td>Integrated preventive dentistry – finishing, polishing of fillings</td>
</tr>
<tr>
<td>8.</td>
<td>Integrated preventive dentistry – prosthodontics</td>
</tr>
<tr>
<td>9.</td>
<td>Cervical sensitivity, dentinal hypersensitivity and erosion</td>
</tr>
<tr>
<td>10.</td>
<td>Care of handicapped and hospitalized patients</td>
</tr>
<tr>
<td>11.</td>
<td>The role of dental hygienists in dental practice</td>
</tr>
<tr>
<td>12.</td>
<td>Dentine hypersensitivity and dentine erosion</td>
</tr>
<tr>
<td>13.</td>
<td>Biofilm</td>
</tr>
<tr>
<td>14.</td>
<td>Oral prevention during pregnancy</td>
</tr>
</tbody>
</table>

### PROSTHODONTICS

#### First Semester

<table>
<thead>
<tr>
<th>Lectures (1 hour per week)</th>
<th>Practices (3 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types of dental restorations. Prosthetic</td>
<td>Description of hand-tools and laboratory appliances equipment</td>
</tr>
<tr>
<td>Establishment and instrumentation of</td>
<td>Upper first-anatomical impression on the dental clinic phantom head</td>
</tr>
<tr>
<td>Impression taking procedures for</td>
<td>Lower first-anatomical impression on complete dentures phantom head</td>
</tr>
<tr>
<td>Shade determination</td>
<td>Cast construction</td>
</tr>
<tr>
<td>Determination of centric occlusion and centric relation</td>
<td>Special tray construction</td>
</tr>
<tr>
<td>Anatomy of the remaining teeth. Cephalometric landmarks</td>
<td>Second – functional – impression</td>
</tr>
<tr>
<td>Impression taking for fixed restorations</td>
<td>Fabrication of lower and upper bite-block I.</td>
</tr>
<tr>
<td>Preparation for fixed restorations</td>
<td>Fabrication of lower and upper bite-block II.</td>
</tr>
<tr>
<td>Preparation and impression taking procedures for post and cores</td>
<td>Midterm test</td>
</tr>
</tbody>
</table>
Removable partial dentures
Stages of constructing complex dentures
Temporary dentures, repair of dentures
Special dentures. Fundamentals 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
Complains, 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
**INTERNAL MEDICINE**

3rd Department of Internal Medicine  
Tutor: Dr. László Jakab

### Second Semester

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to internal medicine.</td>
</tr>
<tr>
<td>History taking.</td>
</tr>
<tr>
<td>Physical examination</td>
</tr>
<tr>
<td>Bronchitis.</td>
</tr>
<tr>
<td>Pneumonia.</td>
</tr>
<tr>
<td>Bronchiectasis. Lung abscess. Pulmonary embolism.</td>
</tr>
<tr>
<td>Chronic aspecific respiratory disorders.</td>
</tr>
<tr>
<td>Tumors of the lung.</td>
</tr>
<tr>
<td>Disorders of the cardiovascular system.</td>
</tr>
<tr>
<td>Physical examination.</td>
</tr>
<tr>
<td>Examination of the peripheral blood vessels.</td>
</tr>
<tr>
<td>Coronary heart disease.</td>
</tr>
<tr>
<td>Acute myocardial infarction.</td>
</tr>
<tr>
<td>Acute heart failure.</td>
</tr>
<tr>
<td>Shock.</td>
</tr>
<tr>
<td>Chronic heart failure.</td>
</tr>
<tr>
<td>Rheumatic fever. Valvular heart disorders.</td>
</tr>
<tr>
<td>Infective endocarditis. Disorders of the pericardium.</td>
</tr>
<tr>
<td>Cor pulmonale.</td>
</tr>
<tr>
<td>Cardiac arrhythmias. Conduction disturbances.</td>
</tr>
<tr>
<td>Hypertension.</td>
</tr>
<tr>
<td>Atherosclerosis. Thromboangiitis obliterans.</td>
</tr>
<tr>
<td>Raynaud’s phenomenon.</td>
</tr>
<tr>
<td>Headache. Dental relation of the heart diseases.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practices (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The bases of the diagnostic procedures in the internal medicine.</td>
</tr>
<tr>
<td>(The exact preparation of the patient’s case history, the methods of physical examination of the patients)</td>
</tr>
<tr>
<td>The medical examination of the heart and lung (percussion, auscultation)</td>
</tr>
<tr>
<td>The investigation of the peripheral arterial pulse rata and blood pressure</td>
</tr>
<tr>
<td>Practicing injection technique</td>
</tr>
<tr>
<td>The physical examination of the abdominal organs.</td>
</tr>
<tr>
<td>The medical considerations of dentistry and dental considerations of internal medicine</td>
</tr>
<tr>
<td>Consultation</td>
</tr>
</tbody>
</table>

**Note:** The maximum number of absences in a semester is 3.  
More than 3 absences invalidate the semester  
Practical course grade
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 antiseptics and asepsis
The operation theater
Oral surgical instrumentation
The removal of teeth/ practice on phantom
The removal of teeth/ practice on phantom
The removal of teeth/ practice on phantom
Semester closing midterm (oral + practical)
Practicing, repetition

Second Semester

Week Lectures (1 hour per week) Practices (3 hours per week)

The history of oral surgery Surgical anatomy of the jaws and teeth
Clinical examination and diagnostics Local anesthesia
Pain control. The physiologic and psychologic Oral and maxillofacial surgical instruments
aspects of pain Clinical diagnosis, medical
The mode of action of local anaeasthetics. examination of the patients
The pharmacological properties of local anaesthetic drugs
The technique of local anaesthesia Part I. Midterm demonstration
(anaesthesia of teeth)
The technique of local anaesthesia Part II. Practicing simple tooth extraction
(Matas, block of n. alv. sup. ant., anaesthesia Practicing simple tooth extraction
of the tongue, the lip, the bucca)
The technique of local anaesthesia Part III. Practicing tooth extraction
(Inflamed tissues, trismus)
Summarising clinical implications /video/
Complications of local anaesthesia.
Conscious sedation in dentistry
Indication and contraindication of tooth removal
Operation technique of dentoalveolar Minor oral surgery
surgery Part I. (surg. tools, flaps, suturing)
Operation technique of dentoalveolar surgery Part II. (complications of tooth removal, surgical root removal) (video)
Problems with the eruption of teeth.
The removal of the impacted teeth
Guest speaker
Midterm exam
Consultation

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

Practical course grade (five-scale).
Lectures (3 hours per week)

The oral mineralized tissues –
Amelogenesis-dentinogenesis – cementogenesis
dentin and cementum. Microanatomy and
and structures of enamel, physiology and innervation
of the pulp. – Chemistry of formation and solubilization
of the various calcium phosphate salts. Crystalligraphy
of bio-apatite and other calcium phosphate
Mechanism of biological calcification
– Principles of demineralization-remineralization-
phenomena – The inorganic and organic composition
teeth – Role of fluoride and carbonate in calcium
and dental tissue phosphate solubility demineralization
-remineralization-phenomena
Abnormal development and mineralization of renamel,
dentin and cementum – Pulpal mineralization and
dentin-pulp phenomena; dentin permeability –
Nutrition and hormonal influences on the oral
mineralized tissues
The salivary glands and saliva – Ultrastructure and innervation
– The physiology of salivary gland secretion

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

Oral motor and sensory system – Ultrastructure of
temperature, touch, pressure and taste receptors
of the oral cavity. – Physiology of temperature
and touch perception in the oro-facial region. – Platelet disorders
– 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 I
nnervation of the tongue – Role of the tongue in

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
oral symptoms in the early diagnosis of
leukemias
Hematology VI.
Abnormalities of red blood cell
production. Part I. Classification of
anemias. Aplastic, iron deficiency,
sideroblastic, hemolytic anemia.
Thalassemia
Hematology VII.
Abnormalities of red blood cell production,
Part II. Folate- and Vit. B12-deficiency
anemia. Polycythemia, erythrocytosis.

Midterm exam of hematology
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
Hernostasis and fibrinolysis – Physiology
and biochemistry
– Activators and inhibitors of blood clotting
and fibrinolysis
– Thrombosis and bleeding disorders: etiology,
pathomechanism, oral symptoms, differential diagnosis
Inflammation – cardinal signs – fever – changes in RES
– vascular permeability – cellular reactions – chemical
mediators – inflammation and repair
The biological effects of ionizing radiation – The sources
of ionizing radiation in the environment – General and
specific effects: cell and gene damages – Radiation
diseases and its consequences – Oral symptoms of
therapeutic irradiations and the management of head
and neck irradiated patients

Note: A semi-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 semi-final. During the semi-final examination there are the following
requirements: a.) to reach the minimum level of a written theoretical evaluation, b.) to present
orally one 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 semi-final. A failed exam can be retaken at least one
week after the first one.
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.
### Fourth Year

#### 7th semester

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Creditcode</th>
<th>Examination</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compulsory General and Dental Radiology</td>
<td>C4L2P2</td>
<td>final#</td>
<td>Radiation Protection</td>
</tr>
<tr>
<td>Compulsory Conservative Dentistry and Endodontics II.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Conservative Dentistry and Endodontics I.</td>
</tr>
<tr>
<td>Internal Medicine II.</td>
<td>C2L2P0</td>
<td>semifinal</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>Oral and Maxillofacial Surgery II.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Oral and Maxillofacial Surgery I.</td>
</tr>
<tr>
<td>Pharmacology, Toxicology I.</td>
<td>C2L1P2</td>
<td>semifinal</td>
<td>Pathology II.</td>
</tr>
<tr>
<td>Prosthodontics II.</td>
<td>C7L1P6</td>
<td>semifinal</td>
<td>Prosthodontics I.</td>
</tr>
<tr>
<td>Periodontology I.</td>
<td>C1L1,5P0</td>
<td>semifinal</td>
<td>Oral Biology</td>
</tr>
<tr>
<td>Orthodontics Pre-clinical</td>
<td>C1L0P1</td>
<td>pract.mark</td>
<td>Oral Biology</td>
</tr>
<tr>
<td>Oral Diagnostics I.</td>
<td>C2L1P1</td>
<td>pract.mark</td>
<td>Pathology II.</td>
</tr>
<tr>
<td>Obligatory Elective</td>
<td>C7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychiatry</td>
<td>C1L1P0</td>
<td>semifinal</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>Neurology</td>
<td>C1L1P0</td>
<td>semifinal</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>Public Health</td>
<td>C3L1,5P2</td>
<td>final#</td>
<td>General and Oral Microbiology</td>
</tr>
<tr>
<td>Dental Ethics</td>
<td>C2L1P1</td>
<td>semi-final</td>
<td>Pathology II.</td>
</tr>
</tbody>
</table>

**Total Credit** C37

#### 8th semester

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Creditcode</th>
<th>Examination</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compulsory Conservative Dentistry and Endodontics III.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Conservative Dentistry and Endodontics II.</td>
</tr>
<tr>
<td>Internal Medicine III.</td>
<td>C2L1P1</td>
<td>final#</td>
<td>Internal Medicine II.</td>
</tr>
<tr>
<td>Oral and Maxillofacial Surgery III.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Oral and Maxillofacial Surgery II.</td>
</tr>
<tr>
<td>Pharmacology, Toxicology II.</td>
<td>C3L1P2</td>
<td>final#</td>
<td>Pharmacology, Toxicology I.</td>
</tr>
<tr>
<td>Prosthodontics III.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Prosthodontics II.</td>
</tr>
<tr>
<td>Othodontics</td>
<td>C3L1P2</td>
<td>final</td>
<td>Othodontics II.</td>
</tr>
<tr>
<td>Periodontology II.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Periodontology I.</td>
</tr>
<tr>
<td>Implantology</td>
<td>C1L1P0</td>
<td>semi-final</td>
<td>Oral and Maxillofacial Surgery II.</td>
</tr>
<tr>
<td>Oral Diagnostics II.</td>
<td>C1L0P1</td>
<td>semifinal</td>
<td>Oral Diagnostics I.</td>
</tr>
<tr>
<td>Obligatory Elective</td>
<td>C7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dental Psychology</td>
<td>C2L2P0</td>
<td>semifinal</td>
<td>Internal Medicine II.</td>
</tr>
<tr>
<td>Surgery</td>
<td>C3L2P1</td>
<td>final#</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>Medical Sociology</td>
<td>C2L1P1</td>
<td>semifinal</td>
<td>Pathology II.</td>
</tr>
</tbody>
</table>

**Total Credit** C33

**Compulsory summer practice**

- General Dentistry practice (4weeks) 120' hours signature

**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


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

Recommended textbooks:

### PHARMACOLOGY, TOXICOLOGY

**Lecturer:** Dr. Valéria Kecskeméti  
**Tutor:** Dr. Zsuzsanna Gyarmati

#### First Semester

**Lectures** (1 hour per week)
- Drugs, receptors and pharmacodynamics
- Pharmacokinetics: Absorption, distribution
- Drug biotransformation
- Introduction to Autonomic Pharmacology
- Cholinoreceptor-activating drugs
- Cholinoreceptor-blocking drugs
- Adrenoceptor-activating drugs
- Adrenoceptor-blocking drugs
- Local anesthetics I.
- Local anesthetics II.
- General anesthetics
- Opioid analgesics and antagonist
- Principles of antimicrobial drug action
- Penicillins, cephalosporins
- Tetracyclines, chloramphenicol
- Sulfonamides – Drugs with specialized indications – Antifungal agents

**Practices** (2 hours per week)
- Drug interactions (agonists, antagonists)
- Factors influencing pharmacokinetic.
- Drug abuse, 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
- The alcohol
- Antiepileptic drugs
- Antiseptics, disinfectants
- Disinfectants
- Aminoglycosides
- Antimycobacterial drugs
- Antiviral chemotherapy
- Urinary antiseptics

#### Second Semester

**Lectures** (1 hour per week)
- Drugs used in congestive heart failure,
- Cardiac glycosides
- Vasodiators
- Antihypertensive drugs
- Drugs used in disorders of coagulation
- Histamine, Histaminereceptor antagonists
- Pharmacology of gastrointestinal tract
- Sedative-Hypnotics
- Antipsychotic agents

**Practices** (2 hours per week)
- Diuretic agents
- Antiarhythmic drugs
- Agents used in hyperlipid
- Agents used in anemia
- Bronchodilators
- Prescription writing
- Drugs of abuse
- Psychomimetic drugs
Lectures (1 hour per week)
Antidepressant drugs
Nonsteroidal anti-inflammatory drugs; nonopioid analgetics
Cancer chemotherapy
Adrenocorticosteroids, adrenocortical antagonists
Agents that affect bone mineral homeostasis
Agents that affect the other endocrine system
Stomatological appearance of drug toxicity

Practices (2 hours per week)
Management of Parkinsonism
Prescription writing
Consultation
Drugs used in gastrointestinal diseases
Dermatologic pharmacology
Consultation

INTERNAL MEDICINE
3rd Dept. of Internal Medicine
Tutor: Dr. László Jakab

First Semester

Lectures (2 hours per week)
Immunologic principles. Lymphocytic system.
Immunoglobulins. Types of immunologic reactions.
Polycythemia. Agranulocytosis. The leukemias.
Plasma cell disorders. Multiple 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.
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.
Lectures (2 hours per week)


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

INTERNAL MEDICINE

Second Semester

Lectures (1 hour per week)

Primary glomerular disorders. Nephritic syndrome.
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.

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 gastrointestinal system.
The medical examination of patients with diseases of the gastrointestinal system.
Dental correlations in patients with the diseases of the gastrointestinal system.
The medical examination of patients with diseases of the liver and biliary tract.
The medical examination of patients with diseases of the liver and biliary tract.
The medical examination of patients with diseases of the pancreas.
Lectures (2 hours per week)
Disorders of the 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.

Practices (2 hours per week)
The medical examination of patients with diseases of the pancreas
Consultation
The medical examination of patients
Consultation

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

CONSERVATIVE DENTISTRY AND ENDODONTICS
Tutor: Dr. Júlia Nemes

First Semester

Lectures (1 hour per week) Practices (3 hours per week)

Infection control Clinical practice
Root canal treatment: preparation of access cavity: Clinical practice
determination of working length, importance of Clinical practice
X-ray in Endodontics Clinical practice
Root canal treatment: cleaning and shaping Clinical practice
Root canal treatment: making preparation of the Clinical practice
root-canal for filling. Obturation of the root canal Clinical practice
Reconstruction of root-canal treated teeth: post & core Clinical practice
Indications and methods of endodontics surgery Clinical practice
Emergency treatment in Endodontics Clinical practice
Complications and failures in the course of root canal treatment Clinical practice
Endodontic microbiology Clinical practice
Endodontic Periodontic Interrelationship Clinical practice
New instruments in endodontics (The Endo-
Endodontic System) Clinical practice
Caries therapy. Cast metal restoration Clinical practice
Caries therapy: ceramic and composite inlays Clinical practice
Preparation for Crown Clinical practice

Note: The maximum number of absences in a semester students have
1 root-canal filling
15 hours assistance

During the first

to make:
4 amalgam fillings
4 esthetic restorations

288
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
- Treatment of cervical lesion
- New equipment and methods in Conservative Dentistry
- Indications and techniques of veneer
- Discussion of thesis of diploma work
- Discussion of thesis of diploma work
- Special dental treatment of some general diseases (AIDS, hepatitis, diabetes, epilepsy, etc.).
- Principles of the Oral Health Insurance System.
- “Anatomie“ of dental praxis.
- Management of Traumatized Teeth
- Special cavity preparation. (Tunnel, slot, mini cavities)

**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
- 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)

- The reasons and the consequences of tooth loss
- Partially dentate patients
- Infection control in prosthodontics
- Psychology and psychopathology of denture intolerance
- Fix appliances, types of crown and bridges

**Practices** (6 hours per week)

- Partially dentate patients
- Partially dentate patients
- Partially dentate patients
- Partially dentate patients
- Partially dentate patients

289
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  Partially dentate patients

Note: The maximum number of absences in a semester is 3 weeks.
More than 3 absences invalidate the semester.
During the semester one midterm examination should be passed.
Semifinal examination.

PROSTHODONTICS

Second Semester

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
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

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practices (1 hour per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery of the neck, Thyroid and parathyroid</td>
<td>Visiting patients' ward</td>
</tr>
<tr>
<td>Surgical treatment of the chest wall, breast, pleura, lung and mediastinum</td>
<td>Visiting operating theater</td>
</tr>
<tr>
<td>Oesophageal surgery (injuries, diverticula, malignant diseases)</td>
<td>Visiting patients' ward</td>
</tr>
<tr>
<td>Gastric and duodenal surgery (benign diseases)</td>
<td>Visiting patients' ward</td>
</tr>
<tr>
<td>Gastric and duodenal surgery (malignant diseases)</td>
<td>Visiting operating theater</td>
</tr>
<tr>
<td>Surgery of gall-bladder and extrahepatic biliary system</td>
<td>Visiting operating theater</td>
</tr>
<tr>
<td>Surgery of the small intestines and colorectum (benign and malignant diseases)</td>
<td>Visiting patients' ward</td>
</tr>
<tr>
<td>Appendicitis</td>
<td>Visiting patients' ward</td>
</tr>
<tr>
<td>Surgery of the liver, pancreas and spleen, (injuries, inflammatory diseases and tumors)</td>
<td>Visiting operating theater</td>
</tr>
<tr>
<td>Bowel obstructions</td>
<td>Visiting patients' ward</td>
</tr>
<tr>
<td>Hernias</td>
<td>Visiting patients' ward</td>
</tr>
<tr>
<td>Basic principles in vascular surgery</td>
<td>Visiting patients' ward</td>
</tr>
<tr>
<td>Shock, Cardiopulmonary resuscitation, intensive therapy</td>
<td>Visiting operating theater</td>
</tr>
<tr>
<td>General principles of traumatology. First aid. Traumatological management of catastrophes. Burned patients. Urology Consultation</td>
<td>Visiting patients' ward</td>
</tr>
</tbody>
</table>

**Note:** The maximum number of absences in a semester is 3. Practical course grade. More than 3 absences invalidate the semester. Final examination.
ORAL AND MAXILLOFACIAL SURGERY
Tutor: Dr. Attila Szűcs

First Semester

Lectures (1 hour per week)  Practices (3 hours per week)
Pyogenic dental inflammations I.  Practicing minor oral surgery
(Pyoderm, peritonsillitis) Dental focus
Pyogenic dental inflammations II.  Practicing minor oral surgery
Periodontitis, periostitis
Pyogenic dental inflammations I. Cellulitis  Practicing minor oral surgery
Osteomyelitis, specific inflammations of the maxillofacial region.
Cystic lesions of the maxillofacial soft tissues.  Practicing minor oral surgery
Dental and surgical aspects of the maxillary sinus
Diseases of the salivary glands.  Practicing minor oral surgery
Odontogenic cysts I.  Practicing minor oral surgery
Odontogenic cysts II.  Practicing minor oral surgery
Odontogenic cysts III  Practicing minor oral surgery
Surgical endodontics. I.  Practicing minor oral surgery
Surgical endodontics. II.  Practicing minor oral surgery
Dental implantology  Practicing minor oral surgery
Preprothetic surgery  Consultation
Consultation

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

ORAL AND MAXILLOFACIAL SURGERY

Second Semester

Lectures (1 hour per week)  Practices (3 hours per week)
Developmental anomalies of the face Part I.  Practicing minor oral surgery
(Cleft lip and palate)
Developmental anomalies of the face Part II.  Practicing minor oral surgery
(Craniofacial malformations, cleft face)
Developmental anomalies of the face Part III.  Practicing minor oral surgery
(Dysgnathias)
The diseases of the salivary glands Part. I.  Practicing minor oral surgery
(Pathology)
Vascular anomalies in the head and neck region Practicing minor oral surgery
(Diagnosis and management)
**Lectures** (1 hour per week)
- The diseases of the salivary glands Part. II. (Differential diagnosis and treatment)
- Maxillofacial traumatology Part I. (General rules, soft tissue injuries)
- Maxillofacial traumatology Part II. (Polytraumatised patients)
- Maxillofacial traumatology Part III. (Fractures of the mandible)
- Maxillofacial traumatology Part IV. (Fractures of the midfacial bones)
- Maxillofacial traumatology Part V. (Posttraumatic deformation and its correction)
- Differential diagnosis and treatment of facial pain
- Case Demonstration
- Guest speaker
- Consultation

**Practices** (3 hours per week)
- Practicing minor oral surgery
- Practicing minor oral surgery
- Practicing minor oral surgery
- Practicing minor oral surgery
- Practicing minor oral surgery
- Midterm Demonstration
- Practicing minor oral surgery
- Practicing minor oral surgery
- Consultation

**Note:**
- The maximum number of absences in a semester is 3.
- More than 3 absences invalidate the semester
- During the semester three midterm examinations should be passed
- Semifinal examination

**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: FOGFKSP_1A
- Credit code: K1E0G1
- Comment: The practical education takes place in 7x2 hours. Training starts in the autumn semesters only.

**The minimal conditions of participation**
Successful final examination of oral biology subject

**The used method**
According to the detailed syllabus, presentation of the current appliance types on a sample, and/or with multimedia methods. The activation of the appliances, wire- and arch bending practiced individually. Individual practice of bracket bonding with the help of typodonts and phantoms. The students are working under the supervision and management of the instructor.
Detailed syllabus

1. The categorization of appliances, the basic principles of their functions, basics of the orthodontic biomechanics
2. The function of the discernible appliances, their activation, elements, wire bending practice
3. The characteristics of metallic alloys used in orthodontics, their usability, wire bending practice
4. The activation of the appliances, their elements, accessories, bracket bonding systems
5. The operation principle of the typodont, its application, the use of the ligatures
6. Arch bending on a model, using typodont
7. Friction-proof systems, loop bending methods

ORAL DIAGNOSTICS

Section of Oral Diagnostics
(Orális Diagnosztikai Részleg)
address: Bp. VIII., Szentkirályi u. 47. 1088,
Tel.: 459-1500/59161, 317-1044
Tutor: Prof. Dr. Gábor Nagy D.M.D Ph.D
email: oral@fok.usn.hu

Fourth year 1st semester

Week Lecture (1 hour/week) Practice (1 hour/week)
1. The Diagnostic method. Medical and dental history. The importance of “Oral diagnosis”.
4. Molecular oral Diagnostics
6. New imaging methods in dentistry. Making decisions in dental radiology. (03.03.)
7. Up-to-date diagnosis of the periodontal tissues.
9. Diagnosis of the salivary glands.
10. Diagnosis of the TMJ disorders and Differential diagnosis of orofacial pain
11. Clinical evaluation of dental conditions, and malocclusion
   Early diagnosis and preventive approach
Rules of practices
Activity of the students:

1. Clinical evaluation and registration of medical and dental conditions, extraoral and intraoral examination of the patients, stomato-oncological cheque-up. Registration of medical and dental history.

2. Documentation of the above, taking oral photos, and preparing diagnostic casts.

3. Making decisions about additional diagnostic methods, X-ray examinations, referrals and consultations.

4. Making diagnosis and complete preliminary treatment planning.

5. Preparing written case-demonstrations including history, clinical finding, diagnosis, preliminary treatment plan and conclusions.

6. Written case demonstrations should be made at home, with the use of the students notes in the practice. Students are responsible for and should take great care about the patients personal rights. No personal data, medical certificate, x-ray pictures or other relevant findings can be brought home, for preparation of the case demonstrations! (only the notes made by the student during the practice, containing no personal data, no official documentation.)

Written theoretical evaluation will be organized in one of the practices in this semester.

Exam:
Practical hours should be visited during 2 days.
The time of practices is between 8.00 a.m – 2.00 p.m.
Semifinal exam will be organized at the end of fourth year, second semester.

Minimal expectations:
reaching the minimum level of the written theoretical evaluation (mark 2)
presentation of three written case-demonstrations reaching the minimum quality level (mark 2)

Non-performance of the minimal expectations invalidate the semester!

Textbook:
BC Decker Inc Hamilton London 2002

Recommended books
Bengel, Veltman, Loeyv,Taschini: Differential Diagnosis of Diseases of the Oral Mucosa

“hand-outs” will be prepared and presented for the students by the lecturers
Fourth year 2nd semester

Lecture-0 Practice (1 hour/week)

Rules of practices
Activity of the students:
1. Clinical evaluation and registration of medical and dental conditions, extraoral and intraoral examination of the patients, stomato-oncological cheque-up. Registration of medical and dental history.
2. Documentation of the above, taking oral photos, and preparing diagnostic casts.
3. Making decisions about additional diagnostic methods, X-ray examinations, referrals and consultations.
4. Making diagnosis and complete preliminary treatment planning.
5. Preparing written case-demonstrations including history, clinical finding, diagnosis, preliminary treatment plan and conclusions.
6. Written case demonstrations should be made at home, with the use of the students notes in the practice. Students are responsible for and should take great care about the patients personal rights. No personal data, medical certificate, x-ray pictures or other relevant findings can be brought home, for preparation of the case demonstrations! (only the notes made by the student during the practice, containing no personal data, no official documentation.)
7. Written theoretical evaluation will be organized in one of the practices in this semester.

Exam:
Practical hours should be visited during 2 days.
The time of practices is between 8.00 a.m – 2.00 p.m.
Semifinal exam will be organized at the end of fourth year, second semester.
Minimal expectations :
reaching the minimum level of the written theoretical evaluation (mark 2)
presentation of three written case-demonstrations reaching the minimum quality level (mark 2)

Non-performance of the minimal expectations invalidate the semester!

Textbook:
BC Decker Inc Hamilton London 2002

Recommended books
Bengel, Veltman, Loey,Taschini: Differential Diagnosis of Diseases of the Oral Mucosa

“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

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practices (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiation physics</td>
<td>Normal radiographic anatomy: Tooth anatomy (lecture)</td>
</tr>
<tr>
<td>Dental caries</td>
<td>Normal radiographic anatomy: Anatomic landmarks of the maxilla (lectures)</td>
</tr>
<tr>
<td>Pulp cavity</td>
<td>Normal radiographic anatomy: Anatomic landmarks of the mandible (lecture)</td>
</tr>
<tr>
<td>Extraction of the teeth</td>
<td>Development of the teeth, Deciduous teeth (lect.)</td>
</tr>
<tr>
<td>Root canal therapy</td>
<td>Recognition of the teeth, anatomic landmarks and caries</td>
</tr>
<tr>
<td>Periapical lesions</td>
<td>Development of the teeth, deciduous teeth, extraction of the teeth</td>
</tr>
<tr>
<td>Periodontal disease</td>
<td>Periapical lesions</td>
</tr>
<tr>
<td>Cysts of the jaws</td>
<td>Periodontal disease</td>
</tr>
<tr>
<td>Hypercementosis</td>
<td>1st midterm</td>
</tr>
<tr>
<td>Excessive bone formation</td>
<td>Cysts of the jaws</td>
</tr>
<tr>
<td>Injuries to teeth</td>
<td>2nd midterm</td>
</tr>
<tr>
<td>Osteomyelitis</td>
<td>Hypercementosis</td>
</tr>
<tr>
<td>Tumors</td>
<td>3rd midterm</td>
</tr>
<tr>
<td>Apicoectomy</td>
<td>Excessive bone formation</td>
</tr>
<tr>
<td>Anomalies</td>
<td>Injuries to teeth</td>
</tr>
<tr>
<td>Salivary gland diseases</td>
<td>Osteomyelitis</td>
</tr>
<tr>
<td>Resorption of the teeth</td>
<td>Anomalies</td>
</tr>
<tr>
<td>Radiation biology</td>
<td>Review</td>
</tr>
<tr>
<td>Health physics</td>
<td>Review</td>
</tr>
<tr>
<td>Long-cone paralleling technique</td>
<td>View of the examination radiographs I.</td>
</tr>
<tr>
<td>Traditional extraoral radiographic examinations</td>
<td>View of the examination radiographs II.</td>
</tr>
<tr>
<td>Panoramic technique I.</td>
<td></td>
</tr>
<tr>
<td>Panoramic technique II.</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** The maximum number of absences in a semester is 3.  
More than 3 absences invalidate the semester.  
During the semester three midterm examinations should be passed.  
Final exam
PSYCHIATRY
Tutor: Prof. Dr. István Bitter
Department of Psychiatry and Psychotherapy

Lectures: 0.5/week, practices: 0.5/week

Examination: Semi-final


Schedule
Subject of psychiatry, classification of disorders, diagnostic methods (lecture)
Case demonstration (psychiatric interview, signs and symptoms )
Affective disorders (lecture)
Case demonstration (depression)
Anxiety, anxiety disorders, somatoform disorders (lecture)
Case demonstration (anxiety disorder)
Organic psychiatry (lecture)
Case demonstration (dementia)
Substance related disorders (lecture)
Case demonstration (alcohol abuse)
Schizophrenia and associated disorders (lecture)
Case demonstration (schizophrenia)
Psychotherapy (lecture)
Emergency in psychiatry, legal aspects (lecture)
Case demonstration, consultation (Z. Hidasi)

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. Semi-final exam: oral exam (based on 2x11 questions)

NEUROLOGY
Tutor: Dr. Sándor Ilniczky

First Semester

Classroom lectures:
Cranial nerves and the brainstem
The motor system
The sensory system, pain syndromes
Altered consciousness. Emergency in neurology
Diagnosis and treatment of cerebrovascular disorders
Epilepsy and sudden loss of consciousness
Movement disorders
Inflammatory disorders and tumors of the nervous system
**Bedside practice, patient demonstration**

- Recognition of neurological symptoms – examination of cranial nerves
- Examination of the motor system
- Evaluation of neurological symptoms
- Emergency in neurology
- Demonstration of cerebrovascular patients
- Diagnosis of epilepsies
- Special investigation of patients with movement disorders

**Requirements:**
- Attendance of the lectures
- Participation on the patient demonstration (maximum 1 absence from 7 practices)
- Semifinal exam: the written exam consists of 50 simple choice questions, including the topics of the lectures and the basic literature listed below. For those who are not able to be present at the written exam, or fail, we provide a date for oral exam.

**Basic reading:**

**Suggested reading:**

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**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
  - Oral immunopathology
  - Drugs and chemicals used in the periodontology
  - Pathomechanism of the periodontal disease
  - Clinical forms of periodontal diseases
  - Acute necrotizing ulcerative gingivitis
  - Pregnant gingitis, Periodontal diseases with endocrine background.
  - Clinical practice
  - Clinical practice
  - Clinical practice
  - Clinical practice
  - Clinical practice

- **Practices** (3 hours per week)
  - Midterm Demonstration
  - Clinical practice
  - Clinical practice
  - Clinical practice
LECTURES (1 hour per week)  
Practices (3 hours per week)  

Non-plaque related periodontal conditions  
Clinical practice  
Oral mucous membrane diseases located on the gingiva  
Clinical practice  
Periodontal diseases of the child and adolescents  
Clinical practice  
Epidemiology of the periodontal diseases  
Clinical practice  
Periodontal diseases and the patients’ behavior  
Clinical practice  
Periodontitis as a behavioral disease  
Clinical practice  
Oral prophylaxis and prevention of periodontal diseases  
Midterm Demonstration  
Measures of individual and group education and motivation  
Clinical practice  
Periodontal charting, periodontal indices  
Clinical practice  
Medical and dental history of the periodontal patients  
Clinical practice  
General appraisal of the etiology of periodontal disease  
Clinical practice  
Rational for therapy.  
Clinical practice  
Consultation  
Clinical practice

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

PUBLIC HEALTH  
Tutor: Dr. András Terebessy

English Dental

Lectures (1.5 hours per week)  
Practicals (2 hours per week)  
Definition of Public Health; Past, present and future of Public Health  
Introduction Basic demographical data  
Demography: International and Hungarian situation  
Public Health Program of EU  
General epidemiology Analytical and intervention methods on field of chronic non-communicable diseases  
Visit into the Central Kitchen of the University  
Lifestyle: smoking, alcohol consumption, drug-abuse  
Practical aspects of epidemiological investigations: study-planning and analysis  
Epidemiology and prevention of non-communicable diseases I  
Dentist’s task on prevention of non-communicable diseases I.: smoking, alcohol consumption and drug-prevention  
Epidemiology and prevention of non-communicable diseases II  
Dentist’s task on prevention of non-communicable diseases II: HBP-prevention  
Epidemiology and prevention of Cancer  
Dentist’s task on prevention of non-communicable diseases III: cancer-prevention

Screening-screening programs  
Environmental health : water, soil, air  
Dentist’s task on environmental health problems

300
**DENTAL PSYCHOLOGY**

2009/2010

2nd semester

neptun-kód: FOMAGDPS_1A

Course syllabus:

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Title and Details</th>
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<td>1+2</td>
<td>February</td>
<td>Principles of perception, pain, consciousness, emotions and communication -and their relations to dentistry. Gábor Suhai</td>
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<tr>
<td>3+4</td>
<td>February</td>
<td>Altered states of consciousness, dental anxiety and suggestive communication. Gábor Suhai</td>
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<td>5+6</td>
<td>February</td>
<td>Techniques of establishing rapport with patients in fear and basics of formulating positive suggestions in dental practice. Gábor Suhai</td>
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<td>7+8</td>
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<td>Stress and stress management programs, Dr. Adrienne Stauder</td>
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<td>March</td>
<td>Dental anxiety and music therapy, László Harmat</td>
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<td>March</td>
<td>Psychotherapeutic methods, Dr. György Purebl</td>
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<td>12+13</td>
<td>March</td>
<td>Conscious states, sleep, dreaming, general anesthesia. Dr. Róbert Bódizs</td>
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<tr>
<td>14+15</td>
<td>March</td>
<td>Health psychology and behavior, Review and semi-final exam, Dr. Róbert Bódizs, Dr. Piroska Balog</td>
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</table>

Participation and making up for absences:
Participation list will be recorded at the end of every lecture. Maximum number of absences in a semester is 3. Course will conclude with a written **semi-final examination.**
Recommended books:


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

Dental Ethics

First Semester

Bioethics
Course Syllabus.
Institute of Behavioral Sciences
Tutor: Dr. József Kovács
(28 hours)

Course objectives:

a. To enable students to recognize ethical issues when encountered in everyday clinical practice and research
b. To provide students with a conceptual-logical system, which helps them to address ethical questions and to resolve ethical dilemmas in an efficient way
c. To introduce students to a body of knowledge, which helps them to understand, respect and protect the rights of patient research subjects and fellow health care professionals
d. To help the would be health care professional to understand the responsibility of the individual, of the health care system and of the society as a whole in maintaining health

1. week (Lecture)
Basic concepts of ethics.
Descriptive ethics, normative ethics, metaethics.
General ethics and applied ethics.
Bioethics, medical ethics, health care ethics. Similarities and differences.
The role of bioethics in a pluralistic society.
The relationship between law and ethics.
Reasoning in ethics. The most common mistakes.

2. week (Practices)
Normative theories of ethics.
Deontological theories of ethics. (The Golden Rule, Kant and the categorical imperative, the principle of double effect, W.D. Ross and the prima facie duties,)
Teleological theories of ethics. (Act and rule utilitarianism.)
Theories of natural law.
Contractarian theories of ethics. (The theory of justice of John Rawls)
3. week (Lecture)
**The basic principles of dental ethics.**
- The principle of respect for autonomy.
- The principle of non-maleficience.
- The principle of beneficience.
- The principle of justice.
- Arguments against „principalism“.

4. week (Practices)
**The concept of health and disease.**
- Naturalistic definitions of health.
- The medical model of defining health.
- Normativist definitions of health.
- Some questions of psychiatric ethics.

5. week (Lecture)
**Informed consent.**
- Simple consent and paternalism in medicine.
- The emergence of the doctrine of informed consent.
- Standards for information disclosure for patients.
- When is informed consent not necessary?
- Standards of competence and incompetence.
- The right to refuse medical treatment.
- Some psychological and communicational aspects of informed consent.

6. week (Practices)
**Information disclosure to terminally ill patients. Telling the truth to patients.**
- The history of information disclosure to terminally ill patients.
- Pros and cons for lying to terminally ill patients.
- The weaknesses of the arguments in favour of lying.
- The dying process according to E. Kübler-Ross.
- How to communicate the bad news to terminally ill patients.
- The physician’s relationship with the relatives of the deceased patient.

7. week (Lecture)
**Justice in Health Care I. Ethical questions of macroallocation.**
- Higher and lower level macroallocational problems.
- The role of personal responsibility in maintaining health.
- The principles and practice of rationing in contemporary health care systems. (Soft and hard rationing.)
- Medical ethics and medical economics. Ethical questions of cost-benefit and cost effectiveness analysis. The QALY.
- The problem of right to health care. (The libertarian, the liberal and the socialist views about the right to health care.)
- The role of the market and that of the state in the health care system.
- Ethical problems of financing health care. (Fee-for-service, capitation, fixed salary, DRG-system, etc.)
- Setting health care priorities in Oregon.
- Attempts to define a just health care system.
8. week (Practices)
Ethical questions of reproductive medicine.
Abortion.
Artificial insemination from donor.
In vitro fertilization, surrogate motherhood.
Ethical questions of genetic counseling.
Ethical questions of embryo experimentation.

9. week (Lecture)
Justice in Health Care II. Ethical questions of microallocation. Moral dilemmas in the allocation of scarce medical resources.
The concept of microallocation.
Ethical analysis of various selection criteria. (Medical benefit, psychological ability, supportive environment, social value criterion, resources required criterion, age, ability to pay, random selection, personal responsibility for the illness, etc.)

10. week (Practices)
Ethical questions of animal experimentation.
History of the thinking about the moral status of animals.
The philosophical significance of the Darwinian conception of nature.
The views of Peter Singer: antispeciesism.
The views of Tom Regan: animal rights.
Ethical questions of experimentation on animals on the basis of a moderate animal protectionist’s view.
Critical anthropomorphism.
Alternatives to animal experimentation.

11. week (Lecture)
Euthanasia and the withholding of life-sustaining treatment
Definitions.
The sanctity of life versus the quality of life doctrine.
Is there any difference between active and passive euthanasia?
Refusal of life sustaining treatment by competent and incompetent patients.
Possibilities to extend the autonomy of patients: living will, durable power of attorney, substituted judgement, etc.
The concept of medically futile treatment.
Ethical problems of the treatment of handicapped newborns. (The debate about the treatment of spina bifida babies, the Baby Doe case, the legal situation, etc.)

12. week (Practices)
Ethical questions of human experimentation.
Possible forms of experimentation on humans.
Contradiction between the two roles of the physician. (Healer and scientist.)
The ethics of Randomized Controlled Clinical Trials. (RCT)
Randomization and prerandomization.

13. week (Lecture)
Ethical questions of organ- and tissue transplantation.
Some problems of justice concerning kidney transplantation and chronic haemodialysis.
Ethical questions of transplantation from living kidney donors.
The concept of death.
Ethical questions of organ harvesting from the dead.
The debate about the market of organs.
Ethical questions of using embryo- or foetal tissue in human therapy.
Ethical problems of using anencephal newborns as organ donors.

14. week (Practices)
The rights of patients.
The role of patient’s rights in the transformation of the paternalistic physician-patient relationship.
Moral versus legal rights.
A list of basic rights of patients.
Mechanisms to ensure the realizations of patient’s rights. (Patient’s rights advocates, ombudsman, hospital ethics committees, institutional review boards, arbitration, etc.

Course Faculty:
Jozsef Kovacs, MD, PhD, (Head of the Department of Bioethics), 210-2930/56350;
e-mail: kovjozs@net.sote.hu
Ágnes Dósa, MD, JD, PhD e-mail: dosaagi@yahoo.com
Imre Szebik, MD, PhD e-mail: szebimre@net.sote.hu
Jeno Lorincz, MD, JD e-mail: lorjen@net.sote.hu

Department:
Institute of Behavioral Sciences
Department of Bioethics
NET Building, 19th, 20th floor
Tel: 210-2953
Secretary: NET Building, 20th floor, Room-2005

List of questions

1. Deontological theories of ethics.
2. Utilitarian theories of ethics.
3. The principles of dental ethics
4. Justice and dental ethics: the allocation of scarce medical resources.
5. Paternalism in dental practice
6. Informed consent
7. Information disclosure for terminally ill patients
8. Advance Directives
9. Experimentation on human subjects
10. Objection to Transplantation of Organs and Counterarguments
11. Ethical problems of live organ donation
13. Organ donation form brain-dead donors: presumed consent
14. Active and Passive Euthanasia
15. Withdrawing and withholding life sustaining treatment.
16. Models of the dentist-patient relationship
17. Ethical issues related to treating patients with partially compromised capacity
18. Professional norms and bad outcomes
19. Ethical questions raised by HIV and AIDS in dental practice
20. Confidentiality issues in dental practice
21. Moral issues related to the HIV positive dentist
22. Possible criteria for distributing the society’s resources
23. Social justice – the free market view of justice
24. Ethical issues in advertising dental services
25. Professional obligations in dentistry

Textbook:

Important:
To participate on at least 75% of the total number of lessons is a prerequisite of getting the signature. (One absence from the lectures and two absences from the practices is the maximum number permitted.) The student can make up for the absences in practices held at other times elsewhere. Doctor’s certificate is required to justify absence from the lessons and the exam. Exam type: semi-final
Sign up for the exam: through the Neptun system.

MEDICAL SOCIOLOGY (Dentsoc)
Code: FOMAGSZO_1A
2nd semester

Hour/semester: 15
Credit: 2

Responsible person and Institute for the course: Dr. Zsuzsa Szántó; Institute of Behavioural Sciences

Lecturers: Dr. Zsuzsa Szántó
Dr. Katalin Kovács
Dr. Bea Dávid
Dr. Fruzsina Albert

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

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

The course includes: lectures, seminars, laboratory exercises - 7 lectures, 7 seminars, 1 midterm exam.

**Course requirements, methods of monitoring:**
To obtain signature for absolving the course students have to participate at a minimum of 10 classes. Participation is documented through catalogues. A midterm exam is taken after the 8th lecture. It is also required to submit a home paper or a class presentation in course-related topics by the end of the semester. The course ends with an exam; the grade may include the results of the midterm and the home assignment.

**Supplement possibilities:** based on the SE’s exam regulation. Absence may be justified by a medical document at the next class. One seminar per semester can be supplemented by an extra assignment given by the teacher or attending the same class with another group.

**Textbook:**
Handouts for the lectures will be accessible on the homepage of the Institute of behavioural Sciences: www.magtd.sote.hu.
GNATHOLOGY – lectures and practices
Department of Prosthodontics
Lecturer: Dr. Peter Hermann

Week  Lecture
1. Introduction into the physiology of the stomatognathic system. Morphology of the masticatory system. Occlusion.
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. Traumatic occlusion – Occlusal trauma Periodontontological aspect of gnathology
7. Examination of patients. Occlusal diagnostics.
10. Occlusal adjustment.
11. 12-13-14 Waxing up occlusal surface of different teeth: maxillary incisor and canine and occlusal surface of premolar and molar. Practical examination

ORAL IMPLANTOLOGY – lecture
Department of Oral and Maxillofacial Surgery and Dentistry
Lecturer: Prof. Dr. Tamás Divinyi

Course Syllabus:

COMPULSORY SUMMER PRACTICE
4-weeks at a Dental Office
(Conservative Dentistry of Periodontology)
The student has to practice whole-scale comprehensive dental treatment including: Oral Prophylaxis, Restorations, Root Canal Therapy and Minor Prosthodontics as well as Er. Management.
### Fifth Year

<table>
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<th>Creditcode</th>
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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

Recommended textbooks:
7 Online: www.lib.sote.hu – Adatbázisok, adattárak – OVID – Books@OVID – Dermatology – Fitzpatrick’s Dermatology in General Medicine
## First Semester

### Lectures (1 hour per every 2nd week)

- The role of otorhinolaryngology in dentistry and medicine. Clinical anatomy of the ear. Diseases of the external ear.
- Acute and chronic otitis media. Etiology, diagnosis, complications and therapy.
- Clinical aspects of diseases of the mouth and pharynx. Diseases of the labial, oral and laryngeal mucosa.
- Anatomy and physiology of the larynx. Disorders of the voice. Infections and tumors of the larynx and their management.

### Practices (0.5 hour per every 2nd week)

- Routine clinical examinations in practice.
- Routine audiology. Operating theater. Video demonstration.
- Direct and indirect laryngoscopy. Videostroboscopy and fiberoscopy.
PEDIATRICS AND INFECTIOUS DISEASES

2nd Department of Pediatrics
Tutors: Dr. Tamás Bense
       Dr. András Kelecsényi

First Semester

Lectures

Development and Growth
Childhood Nutrition and its Disorders
Fluid and Electrolyte Disorders
Newborn Infant: Diseases and Disorders
Genetic Disorders
Congenital Heart Diseases
Respiratory Diseases
Neurologic and Muscular Disorders
Endocrine Disorders
Infectious Diseases, Immunization
Gastrointestinal Tract Disorders
Hematologic Disorders
Malignant Diseases in Childhood
Kidney and Urinary Tract Diseases
Allergic Diseases

PROSTHODONTICS

First Semester

Clinical practices: 2 hours/week. Integrated practices: 5 hours/week.
Treatment of partial edentoulness, 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. Júlia Nemes

First Semester

No lectures  Practices (3 hours/week)
Clinical dentistry 6 hours/week

Second Semester

No lectures  Practices (3 hours/week)
Clinical dentistry 6 hours/week

During the first semester the students have to make:
5 amalgam fillings, 7 esthetic restorations, 2 root-canal fillings, 1 inlay
During the second semester the students have to make:
5 amalgam fillings, 7 esthetic restorations, 2 root-canal fillings, 1 inlay

ORAL AND MAXILLOFACIAL SURGERY
Tutor: Dr. Attila Szűcs

First Semester

Lectures (1 hour / week)  Practices (5 hours / week)
Precanceroses.
Benign tumors of the soft tissues in the head and neck region.
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. Orthognatic Surgery
Biomaterials.
Esthetical consideration in maxillofacial surgery
Risk patient treatment in oral surgery I.
(internal diseases, fainting, antifebrile and painkiller treatment)
Ambulantory narcosis in head and neck surgery,
coagulopathies, anticoagulant treatment.

Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
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

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.
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 fluoridoprophylaxe.
Development of the teeth, anatomy and dentition of primary teeth.
Structure and physiology of the hard dental tissues, and its practical significance.
Disturbances of development of the permanent and primary teeth.
Caries of primary teeth. Treatment of caries of primary teeth.
Consecutive illnesses of caries of primary teeth.
Mechanism of second dentition.
Physiological and pathological phenomena in second dentition.
Caries and treatment of permanent teeth.
Endodontic treatment of immature teeth.
Consultation.

Practice (5 hours/week)

Treatment of patients.
Type of evaluation: Practical grade (1-5 grading system)

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.
8 Administration of medicine in pedodontics.
<table>
<thead>
<tr>
<th>Week</th>
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<tr>
<td>10</td>
<td>Diagnostic competition.</td>
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<tr>
<td>11</td>
<td>Organizing of pedodontic treatment and nursing. Administration and documentation.</td>
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<tr>
<td>12</td>
<td>Significance of agegroup in pedodontics.</td>
</tr>
<tr>
<td>13</td>
<td>Consultation.</td>
</tr>
</tbody>
</table>

**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 parodontontology.
- 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.
- 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 maxillar 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) Practices (2 hours/week)
Introduction: What is the clinical periodontology is? Clinical practice
The rational of periodontal cause related therapy Clinical practice
Clinical and radiological periodontal diagnostics Clinical practice
Oral hygiene, Gingival and Periodontal indices Clinical practice
The treatment of periodontal emergency cases Clinical practice
The stages of the comprehensive periodontal treatment I. Midterm Demonstration
The stages of the comprehensive periodontal treatment II. Clinical practice
Professional oral hygiene I. Supragingival scaling Clinical practice
Professional oral hygiene II. Supragingival scaling Clinical practice
Professional oral hygiene III. Correcting plaque retention factors Clinical practice
Oral hygienic education, tooth brushing 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

**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

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (Part One)</th>
<th>Practices</th>
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<tbody>
<tr>
<td>1</td>
<td>Reevaluation II. Correcting phase in periodontal surgery</td>
<td>Clinical practice</td>
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<tr>
<td>2</td>
<td>Correcting periodontal Surgery -Mucogingival surgery I.</td>
<td>Midterm Demonstration</td>
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<tr>
<td>3</td>
<td>Mucogingival Surgery Gingival esthetics II.</td>
<td>Clinical practice</td>
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<tr>
<td>4</td>
<td>Periodontal regeneration</td>
<td>Clinical practice</td>
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<tr>
<td>5</td>
<td>Periodontal regenerative processes - biological barrier membranes</td>
<td>Literature review</td>
</tr>
<tr>
<td>6</td>
<td>Periodontal regenerative processes – growths factors and other biochemical means</td>
<td>Literature review</td>
</tr>
<tr>
<td>7</td>
<td>Prosthodontic rehabilitation I.</td>
<td>Literature review</td>
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<tr>
<td>8</td>
<td>Prosthodontic rehabilitation II. The white esthetics</td>
<td>Literature review</td>
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<tr>
<td>9</td>
<td>Periodontal follow-up – periodontal maintenance</td>
<td>Literature review</td>
</tr>
<tr>
<td>10</td>
<td>Perio – endodontic relationship</td>
<td>Literature review</td>
</tr>
<tr>
<td>11</td>
<td>The evaluation of the success of the comprehensive periodontal treatment</td>
<td>Differential diagnosis</td>
</tr>
<tr>
<td>12</td>
<td>The occlusion and the periodontium</td>
<td>Consultation</td>
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<tr>
<td>13</td>
<td>Consultation</td>
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</tr>
<tr>
<td>14</td>
<td>Written final exam – periodontal diagnostics</td>
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</table>

**Note:** The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester two midterm demonstrations should be passed. Practical course grade and final exam
ORAL MEDICINE
Head of department: Prof. Dr. István Gera
Lecturer: Dr. Péter Windisch

First semester
Lectures (1 hour / week)
Introduction: The role of Oral Medicine in the whole discipline of stomatology
The significance of laboratory investigation in dentistry
Primary and secondary basic lesions The signs and symptoms of drug side effects
Mucous membrane immunity (in details: alimentary track)
Mucous membrane immunity II. Its clinical relevance
The biochemistry and immunology of inflammation
Inflammation of bacterial origin in the oral cavity
Oral signs of neuro endocrine diseases
Viral diseases
Fungal diseases
The signs and symptoms of temporomandibular joint disorders
Oral manifestations of immuno deficiencies

Midterm Demonstration
Allergic diseases in the oral cavity
Autoimmune diseases in the oral cavity
Aphthous ulcers in the oral cavity

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 Gőbl
Tutor: Dr. László Gorove

First Semester

Topics
The principles of emergency medicine.
The field assessment.
Patient assessment.
Transportation trauma
BLS – AED, ACLS
Prehospital care of the injured patient
Analgesia, anesthesia in the emergency care
Unconsciousness, confused states
Acute chest syndromes. ACS
Acute cardiac failure. Arrhythmias in the emergency care
The shock process. Evaluation and in field management of shock conditions.
Stroke syndromes. Hypertensive emergencies.
Acute dyspnea. Artificial ventilation on the spot
Acute abdominal syndromes
Toxicology in the emergency care
Pediatric oxylogy
Obstetrical first aid
CPR revision

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

Lecturer: **Dr. Márta Marschalkó**  
Tutor: **Dr. Nóra Erős**

Department of Dermatology, Venerology and Dermatooncology  
Mondays 13.00 – 14.45

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Lecturer</th>
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<tbody>
<tr>
<td><strong>Introduction to Dermatology.</strong></td>
<td>Dr. Márta Marschalkó (Deputy: Dr. Norbert Wikonkál)</td>
</tr>
<tr>
<td>Diagnostic procedures, anatomy, functions of skin comparing to oral mucosa.</td>
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<tr>
<td>Elementary lesions.</td>
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<tr>
<td><strong>Sexually transmitted diseases (syphilis, gonorrhoea, NGU, HPV and herpes virus infections)</strong></td>
<td>Dr. Péter Holló (Deputy: Dr. Márta Marschalkó)</td>
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<tr>
<td><strong>Skin tumors. Malignant melanoma, basal cell carcinoma, squamous cell carcinoma. Benign tumors, paraneoplastic syndromes.</strong></td>
<td>Dr. Norbert Wikonkál (Deputy: Dr. Péter Holló)</td>
</tr>
<tr>
<td><strong>Allergic skin diseases. Dermatitis, eczema, implication for dentists.</strong></td>
<td>Dr. Márta Marschalkó (Deputy: Dr. Nóra Eros)</td>
</tr>
<tr>
<td>Atopic dermatitis, urticaria.</td>
<td>Dr. Péter Holló (Deputy: Dr. Márta Marschalkó)</td>
</tr>
<tr>
<td>AIDS. Psoriasis</td>
<td>Dr. Péter Holló (Deputy: Dr. Norbert Wikonkál)</td>
</tr>
<tr>
<td>Autoimmune diseases, bullous diseases, drug allergy, vasculitis.</td>
<td>Dr. Márta Marschalkó (Deputy: Dr. Norbert Wikonkál)</td>
</tr>
<tr>
<td><strong>Bacterial skin diseases.</strong></td>
<td>Dr. Márta Marschalkó (Deputy: Dr. Norbert Wikonkál)</td>
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<tr>
<td>Cutaneous and mucosal diseases caused by fungi. Treatment modalities.</td>
<td>Dr. Nóra Eros (Deputy: Dr. Norbert Wikonkál)</td>
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<tr>
<td>Dermatological treatment.</td>
<td>Dr. Gyöngyvér Soós (Deputy: Dr. Péter Holló)</td>
</tr>
<tr>
<td>Seborrheic dermatitis, acne. Cutaneous and oral manifestations of internal diseases.</td>
<td>Dr. Nóra Eros (Deputy: Dr. Márta Marschalkó)</td>
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</tbody>
</table>
OBSTETRICS AND FAMILY PLANNING

2nd Dept. of Obstetrics and Gynaecology
Head of Department: Prof. Dr. Attila Pajor
Tutor: Dr. Nándor Ács

Second Semester

Lectures (1 hour/week)

- Anatomy and physiology of the genital organs. The menstrual cycle.
- Conception.
- Prenatal care, diagnosis of pregnancy.
- Normal pregnancy and development of the fetus.
- Changes in maternal anatomy and physiology during pregnancy.
- Spontaneous abortion. Ectopic pregnancy.
- EPHgestosis. Hyperemesis.
- Infections in obstetrics and gynecology.
- Normal labour and delivery.
- Abnormalities of labour and delivery.
- Normal and abnormal puerperium.
- Neonatology.
- Gyn. endocrinology. Family planning.
- Sterility, infertility.
- Genetic counseling, fetal anomalies.

OPHTHALMOLOGY

Dept. of Ophthalmology
Program director: Dr. Zsuzsa Récsán
Tutor: Dr. Zsófia Hargitai

First Semester

Lectures (1 hour/week)

- Introduction. History of ophthalmology.
  - Conjunctivitis (“red eye”).
  - Keratitis (“red eye”).
  - Uveitis (“red eye”). Differential diagnostic approach of the “red eye”.
- Basics of optics.
  - Glaucoma (pathomechanismus).
  - Glaucoma (conservative and surgical treatment).
Practical guide (0.5 hour/week)

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

FORENSIC DENTISTRY
Department of Forensic Medicine
Tutor: Dr. 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
## STUDY PROGRAMME

### First Year

<table>
<thead>
<tr>
<th>Subjects</th>
<th>1st semester</th>
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<td>Credit Points</td>
<td>Prerequisites</td>
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SEMMELWEIS UNIVERSITY / FACULTY OF PHARMACY

326
<table>
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<th>Subjects</th>
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<th>Practices</th>
<th>Credit Points</th>
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# The grade influences the qualification of the diploma
* Obligatory courses
** Obligatory elective courses: (2 credit points).
*** 3rd and 4th year Pharmacy students of 2009/10 have to complete the subject 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 2009/10 academic year. The 2nd year students should have already done it in 2008/09.
SEMELWEIS UNIVERSITY / FACULTY OF PHARMACY

List of textbooks

7. Mihalik: Botany for Students of Pharmacy. (Szeged)
11. Kőrös: Inorganic Chemistry. (Szeged)

Recommended textbooks:

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 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.

**First Semester**

**Lectures:** 2 hours per week  
**Practicals:** 2 hours per week

Differential and differential coefficient. Rules for derivations of functions.  
Derivative of the power function.  
Application of differentiation for calculation of limits of fractions.  
An iterative method to solve equations (Newton-method).  
Expansion of differentiable functions to power series. The Taylor series of $\exp x$, $\sin x$, $\cos x$, $\ln x$ and other functions.  
Qualitative examination of functions. Roots, extremes and inflexion points.  
The multiplicity of a root.
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.
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.
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.
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 chi-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.

**BIOLOGY I.**
Tutor: Dr. Valéria László

1st Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The cell membrane: structure and function</td>
<td>The light microscope in use</td>
</tr>
<tr>
<td>2.</td>
<td>Structure and function of the nucleus I</td>
<td>General view of the cell. Light and electron microscopic microtechnique.</td>
</tr>
<tr>
<td>4.</td>
<td>Endoplasmic reticulum and the ribosomes</td>
<td>Cyto/histochemistry</td>
</tr>
<tr>
<td>5.</td>
<td>Golgi complex, secretion and protein transport</td>
<td>Endoplasmic reticulum</td>
</tr>
<tr>
<td>6.</td>
<td>Lysosomes, endocytosis, vesicular transport</td>
<td>Midterm (written)</td>
</tr>
<tr>
<td>7.</td>
<td>Structure and function of mitochondria and peroxisomes</td>
<td>Secretion. Immunohistochemistry</td>
</tr>
<tr>
<td>8.</td>
<td>The cytoskeleton,</td>
<td>Endocytosis. Cellular digestion.</td>
</tr>
<tr>
<td>9.</td>
<td>Cellular movement</td>
<td>Enzyme-histochemistry</td>
</tr>
<tr>
<td>10.</td>
<td><strong>Cell adhesion, cell junctions</strong></td>
<td>Cell and tissue culture</td>
</tr>
<tr>
<td>12.</td>
<td><strong>The cell cycle and its regulation I</strong></td>
<td>Cytoskeleton and cellular movement</td>
</tr>
<tr>
<td>13.</td>
<td>The cell cycle and its regulation II</td>
<td>Cell surface differentiation, ultrastructure of cellular junctions</td>
</tr>
<tr>
<td>14.</td>
<td>Cellular aging and programmed cell death (apoptosis)</td>
<td>Midterm (written)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cell death (necrosis and apoptosis)</td>
</tr>
</tbody>
</table>
# BIOLOGY II.

## Second Semester

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

Second Semester

Lecture (2 hours per week)
Transport phenomena, flow of fluids and gases
U-V-dosimetry
Diffusion, osmosis
Thermodynamic aspects of transport processes
Membrane potential
Signals as information carriers, signal processing
Detectors, transducers, displays
Basic electronic units and circuits
Physical methods for structural analysis I
Physical methods for structural analysis II
Regulatory system in technics and b
Some diagnostic methods, endoscopy, thermography, ultrasound echo, Doppler, X-ray
Isotope diagnostics
Magnetic resonance imaging
Some therapeutic methods, laser surgery, radiation therapy
Research fields in the Department of Biophysics and Radiation Biology

Laboratory (3 hours per week)
Dosimetry
Amplifier
The attenuation of gamma-radiation
Pulse generators
Sine wave oscillators
Audiometry
Densitography (CT)
Calculations
Flow of fluids. Electric model of vascular system
Electrocardiography
Diffusion
Sensory function
Repetition
Repetition
First Semester

**Lectures** (3 hours per week)

Elementary particles: quarks, leptons, gauge particles, electron, proton, neutron.
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 molecule 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. Kp and Kc. The Le Chatelier principle. The temperature and pressure dependence of the equilibrium constant.
Acid/base equilibria. Conjugated acid-base pairs and their strengths.
Complex formation equilibria. Types of ligands. Mass balance equations, calculation of complex equilibria. Heterogeneous equilibria, the solubility product constant, solubility.
Chemical kinetics. Reaction order and molecularity. First order reactions.
Age determinations based upon radioactive decompositions. Second order, pseudofirst order and zero order reactions. Reaction mechanisms.
The temperature dependence of the reaction rate, collision theory.
Catalysis. catalysts. Autocatalytic reactions. Enzyme catalysed, induced and oscillatory reactions.
The phase diagram of water. Crystal structures, unit cell. The rate of crystallization. Sublimation.
Determination of MM by colligative properties.
PRACTICAL GENERAL AND INORGANIC CHEMISTRY

Tutor: Dr. Zoltán Szakács

First Semester

Lectures (2 hours per week)

Methods of purification of chemical substances. Recrystallization. Sublimation.


Complex formation reactions. Naming of complex ions and coordination compounds. Methods of preparation of double salts and coordination compounds.


Problem-solving in general chemistry. Calculation of molar masses of nonelectrolytes from colligative properties.

Problem solving in general chemistry (Electrochemistry)

Practicals (5 hours per week)

Safety instructions. General instructions on the requirements. Recrystallization of KA1(SO4)2. 12 H2O. Sublimation of iodine.

Chemical purification of sodium chloride. Water purification using ion exchange resins. Distillation of hydrochloric acid. Preparation of CuSO4. 5 H2O

Preparation of (NH4)2SO4, H3BO3 from borax (Na2B4O7) Preparation of CaHPO4. Observation of hydrolysis of some salts. Observation of thermal decompositions. Determination of the mass of a

Observation of some oxidation-reduction Reactions. Preparation of metallic copper and metallic manganese. Reactions of metals. Preparation of Cu2O and FeSO4

GENERAL AND INORGANIC CHEMISTRY

Lecturer: Dr. Zsuzsanna Nagy-Ungvárai

Second Semester

3 hours per week (lecture)

Weeks  Introduction


2  Chemistry of hydrogen, oxygen, nitrogen and carbon.


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 oxoanions. The biological role of halogens.

5  The group 6A elements (S, Se, Te). General characteristics, occurrences, preparation, properties. Oxides, oxyacids and oxoanions 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.

Metals

7  Occurrence and distribution of metals. Metallurgy. The physical and chemical properties of metals and alloys. The alkali metals (Li, Na, K, Rb, Cs).
   General characteristics. Some important compounds of sodium and potassium.

8  The alkaline earth metals (Be, Mg, Ca, Sr, Ba). General characteristics. Some important compounds of magnesium and calcium. The zinc-group metals (Zn, Cd, Hg). Occurrences, chemical properties.

9  The transition metals. Physical properties, electron configurations and oxidation states. The chemistry of selected transition metals: chromium, manganese, iron, copper, molybdenum, platinum.
Weeks  Introduction

Chemistry of coordination compounds
The structure of complexes. Types of ligands.
The magnetic and optical properties of complexes.

10  The dynamics of coordination compounds:
Complex equilibria, ligand exchange rates.
The coordination chemistry of alkali metal ions.
(Hostguest complexation.)

Metals in biology
11  Life essential metals and ligands in biosystems.
Metals in enzymatic and trigger processes.
Metals in oxygen and nitrogen biochemistry.
Metals in biomineralization. Metal-induced toxicity.
The biomedical use of metal complexes and metal complexation.

The chemistry of the environment
12  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. Thiophospheterism. 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)


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

Classification of anions into analytical groups. Group reagents for qualitative analysis of anions.
Oxidation-reduction, Oxidation-reduction reactions in qualitative chemical analysis.

Physical methods of qualitative analysis.

Practicals (5 hours per week)

Study of ion reactions of Group III Part II: Al3+, Mn2+, Zn2+. 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.
Second Semester

Week | Lectures | Practicals (Tutor: Dr. Gyöngyi Szedlay)
--- | --- | ---
1 | Introduction. The Plant Kingdom. The botanical sciences. Pharmaceutical Botany, the program of the lectures. | Fundamentals in Botany. The use of the light microscope. Knowledge of the medicinal plants
2 | Compartmentalization and metabolic pathways in plant cells. | Plant cells (plasmolysis, cycloses).
3 | Chloroplast and photosynthesis. Starch formation and degradation. | Plastids, reserve polysaccharides, protein bodies.
5 | Mitochondrion and respiration. | Vacuole, crystals, lipid bodies.
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. | 2nd Test Examination
11 | Dermal tissue system. | Analysis of living plants (Rosaceae, Apocynaceae), medicinal plants.
12 | Conductive tissue system. | Conductive tissue system.
13 | Ground tissue system. | Ground tissue system.
14 | Secretory structures. | Analysis of living plants (Papaveraceae, Primulaceae).

3 Test Work Knowledge of the medicinal plants. Pteridophyta.

A visit to Research Institute for Medicinal Plant (Budakalász) by coach, to study the chemotaxonomic plant collection. Field practice in the mountains near to Budapest to study the springtime blossoming medicinal plants.
ANATOMY
Tutor: Dr. Ágnes Csáky

Second Semester

The aim of the subject is to introduce to the fundamentals of the structure of the human body and by this teach the essential terms used in the communication between pharmacists and physicians. The topic anatomy also serves as a preliminary study for later clinical subjects and deals with the basic methods of morphological research. The programme refers to anatomical books and periodicals helping the pharmacists to complete their knowledge in necessary.

**Lecture**

1. Introduction, general Embryology
2. Basic tissue
3. Bone, joint and muscle types
4. Ossification, development of the vertebral column
5. Heart and its development
6. Blood vessels
7. Blood, development of the blood cells
8. Lymphatic organs
9. Respiratory system
10. Development of lung and intestines
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
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**

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
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.
   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.
   Classification of drugs according to their origin and on the basis of strength.
10. Classification of drugs by their pharmaceutical action, use and by the place of application.
12. Drug utilization. How could be influenced the increased drug consumption?
    Narcotic controls.
    Pharmaceutical literature: treatises, pharmacopeias, formularies, journals, periodicals.
    Pharmacists, connections with physicians, etc.
    Health for all – all for health by the year 2000.
FIRST AID
Institute of Traumatology
Tutor: Dr. Miklós Szebeny

Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–2</td>
<td>Introduction. The purpose of the education of first aid. Initial assessment and management.</td>
</tr>
<tr>
<td>3–4</td>
<td>Mechanical injuries; open-closed. Hemorrhage, control of hemorrhage.</td>
</tr>
<tr>
<td>5–6</td>
<td>Thoracic and abdominal traumas.</td>
</tr>
<tr>
<td>7–8</td>
<td>Unconscious patient. Endocrine emergencies.</td>
</tr>
<tr>
<td>11–12</td>
<td>Resuscitation theory and practice.</td>
</tr>
<tr>
<td>13–14</td>
<td>Thermal and chemical injuries. Transport of injured patients.</td>
</tr>
</tbody>
</table>

Practice: Reanimation

INTRODUCTION TO HEALTH INFORMATICS
Institute of Development and Higher Education in the field of Medical Informatics
Director: Dr. András Jávor
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

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

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical Chemistry (quantitative) I. GYASKAKKG1A</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>GYASKANKG1A - Analytical Chemistry (qualitative) GVEGYMAT2A - Mathematics II.</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Physical Chemistry I. GYFKTFIKE1A</td>
<td>4</td>
<td>–</td>
<td>4</td>
<td>GYASKASKE2A - General and Inorganic Chemistry II. GVEGYMAT2A - Mathematics II. GYFZBIF2E2A - Biophysics II.</td>
<td>semi-final</td>
</tr>
<tr>
<td>Pharmaceutical Botany II. GYNOVGYNG2A</td>
<td>–</td>
<td>3</td>
<td>2</td>
<td>GYGENBIOE2A - Biology II. GYNOVGYNG1A - Pharmaceutical Botany I.</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Pharmaceutical Botany II. GYNOVGYNE2A</td>
<td>1</td>
<td>–</td>
<td>2</td>
<td>GYGENBIOE2A - Biology II. GYNOVGYNG1A - Pharmaceutical Botany I.</td>
<td>final #</td>
</tr>
<tr>
<td>Organic Chemistry I. Practice GYSZKSZKG1A</td>
<td>–</td>
<td>5,5</td>
<td>5</td>
<td>GYASKASKE2A - General and Inorganic Chemistry II. GYASKANKG1A - Analytical Chemistry (qualitative) GYINFBEIE2A - Introduction to Health Informatics II.</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Organic Chemistry I. GYSZKSZKE1A</td>
<td>4</td>
<td>–</td>
<td>5</td>
<td>GYASKASKE2A - General and Inorganic Chemistry II. GYASKANKG1A - Analytical Chemistry (qualitative) GYINFBEIE2A - Introduction to Health Informatics II.</td>
<td>semi-final</td>
</tr>
<tr>
<td>Physical Education III. GYTSITSNG3A</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>GYTSITSNG2A - Physical Education II.</td>
<td>signature</td>
</tr>
<tr>
<td>Hungarian Language III. * GYLEKMSZG3A</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>GYLEKMSZG2A - Hungarian Language II.</td>
<td>practical course grade</td>
</tr>
</tbody>
</table>

27
<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical Chemistry (quantitative) II, Practice GYASKAKKG2A</td>
<td>–</td>
<td>5</td>
<td>3</td>
<td>GYSZKSGKE1A - Organic Chemistry I. GYASKAKKG1A - Analytical Chemistry (quantitative) I.</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Analytical Chemistry (quantitative) II, GYASKAKKE2A</td>
<td>2</td>
<td>–</td>
<td>6</td>
<td>GYSZKSGKE1A - Organic Chemistry I. GYASKAKKG1A - Analytical Chemistry (quantitative) I.</td>
<td>final #</td>
</tr>
<tr>
<td>Biochemistry I., GYOBIKE1A</td>
<td>3</td>
<td>–</td>
<td>3</td>
<td>GYGENBIOE2A - Biology II. GYFIBIFIE2A - Biophysics II. GYSZKSGKE1A - Organic Chemistry I. GYHUMANAE1A - Anatomy</td>
<td>semi-final</td>
</tr>
<tr>
<td>Physical Chemistry II., GYFKTFIKG2A</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>GYFKTFIKE1A - Physical Chemistry I.</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Colloid Chemistry I., GYKOLKOLE1A</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>GYFKTFIKE1A - Physical Chemistry I.</td>
<td>semi-final</td>
</tr>
<tr>
<td>Organic Chemistry II, Practice GYSZKSMG2A</td>
<td>–</td>
<td>5,5</td>
<td>4</td>
<td>GYSZKSGKE1A - Organic Chemistry I.</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Physical Education IV.</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>GYTSITSNG4A - Physical Education III.</td>
<td>signature</td>
</tr>
<tr>
<td>Summer Practice I., ** GYSZGAKG1A</td>
<td>–</td>
<td>35</td>
<td>4</td>
<td></td>
<td>signature</td>
</tr>
</tbody>
</table>

# The grade influences the qualification of the diploma
* Obligatory courses
** 4 weeks (140 hours) summer practice in elective place (accredited public / community pharmacy, Galenical laboratory, research institute, university department) after the second and third year.
LIST OF TEXTBOOKS


Recommended textbooks:

# QUANTITATIVE ANALYTICAL CHEMISTRY

**Tutor:** Dr. Kristina Kurin-Csörgői

## First Semester

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practicals (5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic</strong></td>
<td><strong>Task</strong></td>
</tr>
<tr>
<td><strong>Introduction.</strong></td>
<td>Laboratory introduction; Safety and order in the laboratory; The schedule of the semester; Practical and theoretical requirements in the semester</td>
</tr>
<tr>
<td>Calibration</td>
<td>Calibration of burette (3-6-9-12 ml); Calibration of pipettes (10, 20 ml)</td>
</tr>
<tr>
<td>Acid-alkalimetry</td>
<td>Practicing the use of the laboratory tools; Determination of sulfuric acid</td>
</tr>
<tr>
<td>Acid-alkalimetry</td>
<td>Standardization of ( \sim 0.1N ) hydrochloric acid</td>
</tr>
<tr>
<td>Acid-alkalimetry</td>
<td>Test I. Determinations of hydroxide and carbonate ions in the presence of each other</td>
</tr>
<tr>
<td>Acid-alkalimetry (Instrumental)</td>
<td>Potentiometric titration of acetic acid; Conductometric determination of Betaine hydrochloride</td>
</tr>
<tr>
<td>Acid-alkalimetry</td>
<td>Indirect determination of sodium thiosulfate Determination of “Lidocain” in nonaqueous solution</td>
</tr>
<tr>
<td>Acid-alkalimetry</td>
<td>Determination of lactic acid; Chelatometric determination of lead.</td>
</tr>
<tr>
<td>Chelatometry</td>
<td>Test II. Determination of calcium and magnesium ions in mineral water</td>
</tr>
<tr>
<td>Chelatometry</td>
<td>Determination of aluminium in “Aluminium tartaricum solutum”</td>
</tr>
<tr>
<td>Gravimetry</td>
<td>Gravimetric determination of sulfate ions in the form of BaSO₄; (precipitation, preparation of filter)</td>
</tr>
<tr>
<td>Argentometry</td>
<td>Filtration, washing, weighing of BaSO₄ precipitate; Determination of chloride ions by Mohr’s method</td>
</tr>
<tr>
<td>Argentometry</td>
<td>Test III. Determination of bromide ions by Volhard’s and Fajans’ methods</td>
</tr>
<tr>
<td>Komplexometry</td>
<td>Determination of cyanides by Liebig-Denigee’s Method;</td>
</tr>
<tr>
<td>Supplements</td>
<td>Supplements</td>
</tr>
<tr>
<td>Closing</td>
<td>Closing</td>
</tr>
<tr>
<td>Lectures (2 hours per week)</td>
<td>Practical (5 hours per week)</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td><strong>Topic</strong></td>
<td><strong>Task</strong></td>
</tr>
<tr>
<td>Titration curves in oxidimetry, Titration with permanganate solution.</td>
<td>Introduction Safety and order in the laboratory Practical and theoretical requirements in the semester The schedule during the semester Redox titrations (permanganometry) Standardization of ca. 0.2N potassium permanganate solution</td>
</tr>
<tr>
<td>Titration with chromate and cerium (IV). Bromatometry I.</td>
<td>Permanganometry Permanganometry Permanganometry Determination of the total iron content by Zimmermann-Reinhardt method Permanganometric determination of bromide ions (Winkler’s method)</td>
</tr>
<tr>
<td>Bromatometry II. Reactions with periodate and their analytical use.</td>
<td>Chromatography Chromatography Bromatometry Bromatometry Determination of Mohr salt with chromatometric titration Bromatometric determination of arsenic (III) (from As2O3) or antimony (III) compounds (in form of “tartar emetic”: antymonyl tartarate) Determination of azophene</td>
</tr>
<tr>
<td>Iodometric titrations and other reductometric methods.</td>
<td>Bromatometry Bromatometry Cerimetry Iodometry Bromatometric determination of ascorbic acid (Vitamin C) in tablets (e.g., Vit C, Rutascorbin, Béres C) Cerimetric determination of amidazophene</td>
</tr>
<tr>
<td>Sampling and preparatory processes in analytical chemistry.</td>
<td>Iodometry Iodometry Standardization of ca. 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</td>
</tr>
<tr>
<td>Interactions between electromagnetic radiations and materials. Emission spectroscopy. Flame emission photometry, atomic absorption spectrophotometry. ICP-ES and ICP-MS possibilities.</td>
<td>Iodometry Iodometry Iodometry Iodometric determination of copper (II)-ions Determination of mannitol by Malaprade’s reaction with periodate Determination of iodide by Winkler’s method</td>
</tr>
<tr>
<td>Molecular absorption spectroscopy in UV-Vis region as well as in IR. Possibilities of spectrophotometric method(s) in complex systems.</td>
<td>Optional measures* Optional measures* Optional measures* Spectrophotometric determination of iron content in multivitamin tablets</td>
</tr>
<tr>
<td>Separation methods in analytical chemistry. Distillation, extraction and their possibilities.</td>
<td>Optimal measures* Optimal measures* Spectrophotometry</td>
</tr>
</tbody>
</table>

**Second Semester**

**TEST I.**

**TEST II.**

One selection from “Other determinations” Computer aided learning of modern instrumental analytical methods (HPLC; GC; UV-Vis Spectrophotometry) From “Potentiometric determinations” From “Other determinations”
<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practicals (5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic</strong></td>
<td><strong>Task</strong></td>
</tr>
<tr>
<td>Spectrophotometric</td>
<td>Semi-quantitative analysis</td>
</tr>
<tr>
<td>determination of</td>
<td>Semi-quantitative analysis</td>
</tr>
<tr>
<td>phosphate content in</td>
<td>“Merkoquant” testpapers</td>
</tr>
<tr>
<td>egg shell</td>
<td>(Public) Holiday</td>
</tr>
<tr>
<td>Different planar</td>
<td>Optional</td>
</tr>
<tr>
<td>chromatographic methods</td>
<td>From “Potentiometric determinations”</td>
</tr>
<tr>
<td>and their use in</td>
<td>Final test</td>
</tr>
<tr>
<td>pharmaceutical analyses.</td>
<td>TEST III.</td>
</tr>
<tr>
<td>High performance liquid</td>
<td>(Qualitative and quantitative analysis of complex samples)</td>
</tr>
<tr>
<td>chromatography.</td>
<td></td>
</tr>
<tr>
<td>Supercritical fluid</td>
<td>+ Determination</td>
</tr>
<tr>
<td>extraction and</td>
<td>Quantitative determination of</td>
</tr>
<tr>
<td>chromatography,</td>
<td>the sample</td>
</tr>
<tr>
<td>HPCE and its future</td>
<td></td>
</tr>
<tr>
<td>application.</td>
<td></td>
</tr>
<tr>
<td>Survey on analytical</td>
<td></td>
</tr>
<tr>
<td>chemistry.</td>
<td></td>
</tr>
</tbody>
</table>

**Potentiometric determinations:**
1. Direct potentiometric determination of fluoride content in tooth paste
2. Potentiometric titration of bromide content of “Elixirium thymi composita”
3. Potentiometric titrations of iodide and chloride ions in presence of each other
4. Potentiometric titration using computer controlled burette: Determination of phosphoric acid content in “Coca Cola”

**Other determinations:**
1. Complexometric determination of metals in coins: (e.g., 1,- Ft; 2,- Ft; 5,- Ft; US cent; Groschen) (\(Cu^{2+}\); \(Ni^{2+}\); \(Zn^{2+}\); \(Cu^{2+}\); \(Al^{3+}\))
2. Determination of calcium and magnesium ions in mineral water (e.g., Römerquelle, Teodora Quelle, Margitszigeti), in bitter water (Míra) and in tap water
3. Chelatometric determination of aluminium ions in “Aluminium aceticum tartaricum solutum”
4. Iodometric determination of \(Cr^{3+}\) ions
5. Permanganometric determination of hydrogen peroxide content in tablet “Hyperol”
6. Complex analysis of “Solutio iodi alcoholica”
7. Determination of “Papaverinium chloride” in nonaqueous solution (glacial acetic acid)
8. Conductometric determination of acid contents in red wine
## ORGANIC CHEMISTRY

**Lecturer:** Prof. Dr. Péter Mátyus  
**Tutor:** Dr. Péter Tétényi

### First Semester

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

*** number of hour (1) for introductory lecture
## ORGANIC CHEMISTRY

### Second Semester

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

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

Compounds of the main classes are discussed according to the following aspects: structure, nomenclature, physical properties, preparation/synthesis, chemical properties, some important individual compounds (particularly in respect to the medicinal chemistry).
Week | Lectures (4 hours per week)
--- | ---
3 | Nuclear magnetic resonance: The technique, the chemical shift. Electron spin resonance. Mass spectroscopy.
5 | Changes in internal energy. The temperature dependence of the internal energy and enthalpy. The relation between Cv and Cp. The reaction enthalpy. Hess’s law and reaction enthalpies. The temperature dependence of reaction enthalpies. (Kirchoff’s law).
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

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What are colloids? Definitions, nomenclature, historical perspective.</td>
</tr>
</tbody>
</table>
| 2    | Basic principles of colloid stability  
Intermolecular forces, interparticle forces, effect of the intervening medium.  
Electrostatic forces and the electrical double layer. |
| 3    | Steric repulsion, the effect of adsorbed or anchored layers.  
The total interaction potential curve. |
| 4    | Preparation of colloidal dispersions  
Dispersion methods, condensation methods: nucleation and particle growth.  
Emulsion and dispersion polymerization. Preparation of monodisperse colloids. |
| 5    | Interfaces  
Surface tension, surface energy, wetting phenomena. |
| 6    | Adsorption: the Gibbs adsorption equation, the influence of adsorption  
on interparticle forces. The effect of the curvature of surfaces on equilibrium. |
| 7    | Some important properties of colloids.  
Kinetic properties: Brownian motion, diffusion, osmosis, Donnan equilibrium,  
dialysis, electrokinetic phenomena, sedimentation and creaming.  
Scattering of radiation: light scattering, neutron scattering. |
| 8    | Rheology: viscosity, Newtonian and non-Newtonian systems, rheology  
of suspensions of colloidal particles. |
| 9    | Aggregation processes in colloidal dispersions  
Flocculation and coagulation of electrostatically stabilized dispersions,  
the Derjaguin–Landau–Verwey–Overbeek (DLVO) theory. Reversible flocculation,  
briding flocculation, depletion flocculation, sterically stabilized systems.  
Kinetics of coagulation, heterocoagulation. |
| 10   | Structure of flocs and sediments.  
Coalescence and particle growth. |
| 11   | Association colloids and self-assembly systems  
Micellisation, solubilization. |
| 12   | Thin films, foams and emulsions  
Film stability, film tension.  
Foams, foaming and antifoaming agents, froth flotation.  
Emulsions and microemulsions. |
| 13   | Macromolecular colloids and gels  
The formation and structure of macromolecules.  
General properties of polymer solutions.  
Determination of the molecular mass of macromolecules.  
Forces leading to gel formation.  
Swelling properties of gels. |
| 14   | The industrial importance of colloids. |
First Semester

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Lectures (1 hour per week)</th>
<th>Practicals (3 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Embryo development. The root apex, primary structure of roots.</td>
<td>Germination, seedlings. Plants representing fam.: Fabaceae, Brassicaceae</td>
</tr>
<tr>
<td></td>
<td>Root modifications</td>
<td>Roots. Plants representing fam.: Apiaceae, Euphorbiaceae.</td>
</tr>
<tr>
<td>2</td>
<td>The shoot apex. The primary structure of stems. Stem-root connection.</td>
<td>Stems I. Plants representing fam.: Solanaceae, Lamiaceae</td>
</tr>
<tr>
<td>3</td>
<td>Secondary growth of roots and stems.</td>
<td>Stems II. Plants representing fam.: Asteraceae</td>
</tr>
<tr>
<td>4</td>
<td>Development and anatomy of leaves. Adaptations to the environment.</td>
<td>1. Test Work:</td>
</tr>
<tr>
<td></td>
<td>Shoot modifications.</td>
<td>Plants representing fam.: Cannabaceae</td>
</tr>
<tr>
<td>5</td>
<td>The movement of water in plants. Mineral nutrition. Transport of assimilates.</td>
<td>Woddy stems (Gymnosperms, Angiosperms.)</td>
</tr>
<tr>
<td>6</td>
<td>Initiation and anatomy of flowers. Sporo- and gametogenesis in angiosperms. Fruits and seed.</td>
<td>The fungi (introduction). I. Test Work on the knowledge of medicinal plants</td>
</tr>
<tr>
<td>7</td>
<td>Control of growth and development.</td>
<td>The Fungi I.</td>
</tr>
<tr>
<td>8</td>
<td>Mycophyta, Bryophyta, Pteridophyta, Gymnospermaphyta</td>
<td>The Fungi II.</td>
</tr>
<tr>
<td>9</td>
<td>Angiospermaphyta: Magnoliidae</td>
<td>2. Test Work: Fungi</td>
</tr>
<tr>
<td>10</td>
<td>Angiospermaphyta: Hamamelididae, Caryophyllidae</td>
<td>Preparing a cleared specimen</td>
</tr>
<tr>
<td>11</td>
<td>Angiospermaphyta: Rosidae</td>
<td>Leaf and flower anatomy</td>
</tr>
<tr>
<td>12</td>
<td>Angiospermaphyta: Dilleniidae</td>
<td>Morphology and anatomy of the seed</td>
</tr>
<tr>
<td>13</td>
<td>Angiospermaphyta: Asteridae</td>
<td>2. Test Work on the knowledge of medicinal plants.</td>
</tr>
<tr>
<td>14</td>
<td>Angiospermaphyta: Monocotyledoneae</td>
<td>Morphology and anatomy of the fruit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Test Work: woody stems, leaf, Rower, seed, fruit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consultation, questioning, finishing the practicalls.</td>
</tr>
</tbody>
</table>

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.
Separation procedures based on molecular size, solubility differences, electric charge and selective adsorption.
Fine mechanism of enzyme action. Three-dimensional structure of chymotrypsin, a serine protease.
Oxidative decarboxylation of pyruvate
Citric acid cycle.
Metabolic transport through the mitochondrial membranes. Respiratory chain.
Oxidative phosphorylation. Mitochondrial import and export of reductive equivalents.
The phosphogluconate oxidative pathway. Significance and regulation of the pentose phosphate pathway.
Biogenesis of hexosamines. Biological role and synthesis of glycoproteins and glycolipids.
Lectures (3 hours per week)

Beta oxidation 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.
8. Labour safety in a pharmacy. (Inflammable, explosive goods, acids, corrosive chemicals etc.)
Faculty of Pharmacy
3rd year
## STUDY PROGRAMME

### Third Year

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
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# The grade influences the qualification of the diploma
* Obligatory courses
** 4 weeks (140 hours) summer practice in elective place (accredited public / community pharmacy, Clinical laboratory, research institute, university department) after the second and third year.
- The prerequisite to start 4th year is to take a Basic Hungarian Language Exam (oral).
LIST OF TEXTBOOKS

3. Szász, Takács, Végh: Pharmaceutical Chemistry Lecture Notes I-II. (Bp.) SOTE
4. Szász, Budvári: The Quality Control of Medicinal Compounds. (Bp.) SOTE
5. Szász, Budvári: The Quality Control of Pharmaceutical Preparations. (Bp.) SOTE
6. Rácz: Drug Formulation (Bp.)
7. Rácz: Pharmaceutical Technology – Part One (Bp.)
8. Rácz: Pharmaceutical Technology – Part Two (Bp.)
9. Rácz: Pharmaceutical Technology – Part Three (Bp.)

Recommended textbooks:

# PHARMACEUTICAL CHEMISTRY

**Director:** Prof. Dr. Noszál Béla  
**Tutor:** Prof. Dr. Krisztina Takács–Novák

## First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (4 hours per week)</th>
<th>Practicals (5 hours per week)</th>
</tr>
</thead>
</table>
| 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.  
General purity tests of inorganic ions II. |
| 6    | Narcotics  
Sedato-hypnotics and anxiolytics | |
| 7    | Major analgetics | General purity tests of inorganic ions III. |
| 8    | Minor analgetics | Complete pharmacopeial qualification of an inorganic compound official in Ph. Eur. |
| 9    | Psychopharmacons | Narcotics, sedato-hypnotics  
Major analgetics I. |
| 10   | UV-VIS spectroscopy in the analysis of drug mixtures  
ORD and CD spectroscopy in the analysis of drug mixtures | Major analgetics II. |
| 11   | Separation techniques I.-V.  
Application of chromatographic methods for the drug analysis.  
TLC | |
<p>| 12   | GC, HPLC, CE | Minor analgetics I. |
| 13   | Cholinergic and adrenergic agents | Minor analgetics II. |
| 14   | Cholinergic and adrenergic agents | Psychopharmacons |</p>
<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (4 hours per week)</th>
<th>Practicals (5 hours per week)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Proton speciation of drugs</td>
<td>Equipping, identification</td>
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<tr>
<td>2</td>
<td>Determination of protonation constants</td>
<td>Drugs acting on the vegetative nervous system I.</td>
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<td>Optimization of pH-dependent processes</td>
<td>Drugs acting on the vegetative nervous system II.</td>
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<tr>
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<td>Cardiac glycosides, sugars</td>
<td>Local anaesthetics</td>
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<td>Analysis of cardiac glycosides, sugars</td>
<td>Digitalis glycosides, sugars</td>
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<tr>
<td>4</td>
<td>Local anaesthetics</td>
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<tr>
<td>5</td>
<td>Cardiovascular drugs: antiarrhythmic agents</td>
<td>Determination of protonation macroconstants</td>
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<tr>
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<td>Cardiovascular drugs: antianginal agents</td>
<td>Determination of protonation microconstants</td>
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<tr>
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<td>Cardiovascular drugs: antiinflammatory agents</td>
<td>Determination of logP</td>
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<td>Cardiovascular drugs: antihypertensive agents</td>
<td>Diuretics</td>
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<tr>
<td>7</td>
<td>Diuretics</td>
<td>Steroidal hormones</td>
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<tr>
<td>8</td>
<td>Vitamines</td>
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<tr>
<td>9</td>
<td>Quality assurance, GLP, validation</td>
<td>Complete pharmacopoieal qualification of an organic compound official in Ph. Eur.</td>
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<td>Non-steroid antiinflammatory agents</td>
<td>Non-steroidal antiinflammatory agents</td>
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<tr>
<td>10</td>
<td>Corticosteroids</td>
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<td>Sexual hormones</td>
<td>Quality assurance, GLP, validation I.</td>
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<td>NMR: spin echo, 2D NMR, MRI, MRS</td>
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<tr>
<td>13</td>
<td>Desinfectants</td>
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<td>Chemotherapeutic agents: sulfonamides</td>
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<td>Chemotherapeutic agents: antimalarial drugs, fluoroquinolones</td>
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<td>Antidiabetics</td>
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</table>
PHARMACEUTICAL TECHNOLOGY
Department of Pharmaceutics
Director: Prof. Dr. Imre Klebovich
Tutor: Dr. István Antal, Dr. Mária Hajdú

First Semester

Lectures
History of pharmaceutical compounding and technology
Dosage forms as drug carrier systems. Classification of dosage forms and routes of administration.
Technological aspects of quality, safety, and efficacy.
The tasks, construction, and equipments of a pharmacy. Storage of pharmaceuticals.
Technological considerations of the pharmacopoeia (Eur. Ph.)
Physical chemical principles in the pharmaceutical technology.
Basic operations for pharmaceutical compounding.
Liquid dosage forms. Theory and classification.
Excipients for liquid dosage forms.
Preparation of solution, aromatic water, syrup, mucilago, mixture, gargle, enema.
Drops for internal and external use.
Preparations made by extraction.
Disperse systems and their physical chemical characteristics.
Emulsions.
Suspensions.

Practice
Introduction, general information, labour safety.
The prescription. Nomenclature.
Weighing and balances. Control and measuring.
Dose calculations. Reading prescriptions.
Computer in the pharmacy practice.
Preparation of simple solutions.
Preparation of composite solutions.
Preparation of drops.
Preparation of ophthalmic solutions
Preparation of decoctions and infusions.
Preparation of suspensions without excipients.
Preparation of suspensions with excipients.
Preparation of emulsions
Dispensing a test preparation independently.

SEMMELWEIS UNIVERSITY / FACULTY OF PHARMACY
PHARMACEUTICAL TECHNOLOGY

Second Semester

Lectures
Dosage forms with coherent structure
Ointments, gels, pastes. Eye ointments.
Tests of semisolid preparations. Rheology and other characteristics.
Cosmetics.
Rectal and vaginal preparations.
Tests of suppositories.
Dosage forms prepared by aggregation. Pills, boluses, sticks, foams, medicated chewing gums.
Compounding powder preparations.
Compounding veterinary preparations.
Incompatibility problems I. Solutions.
Incompatibility problems II. Solid dosage forms
Incompatibility problems II. Other dosage forms and role of excipients.
Good Pharmacy Practice.
Laws governing the pharmacy practice.

Practice
Formulate Normales: the guide for pharmaceutical compounding in Hungary.
Preparation of ointments of solution and emulsion type.
Preparation of ointments of emulsion and suspension.
Preparation of ointments of composite type.
Directions of eye ointments and gels. Preparations of eye ointments.
Preparation of pastes.
Preparation of cosmetics.
Preparation of suppositories by cold compression and by by moulding.
Preparation of vaginal preparations.
Preparation of pills.
Preparation of multidose powders. Topical powders.
Preparations of veterinary preparations.
Guidelines for the preparation of incompatible drugs.
Incompatibility problems of solutions
Incompatibility problems of powder mixtures.
Incompatibility problems of emulsions.
Incompatibility problems ointments.
Health accessories in pharmacy.
Dispensing a test preparation independently.
PHARMACOGNOSY

Director:  Dr. Anna Blázovics
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, glicosinolates, Betalains.
- Protein sweeteners. Lectins. Enzymes.
- Compounds of special (secondary) metabolism. Plant phenolics in general. Phenols, phenolic acids, derivatives and crude drugs.
- Coumarins and coumarin containing drugs.
- Medicinal application and toxicity.
- Lignans, lignan containing drugs. Biological interest of lignans. Silibum 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.

**Practicals** (4 hours per week)

- Introduction, safety rules.

- General methods in quality control of vegetable 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.
Lectures (2 hours per week)


Practicals


Midter: nucleotides and macromolecules
Lectures (2 hours per week)


Practicals

Seminar: gene therapy

Consultation.

COLLOID CHEMISTRY

Tutor: Dr. Ferenc Csempesz

First Semester

Practice (2 hours per week)

Surface and interfacial tensions
Measurement of the surface, the tension of aqueous surfactant solutions. Determination of oil/water and oil/solution interfacial tensions. Adsorption at interfaces
Determination of vapour adsorption isotherm by gravimetric method. Adsorption from solution; determination of adsorption isotherm for methylene blue on cellulose.
Wetting of solid surfaces
Determination of contact angles. 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 to components of a dye mixture by zone electrophoresis. Suspensions and emulsions
**Practice** (2 hours per week)

Association colloids
Determination of critical micelle formation concentration by conductometric titration.
Solubilization of organic acids, determination of solubilization saturation.
Macromolecular colloids
Determination of the relative molecular mass of polymers by viscosity measurements.
Dependence of the viscosity of polyelectrolyte solutions on pH.
Phase states and structures of polymers
Determination of the thermomechanical curve of a polymer by Höppler consistometer.
Determination of the relative deformation of a polymer at various loading times.

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

**First Semester**

**Week**
**Lecture** (5 hours per week)
5. Cardiac functions: Biomechanical basis of cardiac functions. Cardiac pump. Signal transduction in the cardiomyocytes.
8. Cardiovascular control mechanisms: Systemic control mechanisms. Local control mechanisms. Control of cardiac output.
### Week Lecture (5 hours per week)

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<th>Week</th>
<th>Lecture</th>
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<tbody>
<tr>
<td>12</td>
<td>Regulation of respiration: Neural and chemical control of respiration. Adaptation of cardiorespiratory system and skeletal muscle to physical exercise.</td>
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<tr>
<td>13</td>
<td>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.</td>
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</tbody>
</table>

### 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

<table>
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<th>Week</th>
<th>Lecture (5 hours per week)</th>
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<tbody>
<tr>
<td>1</td>
<td>Formation and excretion of urine. Physiological functions, their significance in the maintenance of the internal milieu and in healthy functioning of the organism. Renal circulation. Glomerular filtration.</td>
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<tr>
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<td>Regulation of acid-base balance.</td>
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</table>
Week Lecture (5 hours per week)


Practice and consultation (2 hours biweekly)

Indirect measurement of arterial pressure and recording heart sounds
Kidney function
Determination of parameters of acid/base equilibrium
Endocrinology lab
Electroencephalogram (EEG) experiment
PHARMACEUTICAL MICROBIOLOGY
Program director: Prof. Dr. Éva Ádám
Tutor: Dr. Zsuzsanna Csukás

Second Semester

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.
Principles of microbial pathogenicity and epidemiology.
Immunity to microbes. Active and passive immunization.
Bacteria causing purulent diseases.
Causative agents of respiratory tract. Aerobic and anaerobic endospore forming bacteria. Other anaerobic microbes. Spirochetes, Rickettsiae, Chlamydia, Mycoplasmas
Parasitology (protozoa 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.
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. Medical virology. The most important viral diseases: prevention and therapy.
Importance of nosocomial infections. Factory and hospital hygiene and good manufacturing practice.

Practices (2 hours per week)
Methods for cultivation of bacteria. Examination of biochemical activity of microorganisms.
Colonial morphology of bacteria. Examination of biochemical activity of microorganisms.
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 protozoans.
Cultivation of viruses. Virus-cell interactions.
Bacteriophages.

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.
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
Immunno-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, colloidics, physiology etc.) to the practical work in pharmacies.

Duties and respects:
1. Appreciation of prescriptions, reading of prescriptions (Formula Magistralis, Formula
Normales, Formula Originalis). The forms of dispensing, dose calculating etc. Preparation of
medicaments (Formula Magistralis) under supervision of the instructing pharmacist.
2. Prescriptions and regulations of narcotics
3. Various dosage forms (solutions, suspensions, emulsions, ointments, solid dosage forms
etc.), their preparation.
4. Practising of the pharmaceutical technological manipulations, procedures etc.
5. Aseptic production of medicaments. Main technological steps.
6. Guidelines for the preparation of incompatible drugs. Preparation of these medicaments.
# STUDY PROGRAMME

## Fourth Year

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

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
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# The grade influences the qualification of the diploma
* The new name of Basic Medical Pathophysiology is Drug Therapy.
** 3rd and 4th year Pharmacy students of 2009/10 have to complete the subject 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 2009/10 academic year. The 2nd year students should have already done it in 2008/09.
*** Obligatory elective subject.
LIST OF TEXTBOOKS

5. Z.Vincze: Pharmacy Administration. Lecture notes.

Recommended textbooks:

PHARMACEUTICAL CHEMISTRY

Director: Prof. Dr. Béla Noszáli
Tutor: Dr. Péter Horváth

First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (2 hours per week)</th>
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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.
Pyrogenicity. Endotoxins.
Preparations for inhalation. Aerosols.

Practice

Pilot plant laboratory
Controlling the drying process.
Study of the filtration process.
Mixing of solids.
In-process control of the homogenization process.
Study on parameters of fluidization.
Investigations of factors affecting the size reduction in ball-mill.
Control of raw materials.
Preparation and stability test of emulsions.
In-process control of manufacturing solid dosage forms.
Manufacturing suppositories. Determination of the replacing factor.

Laboratory for parenteral preparations
Aseptic processing.
Autoclaving.
Determination of inside pressure of bottles at different filling volumes.
Preparation of dextrose infusion.
Preparation of mannitol infusion.
Filtration by frame filter.
Control of infusions and injections containing dextrose (pH, refractive index, degradation product).
Preparation and control of infusions containing electrolytes and sugars.
Preparation of infusions used in acidosis.
Determination of endotoxin concentration in parenteral solutions by the quantitative LAL test.
Adjustment of isotonicity.

Chemical laboratory
Control of the formation of calcium acetilsalicylate with oscillometry.
Acid neutralizing tests of antacids (USP tests and "pH-stat" method).
Determination of the lipase activity.
Investigation on the catalytic oxidation of ascorbic acid.
Stability test of hydrocortisone-hemisuccinate solutions.
Stability test on the decrease of acetic acid content of Spiritus antirheumaticus.
Stability test of solutions containing penicillin.
Real-time stability test of tablets containing aspirin.
Accelerated stability test of solutions containing phenobarbital sodium.
Computer Aided Practice (accelerated stability testing).
Physical laboratory
Test of ion-exchange resins.
Determination of the dissociation constant of drugs.
Increasing of solubility of salycilic acid by changing permittivity.
Concentration determination of sugar syrups by viscometry.
Viscometric evaluation of macromolecular colloids used as stabilizers.
Investigation of phase-inversion of emulsions by viscometry.
Determination of the average molecular mass of polyethylene glycols by viscometry.
Investigation 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 Wiegner’s tube.

Second Semester

Lectures
Physical chemistry for solid dosage forms.
Characterization of particle systems. Powder rheology.
Granules and granulation.
Pellets and pelletization.
Capsules and microcapsules.
The tablet compression process.
Tablets and their characteristics. Testing tablets.
Manufacturing methods and excipients for tablets.
Coated dosage forms and the coating procedure. Coating materials.
Traditional sugar coating and film-coating. Solvent-free coating.
Dosage form design: modified drug release and prolonged action.
Dosage form design: improving bioavailability and enhancement of absorption.
Modern dosage forms: concepts of the therapeutic systems.
Oral preparations with modified release.
Locally applied therapeutic systems.
Transdermal drug delivery systems.
Alternative routes of drug administration.
Colloidal drug delivery systems.
Micro- and nanofabrication.
Molecular pharmaceutics.
Technological aspects of genomics and biopharmaceuticals.
Technological aspects of veterinary drug delivery.
Innovation and the pharmaceutical technology. Generics and supergenerics.

Practice
Pilot plant laboratory
Preformulation studies and product development.
Ointment preparation.
Preparation of liquid dosage forms (solutions, elixirs, syrups, mixtures).
In-process control tests for solutions.
Tablet compression and in-process control of tablet manufacturing.
Pellet preparation in a high-shear mixer
Preparation of coating dispersions.
Coating of pellets in fluid bed.
Coating of tablets.

Laboratory for parenteral preparations
Preparation of injections liable to hydrolysis.
Determination of the chloride ion concentration by ion selective electrode.
Filling and closing of ampoules.
Preparation and control of aerosols.
Preparation of heat sensitive injections.
Sterilization by membrane filtration. Integrity testing of membranes.
Nonaqueous injections.
Freeze-drying.
Preparation of injections liable to oxidation
Control of drug content of ascorbic acid injection
Preparation of suspension injections
Color determination of ascorbic acid injections
Isotonicity setting based on freezing point depression
Isotonicity setting based on sodium chloride equivalents

Chemical laboratory
Testing of containers (hydrolytic resistance; physical resistance; blister closing testing; light transmission test, adsorption test)
Investigation of the interaction between acetylsalicylic acid and caffeine.
Investigation of the interaction between papaverine hydrochloride and phenobarbital sodium with potentiometric method.
Investigation of the interaction between methyl-p-oxy-benzoate and macromolecules by dynamic dialysis.
Formulation of KCl prolonged release capsules and their dissolution test.
Dissolution test of aspirin containing tablets with rotating basket method.
Study on impurities by HPLC, GC/MS and LC/MS analytical methods.
Preparation of oxytetracycline containing microcapsules.
Testing dissolution profile of coated pellets.

Physical laboratory
Slipping-and drop point determination of ointment and suppository bases.
Study on drug release of suppositories.
Investigation of compression strength of suppositories.
Study of disintegration of suppositories.
Congealing-and softening point determination of ointment and suppository bases
Penetrometric test of ointments.
Study on the rheological behaviour of ointments with rotational viscometer.
Examination of drug distribution in suspension type suppositories.
Determination of the adsorptive surface of medicinal charcoal.
Study of polymorphism.
Determination of particle size and particle size distribution by sieve analysis.
Investigation of flow properties and real density of granules.
Investigation of disintegration of tablets and capsules.
**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.
- Cardiac glycosides. Structures, chief vegetable drugs. Starting materials for steroid hormone semisynthesis. Other significant steroids and triterpenes.
- 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-, isooquinolines-, benzyltetraisoquinoline-, phenethylisoquinoline alkaloids and their drugs.
- Alkaloids derived from phenylalanine and tyrosine: Morphinan alkaloids.
  - Alkaloids derived from tryptophan: ergotine alkaloids, monoterpenoid indole alkaloids and chief drugs.
- Purine bases.
- Alkaloids with miscellaneous structure.
- Vitamins and vitamin containing drugs.
- Plants in complementary and traditional systems of medicine.
- Plants in prevention, Functional foods

**Practicals** (4 hours per week)
- Essential oil containing drugs (Lamiaceae, Asteraceae, Apiaceae)
- Bitter substances of plants. Classification, reactions, bitter value.
- Saponins and chief saponin drugs.
- Methods used in the identification and quality control of saponins.
- Cardioactive glycosides and chief drugs.
  - Methods used in the analyses of cardioactive glycosides.
  - Tropane, pyridine and piperidine alkaloid containing drugs. Quantitative assays in alkaloid chemistry (titration)
  - Quinoline, isoquinoline and morphine group alkaloids, their 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. László Tóthfalusi

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 anthelmintic 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, retinoids

PHARMACY ADMINISTRATION

Faculty of Pharmacy
University Pharmacy Department of Pharmacy Administration
Director: Prof. Dr. Romána Zelkó
Tutor: Dr. Ágnes Meszáros

4th year term 2

Lecture

Objectives and research methods of pharmacy administration
European Pharmacopoeia, Ph.Hg. VIII, FoNo VII.
Managing health care
Financial pressures and human resource management
Resource allocation in health care
Managing quality in health care
Quality systems and total quality management
Good Clinical Practice (GCP)
European marketing authorisation procedures
The registration dossier
Legal regulations in health care
Health promotion
Good Pharmacy Practice (GPP)
International pharmaceutical organisations
Pharmaceutical ethics
DRUG THERAPY
Institute of Pharmacodynamics
Course Director and Tutor: Prof. Dr. Kornélia Tekes

First Semester

Fundamental pathological processes
Psychiatry: diagnostic systems
Delirium, dementia, amnestic disturbances
Injuries produced by high and low temperatures and electricity
Schizophrenia. Depressive disorders
Anxiety disorders. Drug induced disorders
Sleep disorders. Eating disorders. Impulse control disorders
Epilepsy. Neurodegenerative disorders
Inflammatory diseases of the central nervous system
Headache. Backache Disorders of erythropoiesis and haemostasis
Varicose veins. Thrombo-embolic disorders
Congestive heart failure. Atherosclerosis
Ischaemic heart disease. Cardiac arrhythmia
Inflammatory diseases of the heart
Hypertension. Circulatory shock

Second Semester

Gastrointestinal disorders I
Gastrointestinal disorders II
Gastrointestinal disorders III
Respiratory diseases I.
Respiratory diseases II.
Genitourinary disorders
Infectious disorders I.
Infectious disorders II.
Ophthalmologic disorders I.
Ophthalmologic disorders II., Ear disorders
Endocrine and metabolic disorders I.
Endocrine and metabolic disorders II.
Musculoskeletal disorders
Immuneologic disorders. Oncologic disorders
Dermatologic disorders, Consultation
PUBLIC HEALTH
Tutor: Dr. András Terebessy

Second Semester

**Lectures** (2 hours per week)

- The development and role of public health in medicine. Basic principles of epidemiology and demography.
- Global situation of communicable diseases in the world and in Hungary. Life expectancy, morbidity, mortality in Hungary.
- The occurrences of communicable diseases. Surveillance. New immunizations, chemoprophylaxis.
- Infections of Gastrointestinal and Respiratory Tract.
- Haematogen infections and infections of the skin.
- STD. AIDS/HIV. Viral hepatitis.
- New, emerging diseases. Health care in case of disasters.
- Acute food-borne diseases.
- Water hygiene.
- Air-and soil hygiene.
- Occupational risk factors, prevention of occupational diseases. Ionising and non-ionising radiation
- The health care system, quality assurance.
- Maternal, infant child and youth health care.
- Health promotion and health education.

**Practices** (2 hours per week)

- Classification of communicable diseases.
- Disinfection and sterilisation. Laboratory investigations
- 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.
- Toxicology. Radiation hygiene.
- Occupational diseases, accidents. Vibration, noise.
- Practical aspects of maternal, infant, child and young people hygiene.
- Practical aspects of health education.

Practices are compulsory for each student.

**The obligatory material for the final exam:**

The material of the lectures and practices compulsory textbooks, see List of Textbooks
INDUSTRIAL PHARMACEUTICAL TECHNOLOGY I: 
Dosage form and product development
Department of Pharmaceutics
Director: Prof. Dr. Imre Klebovich
Tutor: Dr. István Antal

First semester

The subject is recommended for the students interested in several fields of industrial pharmaceutical technology such as research and development of new dosage forms and medicinal preparations.

Topics:

INDUSTRIAL PHARMACEUTICAL TECHNOLOGY II: 
Operations and procedures
Department of Pharmaceutics
Director: Prof. Dr. Imre Klebovich
Tutor: Dr. István Antal

Second semester

The subject is recommended for the students interested in several fields of industrial pharmaceutical technology such as operations and procedures in the manufacture of medicinal preparations.

Topics:
COMPULSORY SUMMER PRACTICE

Program

Four weeks: 35 hours/week; max. 8, min. 6 hours/day. The aim of the summer practical training: to profound theoretical and practical knowledge of Pharmaceutical Technology learnt in the 4th year; adaptation of basic knowledges (chemistry, physics, colloidics, physiology etc.) to the practical work in pharmacies.

Duties and respects:
1. Appreciation pf 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.
## STUDY PROGRAMME

### Fifth Year

#### 9th semester (12 weeks)

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#### 10th semester (16 weeks)

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<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compulsory Practical Training I. (4 months) * GYSZGSZVG2A</td>
<td>–</td>
<td>40</td>
<td>16</td>
<td>signature</td>
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<tr>
<td>Diploma Defence GYXXXDIVE1A</td>
<td>–</td>
<td>15</td>
<td>–</td>
<td>final</td>
</tr>
</tbody>
</table>

** 32**
**COMPULSORY PRACTICAL TRAINING AND PROGRAM OF THE 5TH YEAR PHARMACY STUDENTS**

Examination period for 4th year pharmacy students is from May 18, 2009 to July 10, 2009. 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 August 3, 2009 to September 25, 2009. 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 28, 2009 to December 18, 2009.

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 February 1, 2010 to May 21, 2010.
5. The deadline of the defense of the diploma work is March 25, 2010.

**IMPORTANT:** Pharmacy graduates are entitled to bear the title of doctor. The name of the degree is Doctor of Pharmacy (Dr. pharm.)

**LIST OF TEXTBOOKS**

2. Z. Vincze: Pharmacy Administration, Lecture Administration.

**Recommended textbooks:**

PHARMACEUTICAL CARE
Faculty of Pharmacy
University Pharmacy Department 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
5. Clinical guidelines in the treatment of hypertension
6. Special conditions influencing drug therapy
7. Clinical bio-analytical analyses
8. Therapeutic drug monitoring, Pharmacogenetics
9. Pediatrics
10. Total Parenteral Nutrition
11. Pharmaceutical care in asthma
12. Patient education in OTC products I.

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

BIOPHARMACY – PHARMACOKINETICS
Department of Pharmaceutics
Director: Prof. Dr. Imre Klebovich
Tutor: Prof. Dr. Sylvia Marton

First Semester

Lectures
Introduction into biopharmacy and pharmacokinetics. Terms and definitions.
Modeling the fate of drugs in the body (LADME and other models).
Transport processes and absorption mechanisms. Factors influencing the absorption.
Basic concepts and importance of the Biopharmaceutical Classification System.
Biopharmaceutical considerations of drug distribution and metabolism.
Bioanalytical methods.
Excretion and clearance of drug. The biological half-life.
Bioavailability and influencing factors.
Studies and regulations on bioequivalence.
Importance of food-drug interactions.
Compartmental and non-compartmental modeling.
Physiologically based pharmacokinetic models.
Pharmacokinetics of multiple dosing.
In vitro – in vivo correlation and relationship.
Pharmacokinetic and metabolism investigations during preclinical and clinical development.

**Practice**
Study on the distribution of salicylic acid in a three-phase system.
In vitro test for drug liberation from a patch system.
In vitro drug release from ointments with local effect.
In vitro dissolution profile of conventional and modified release nitrofurantoin containing preparations.
Determination of diclofenac sodium in synovial fluid samples.
Urinary excretion kinetics of aspirin.
Determination of theophylline plasma levels in beagle dogs after iv. administration.
Determination of theophylline plasma levels in beagle dogs after po. administration.
Calculation of bioavailability.
Computer modeling and analysis in pharmacokinetics.
Analyzing data to establish in vitro-in vivo correlation.

**PHARMACEUTICAL ETHICS**

Credit: 2

Lecturer: Dr. József Kovács

**Syllabus** (14 hours)

Course objectives:
a. To enable students to recognize ethical issues when encountered in everyday practice and research
b. To provide students with a conceptual-logical system, which helps them to address ethical questions and to resolve ethical dilemmas in an efficient way
c. To introduce students to a body of knowledge, which helps them to understand, respect and protect the rights of patients, research subjects and fellow health care professionals
d. To help the would-be health care professional to understand the responsibility of the individual, of the health care system and of the society as a whole in maintaining health
1. week (Lecture)
Basic concepts of ethics.
Descriptive ethics, normative ethics, metaethics.
General ethics and applied ethics.
Bioethics, medical ethics, health care ethics. Similarities and differences.
The role of bioethics in a pluralistic society.
The relationship between law and ethics.
Reasoning in ethics. The most common mistakes.

2. week. (Lecture)
Normative theories of ethics. The basic principles of medical ethics.
Deontological theories of ethics. (The Golden Rule, Kant and the Categorical imperative, the
principle of double effect, W.D. Ross and the prima facie duties,)
Teleological theories of ethics. (Act and rule utilitarianism.)
Theories of natural law.
Contractarian theories of ethics. (The theory of justice of John Rawls)
The principle of respect for autonomy.
The principle of non-maleficience.
The principle of 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?  
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  
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
14. Organ donation from brain-dead donors: presumed consent
15. Stages of Dying
16. Active and Passive Euthanasia
17. Withdrawing and withholding life sustaining treatment.

Important notes:

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

Justification of an absence: Doctor’s certificate

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

Grade: The result of the semi-final.

Sign up for the exam: Through the NEPTUN system.
Modifying of the exam date: Through the NEPTUN system.

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

Textbook:
**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” Behaviour (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: szanzsuz@net.sote.hu
Katalin Kovács, PhD e-mail: kovacs.katalin@gmail.com

**Department:**
Institute of Behavioral Sciences
Department of Sociology
NET Building, 19th, 20th floor
Tel: 210-2953
Secretary: NET Building, 20th floor, Room-2005

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

**Justifying absence:** with doctor’s certificate

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

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

**Textbook:**

Handouts for the lectures will be accessible on the homepage of the Institute of behavioural 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 Szőkö
Tutor: Dr. Tamás Tabi
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 standardisation 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 characterisation 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 (theory and practice) 5 hours

Spectroscopy
   UV and visible spectrophotometry 9 hours
   Fluorimetry 3 hours
   NMR spectroscopy 6 hours
   Mass spectrometry 3 hours
   Infrared spectroscopy 3 hours

The course is given by teachers of the Institute of Pharmaceutical Chemistry and wellknown
researchers of academical institutes and the pharmaceutical industry.
The subject is offered to students who are interested in the pharmaceutical analysis. It is essential
in the fields of the drog 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 cardiotonic natural products
   Vasodilators.
2. Plant preparations for troubles of memory, equilibrium and auditory disturbance.
   The horse-chest, its preparations and effectivites.
3. Oxy- and methoxycumarines in medical plants.
   The occurrence of rutin and diosmine.
4. The bitter principals.
   The appetiser preparations.
5. The essential oils.
6. Procyanidine crude drugs and preparations.
7. The liver therapy (natural products and medical plants).
   Choloretics and chologoges with plant origin.
8. Cholesterin level decreasing diets and others for diabetics.
   Slimming cures and their aims. Fat-reducing mechanism.
9. Plant sedatives, their effects and combinations.
   Natural products with stimulating and animating activity (stress).
10. Urological phytopreparations and some for prostatitis diseases.
11. The Kneipp cures and their possibilites.
   Gerontology.
   Treatment of rheumatism.
   Immunstimulant medicinal plants.
14. Cure of cold with medicinal plant remedies, Phytopreparations.
   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. András Jávor
Tutor: Dr. Mariann Szabó Dinya

2 hours/week

<table>
<thead>
<tr>
<th>THEMES</th>
<th>Statistics in drug development</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Elements of SPSS program: interactive means, data matrix, windows</td>
</tr>
<tr>
<td>2.</td>
<td>Command of Edit menu in the SPSS program: file menu, edit menu, view menu, data menu, transform menu, graphs menu, utilities menu, help menu</td>
</tr>
<tr>
<td>4.</td>
<td>Deviation analysis: ANOVA methods (Student’s test, Fisher’s dissociation, one way and multiple-way ANOVA designs)</td>
</tr>
<tr>
<td>5.</td>
<td>Regression analysis: correlation coefficient, one and multiple variable regression models, GLM models, logistic model</td>
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<tr>
<td>6.</td>
<td>Taxonomy: clusters, factorial analysis</td>
</tr>
<tr>
<td>7.</td>
<td>Final test: solution of data processing problem</td>
</tr>
</tbody>
</table>

BIOORGANIC CHEMISTRY
Institute of Organic Chemistry

Organic compounds are produced by nature in inexhaustible richness. One of the basic sources of therapeutically useful compounds is the molecular storage of the pharmacy of nature. Natural products are generally environment friendly. Their chemistry is in rapid development in our days, too.

What are the most important steps of molecular evolution in the cosmos and on our Earth? What is the origin of the chirality of life? How can natural products be isolated from the sources? How can their structure be elucidated? How can the ingenious synthetic methods of nature be imitated in laboratory? How can the chirality of natural products be transferred to synthetic drug molecules? How can the complete base sequence of the human genom be determined? These are some questions of the many others, which are tried to be answered in the special collegium.

Programme
1. Isolation of natural products (e.g. iridioids, peptides).
3. Application of NMR spectroscopy for the stereostructure of organic micromolecules (e.g. alkaloids, iridoids).
4. Sequence determination of natural polymers (polypeptides, polynucleotides, e.g. the human genom).
5. The role of the isoprene unit in the construction of terpenes carotenoids and steroids.
6. Biomimetic transformation in the chemistry of iridoid compounds.
7. Chemistry of alkaloids derived from the coupling of biogenic amines (phenylethylamine and tryptamine) with secologanin.
During the last two decades our knowledge on the behavior of metals and some nonmetals (e.g. boron, silicon, selenium) has widened considerably. As a result of this the cooperation between inorganic chemists, biochemists and biologists became most involved and a new multidisciplinary branch of natural sciences developed that is termed bioinorganic chemistry or inorganic biochemistry.

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

In order to understand all aspects of the material discussed in the course a brief summary is given on metal coordination compounds: on their stereochemistry, equilibria and kinetics. A rather fascinating problem is how certain metal ions have been selected during a long evolutionary process for biological purposes, and how the various metal containing systems developed due to the change of the geoenvironment.

The biosystems take up metals and non-metals from the geosphere. The entry of an element into the living system and its incorporation into a specific site of a biomolecule is a multistep process controlled both by thermodynamic and kinetic factors. This will be demonstrated on many examples including metal ions, anions, and neutral molecules.

In the following topics the roles of bioessential metals are dealt with. Many physiological phenomena are connected to the biochemistry of sodium, potassium, magnesium, and calcium, e.g. the conduction of nerve impulses, muscle contraction, and blood clotting.

Zinc metalloenzymes are most abundant in the living organism and catalyze a large number of hydrolitic and group transfer reactions. Iron, copper and molybdenum take part in many bioredox processes, and the former two metals also in the transport of molecular oxygen. Also, cobalt, manganese, chromium, nickel and vanadium have their roles in important biochemical processes.

Transition metals are needed to activate small molecules as CO2, N2 and O2. The biochemistry of the latters is an intriguing topic of bioinorganic chemistry. The deposition of certain inorganic compounds (CaCO3, Ca-phosphates, etc.) in the organism is under biological control and worth dealing with briefly.

Among the biomedical problems some metaldependent deseases (e.g. Wilson’s desease, Menkes’ desease) are touched upon. Much time will be devoted to metal complexes of antitumor activity and to those that are used in the treatment of rheumatoid artritis.

Metal ion toxicity, an increasing hazard due to the contaminated environment, and chelate therapy are the topics that also deserve attention.

A look into the future closes the course.
BIOTECHNOLOGY
Department of Plant Anatomy (ELTE)

Topics
1. Introduction to biotechnology
   Historical evolution of biotechnology. Biotechnology as an interdisciplinary pursuit.
   Application of biotechnology. Substrates of biotechnology.
2. Applied genetics
3. Introduction to genetic engineering
   The emergence of recombinant DNA technology. Regulation and control of recombinant DNA experimentation. Basic recombinant DNA techniques. Restriction endonucleases and other DNA and RNA modification enzymes.
4. Gene cloning
5. Expression of foreign DNA in bacteria
6. Cloning in higher organisms
7. Application of molecular biology in medicine
   Diagnosis of genetic disorders. DNA fingerprinting. Case applications.
8. Genetic engineering and the pharmaceutical industry
9. Fermentation technology
10. Enzyme technology
11. Biosensors
    Principle and structure of biosensors. Application in clinical chemistry and medicine. Application in fermentation industries.
PHYSICAL ORGANIC CHEMISTRY
Institute of Organic Chemistry

The number of registered organic compounds is well over 15 million. Innumerable basic reactions contact them. How can we find an order in this jungle of compounds and cavalcade of reactions? How can the reactions be oriented? How can they be used for synthesis of drugs and many other practically important compounds (polymers, dyestuffs, etc.)? How do energy changes direct organic reactions? How can we control the factors influencing them?

Organic reactions take place in the interaction of atomic and molecular orbitals. These changes are the molecular base of life, too. Is it possible to get an insight into them by simple mathematical methods?

All these questions concern physical organic chemistry, i.e. the study of organic reaction mechanism.

Programme
1. Systematics of organic reaction mechanism according to the notation system of IUPAC.
2. The basic concepts and applications of perturbational molecular orbital (PMO) method for interpretation of reaction mechanism.
4. Experimental methods for investigation of reaction mechanism.
5. Factors which influence the reaction (reagents, concentration, solvent, catalyst, temperature, etc.).
6. Analysis of the basic organic reaction types on selected examples.
7. Symmetry principles in organic reactions.
8. Orbital interactions as the molecular base of life processes.

COMPUTATIONAL CHEMISTRY AND QSAR METHODS
Institute of Organic Chemistry

1. Computational chemistry and molecular modeling: topics, scope and limits.
2. Quantum chemistry: basic principles and methods.
3. Molecular mechanics and dynamics.
5. Secondary interactions: molecular basis of receptor-ligand interactions.
6. QSAR methods: prediction of biological activity.
7. Applications and practice.
“... 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. András Jávor

3 hours/ week

1. Aims:
to present state of art computing and telecommunication techniques including the INTERNET and to illustrate how these techniques are applied in drug industry, pharmacies and clinical patent management.
to discuss various data base and knowledge base management systems, health care information systems, decision support tools for pharmacotherapeutic problem solving, educational programs and telemedicine techniques as they are applied in drug research and development, and in evidence based pharmacotherapy
to teach pharmacy students how to rely on informatics tools when making cost effective decisions and trying to improve patient compliance.

2. Organization of the course:
The course consists of lectures and practices. Lectures provide theoretical foundations as well as examples of the use of various technologies and methods in research and pharmacy practice.
Practices allow students to work with different medical databases, information systems, and decision support tools that address various drug related problems.
<table>
<thead>
<tr>
<th>Lectures</th>
<th>References</th>
<th>Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. MEDICAL INFORMATICS AS A DISCIPLINE</td>
<td>HEALTH INFORMATICS IN THE 21st CENTURY by John Mantas, Document 506</td>
<td>2</td>
</tr>
<tr>
<td>Dr. András Jávor</td>
<td>GLOBAL INFORMATION SOCIETY AND HEALTHCARE by Jean ROBERTS Document 508</td>
<td></td>
</tr>
<tr>
<td>2. DATA TYPES, CLINICAL DATA-BASES, DATA BASE MODELS, AND MEDICAL IMAGES</td>
<td>TERMING, CODING AND GROUPING SYSTEMS IN HEALTH by Rudiger KLAR, Document 416</td>
<td>2</td>
</tr>
<tr>
<td>Dr. György Surján</td>
<td>DATABASES, SPREADSHEETS AND WORD PROCESSING IN HEALTH by Francesco PINCIROLI, Luisa PORTONI Document 401</td>
<td></td>
</tr>
<tr>
<td>3. THE THERAPEUTIC PROCESS AND THE MEDICAL RECORD</td>
<td>HEALTHCARE RECORD by Jos AARTS Document 407</td>
<td>2</td>
</tr>
<tr>
<td>Dr. András Jávor</td>
<td></td>
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<tr>
<td>4. HEALTH CARE INFORMATION SYSTEMS</td>
<td>OPERATIONAL USES OF HOSPITAL INFORMATION SYSTEMS by Marie-Christine JAULENT, Document 405 ARCHITECTURES IN HEALTH by Sergio TORRES, Jose TORRES Document 422</td>
<td>2</td>
</tr>
<tr>
<td>Dr. András Jávor</td>
<td></td>
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<tr>
<td>5. COMPUTER-BASED SUPPORT FOR PHARMACISTS (AN OVERVIEW)</td>
<td>EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990</td>
<td>2</td>
</tr>
<tr>
<td>Dr. Tibor Deutsch</td>
<td></td>
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<tr>
<td>6. REPRESENTING DRUG-RELATED KNOWLEDGE (classification of drugs, describing drug properties, drug information systems, examples)</td>
<td>EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990</td>
<td>2</td>
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<tr>
<td>Dr. Tibor Deutsch</td>
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<tr>
<td>7. HOSPITAL PHARMACY AND DRUG-USE MONITORING SYSTEMS (informatics of public and hospital pharmacies, patient education)</td>
<td>EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990</td>
<td>2</td>
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<tr>
<td>Dr. Tibor Deutsch</td>
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<tr>
<td>8. INFORMATION RESOURCES AND THE INTERNET, KNOWLEDGE COUPLERS</td>
<td>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</td>
<td>2</td>
</tr>
<tr>
<td>EVIDENCE-BASED DRUG THERAPY (pharmacoeconomics and outcome research planning therapeutic protocols)</td>
<td></td>
<td></td>
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<tr>
<td>Dr. Tibor Deutsch</td>
<td></td>
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<tr>
<td>9. INFORMATICS OF DRUG PRESCRIPTION</td>
<td>EXPERT SYSTEMS AND ARTIFICIAL INTELLIGENCE IN HEALTH by Jana ZVAROVA, Jan TALMON Document 424 COMPUTER-AIDED DIAGNOSTIC SUPPORT by Ann OOSTENDORP, Document 408</td>
<td>2</td>
</tr>
<tr>
<td>Dr. Tibor Deutsch</td>
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<tr>
<td>Dr. Tibor Deutsch</td>
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</tbody>
</table>

Total: 20
### PRACTICES:

<table>
<thead>
<tr>
<th>Practice</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Informatics of high throughput screening (METABOL, EXPERT)</td>
<td>2</td>
</tr>
<tr>
<td>2. Drug information systems (Micromedex and Internet resources)</td>
<td>2</td>
</tr>
<tr>
<td>Resources of evidence based medicine (Cochrane library)</td>
<td></td>
</tr>
<tr>
<td>3. Analysis of dose response data in pharmacology (PROBIT analysis)</td>
<td>2</td>
</tr>
<tr>
<td>Evaluation of clinical trial data (analysis of variance)</td>
<td></td>
</tr>
<tr>
<td>4. An antibiotic advisor UTI</td>
<td>2</td>
</tr>
<tr>
<td>5. A drug dosage planning assistant USC PACK</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
</tr>
</tbody>
</table>


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

414
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.*
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 scientifc periodical.
   The request must be submitted at the at the Dean’s Office by the end of the year before the final year. If the waiver is granted, the student still has to defend the paper.

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

LEAVING CERTIFICATE

After completion of the obligatory practices (internships at the Faculty of Medicine), all the final and semi-final examinations and the successful defense of the diploma work, the students receive a “Leaving Certificate” (Absolutorium) in their lecture book validated by the Dean’s signature.

The Leaving Certificate is essential for the permission to take the General Board Examination.
1. The final examination includes (as defined by the qualification requirements):
   a) a written part
   b) an oral part
   c) a practical exam.
   The defense of the thesis is part of the final exam, but is evaluated and conducted separately.
2. The dean is obliged to specify at least two final exam periods annually. The final exam may only be taken in such periods.
3. The Final Examination Committee includes at least two members in addition to the head. The head and the two members are recognized external experts of the special field and university professors or associate professors. At least one member must an external professor. The head of the Committee and the members are appointed by the dean for one to three years with the approval of the Faculty Council.
4. The student must report for the final exam in the Dean’s Office no later than 60 days before the first day of the final exam period.
5. The Faculty Dean is responsible for organizing the final exam. The number of committees will be decided based on the number of students registering for the exam in a way that a committee should have a maximum of 6 students a day.
6. The students must be divided among committees randomly. The division may only be announced at the Faculty on the day of the exam in the common announcement method used at the Faculty.
7. The Final Examination Committee grades the exam subjects in a private discussion. The head of the committee announces the results after the completion of the final exam.
8. The final grade of the final exam will be based on the arithmetic average of the partial grades.
9. The result of the final exam is established by the committee and records the result in the lecture book of the student.
10. The final examination is passed if all subjects are passed.
11. In case any subject is failed, or a partial exam is given a fail, the student must retake the relevant failed part or subject only.
12. The final exam may only be retaken twice. A final exam may only be retaken in later final exam periods.
13. No credit is granted for passing the final exam.
14. If the final exam is passed over seven years past the obtaining of the final certificate, the prerequisite of the final exam is the successful completion of the final year of studies.
THE DIPLOMA (dr. med.; dr. med. dent.; dr. pharm.)

1. The credit value of subjects accepted by the university through a credit transfer process or the credit value of a diploma issued by another institute of higher education may not exceed 50% of the credit value required by the qualification requirements.

2. A condition of issuing the diploma 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:

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

Where:

- \(XD\) = the number to be taken into consideration for the diploma grade
- \(X_n\) = the sum of required 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 2009/2010 academic year

<table>
<thead>
<tr>
<th>Course</th>
<th>Fee (USD) per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>7,200</td>
</tr>
<tr>
<td>Dentistry</td>
<td>8,000</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>5,800</td>
</tr>
</tbody>
</table>

The first year tuition fee (+ the registration fee – USD 200 payable in the 1st semester) should be paid in two installments (unless the Hungarian Visa regulations have different conditions):

<table>
<thead>
<tr>
<th>Installment</th>
<th>Medicine</th>
<th>Dentistry</th>
<th>Pharmacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within two weeks after receipt of the Letter of Acceptance</td>
<td>7,400</td>
<td>8,200</td>
<td>6,000</td>
</tr>
<tr>
<td>Before February 1</td>
<td>7,200</td>
<td>8,000</td>
<td>5,800</td>
</tr>
</tbody>
</table>

In consecutive years the annual tuition fee should be paid:

- Before September 1 (for the 1st semester)
- Before February 1 (for the 2nd semester)

(6th year students may pay their tuition fee in two installments in case they ask for permission in writing. The two parts are determined by the English Secretariat! The first part is payable until July 31, the second until December 31, 2009)

Dentistry students pay additional material fee, years 3, 4 & 5:

- (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.

All faculties:

- Compulsory summer practice when at Semmelweis University: USD 330/month.
- At the Faculty of Dentistry: HUF 31,000/week

**International Studies**

IBAN: HU 86-1030-0002-5011-7173-4101-4014

MKB Bank

H-1051 Budapest, Szent István tér 11, Hungary

(main brach: H-1056 Budapest, Váci u. 38)

Swift code: MKKBHUHB
RESIDENCE VISA, RESIDENCE PERMIT, ENTRY FOR A LONG STAY

For citizens of the European Economic Area countries (EU+ Norway, Iceland, Lichtenstein)

Citizens of the above states are not required to obtain a residence visa in order to enter Hungary for the purpose of studies. They will, however, be required to apply for a residence permit at least fifteen days prior to the expiry of the first 90-day period. Students coming from the above states are not obliged to report the address of their place of residence on arrival. It will have to be done when they apply for the registration certificate.

Please find enclosed the list of the necessary documents that are needed.

- school certificate in Hungarian
- form for issuing Registration Certificate and Reporting Accommodation (you will get it at the registration)
- lease contract of the apartment - bérleti szerzodés (original, written in Hungarian and signed by two witnesses)
- bank account statement about approx. 700-800 EUR or receipts about changing Hungarian Forints
- official bill stamps for 1000 Forints (‘okmánybéliyeg’ from the Post Office)
- 1 passport size photo
- certificate about a comprehensive health insurance

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.

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 Sztergova street)
From Móricz Zsigmond tér, bus No.33 or No.33/A 5th stop-Hengermalom utca.
OPENING HOURS OF THE IMMIGRATION OFFICE
(residence permit application)

MONDAY: 8:30–13:00
TUESDAY: 13:00–18:00
WEDNESDAY: 8:30–12:00
THURSDAY: 8:30–13:00
FRIDAY: 8:30–12:00

Entry for Long Stay (exceeding 90 days)

Foreign nationals wishing to pursue studies in Hungary are required to apply for entry for a long stay (exceeding 90 days) for the purpose of studies in their home countries and enter the country on the entry permit issued by the Hungarian Embassy or Consulate (you can find the list of Hungarian embassies and consulates at the following web-site: http://www.mfa.gov.hu).

The entry permit is valid for a single entry and up to 30 days of stay in Hungary. Within ONE MONTH upon arrival, you will have to register your address and submit your application for the residence permit to the Immigration Office in Budapest.

The following documents are required for the application for the entry permit:

- A wholly and legibly completed Application for residence permit for the purpose of studies (you can obtain an application form from the Hungarian embassy in your country or download it from the Internet at http://www.mfa.gov.hu)
- A valid passport (valid for at least eighteen months at the time of submitting the application)
- Two passport size color photos (not older than six months)
- Letter of Acceptance from the University
- Proof of payment of the tuition fee
- Proof of financial means ensuring livelihood in Hungary (bank statement about the balance of your credit card, cash, or a declaration by the parents that they will provide the funds for all your expenses in Hungary)
- An application fee of EUR 60
- The Hungarian Embassy may ask for your flight reservation and air ticket
- The address of your residence in Hungary (you should write the address of Star Hotel 1078 Budapest, Istvan 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.
REDUCTION OF TUITION FEE

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.

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

Students taking only one course (“FM” course) or one exam (“CV” exam) in a semester pay 50% of their semester tuition fee.

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.

Tuition fee for the 6th year:

1. 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.
2. In case the student completes the 4 weeks compulsory Neurology rotation and 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, 2009. Otherwise the student is not entitled for the reduction!

Please write a letter of request addressed to the Academic Program Director when applying for the 20% reduction!

No requests in any of the above matters will be accepted after graduation!
THE WORDS OF THE SOLEMN VOW AT REGISTRATION

"I, .................................. promise solemnly that I will respect the Constitution and laws of the Hungarian Republic. I promise that I shall abide by the regulations of SEMMELWEIS University. I promise solemnly that I will respect the professors and teachers of the University and that my conduct will be in keeping with the honor of my profession. I will keep the secrets of the patients that I learn about in the course of my studies. I will pursue my studies with full sense of responsibility to prepare myself to the best of my abilities for all my duties and obligations in my profession so as to be able to serve with my knowledge, the progress of mankind."

THE WORDS OF OATH AT GRADUATION

Faculty of Medicine and Dentistry

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

THE WORDS OF OATH AT GRADUATION

Faculty of Pharmacy

"I, ................................., swear that in virtue of my acquired knowledge of pharmaceutical sciences, I shall do my professional duty with the utmost diligence, and I shall always behave worthy of my profession. I shall place before all things the care for and the healing of my patients. I shall not reveal any data concerning the health status or the medication of my patients. I shall maintain my theoretical and practical knowledge at a high level. I shall never use my knowledge for activities that are contrary to the ethical code of pharmacists. As a participant in the activity of healing, I shall use my knowledge only for the defense and restitution of health to my fellow humans. I shall do my best to promote the science of pharmacy and keep the good name of the Semmelweis University."
HOW TO GET A CERTIFICATE WHICH PROVES THAT THE DIPLOMA ISSUED BY SEMMELWEIS UNIVERSITY IS IN CONFORMITY WITH THE EU REQUIREMENTS, AND A CERTIFICATE OF GOOD STANDING

Applicants have to write a letter of request to one of the following email addresses:
karoly.maria@eekh.hu
or:
rozsa.boglarka@eekh.hu

Mail address:
Egészségügyi Engedélyezési és Közigazgatási Hivatal
Dr. Zorica Hergert
Zrínyi u. 3
second floor, room no. 212
H-1051 Budapest, Hungary

In person:
Egészségügyi Engedélyezési és Közigazgatási Hivatal
Budapest, district 5, Zrínyi u. 3
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. Zorica Hergert, 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 17.250,- HUF per each certificate.

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)
   (also the second and third retake) 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 below under 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 2,000 HUF
8. Copy of the diploma (per number of copies and languages) 4,000 HUF/each
9. Copy of the lecture book (index) 10,000 HUF
10. Official transcript 2,000 HUF/each
    (the old type: 500 HUF/page
11. Failing to keep any deadlines: 5,000 HUF
Important

Registration requirements

Please note that the date of registration for the first semester is between August 31 - September 4, 2009 and for the second semester is between 25–29 January, 2010. 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 11 September, 2009 and 5 February, 2010 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 4 September, 2009 and 29 January, 2010, 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
**Summary of the most important information and frequently asked questions**

**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

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 grade. 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 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”. After this, please see the English Secretariat to pick up your check. The check must be paid at the Post Office, and the retained part of the check is to be shown prior to the exam on site.

- **What do the so-called CV and FM exams mean?**
  CV and FM are abbreviations. CV stands for the Hungarian term „Csak Vizsga”, meaning „Exam only”. The term indicates that the student has already received the signature (fulfilled the semester requirements), and shows that he/she wouldn’t be able to sit again for the subject, because the subjects in not announced in the following semester, there are only retake exams of the subject announced. CV can be taken only in case you have exam opportunity remained. FM stands for the Hungarian term „Felmentett”, meaning „Exempt”. This term also indicates fulfilling requirements of the subject, and that the student is not obliged to take the course again. However, the subject is announced again, so the student can choose to attend the class, if he/she decides so...

(Should the student decide to attend the course again even though he/she has already fulfilled the requirements, the same rules shall apply to him/her, as to those attending the class for the first time (Absence, attendance at classes, etc.))

- **How many retake opportunities do I have in a semester and in an academic year?**
  There are 3 exam opportunities in each subject, per academic year (1 exam, and 2 retakes). There is a special 4th trial (the 3rd retake), which may be used exclusively in 1 chosen subject, once a year. After using this 4th exam opportunity, the student shall not have a 4th trial in other subjects and cannot be granted a “special permission” for a 5th opportunity.
Please count carefully your remaining exam opportunities! For example if you use 2 exam opportunities in Chemistry in the 1st semester (1 exam and 1 retake), you will only have 1 remaining opportunity for a retake in the following semester (plus the one extra 4th chance, in case you hadn’t used it up in the same year in another subject.

- **How do I order a check for my 3 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.
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.
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 has undergone changes in the spirit of modernization. So at present there are 20 departments, with about 200 highly-qualified lecturers and 3000 students.

The Hungarian Accreditation Committee (HAC) qualified the Optometrist, Physiotherapist and Dietician departments as ones that are doing training at international level. (According to the report of the special committee of the HAC 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 three 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 and German. Students of Physiotherapy and Nursing can study in English, while students of Midwifery can take part in the German training.
Government, Dean’s Office, Staff

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SCHEDULE FOR THE ACADEMIC YEAR 2009/2010

Autumn semester

Registration for the 1st year students: August 31, 2009
for 2nd, 3rd and 4th year students: September 1, 2009
Opening Ceremony: September 6, 2009
First day of the term: September 7, 2009
Last day of the term: December 11, 2009
Examination period: December 14, 2009 – January 22, 2010
Announcement of continuing studies in the next semester: January 29, 2010
Final examination period:
Practical and Written parts: October 12 – 16, 2009
Oral part: October 19 – 30, 2009
National/Public holidays: October 23, 2009

Spring semester

Registration: January 29, 2010
First day of the term: February 8, 2010
Last day of the term: May 21, 2010
Spring holiday: March 29 – April 2, 2010
Examination period for graduating students: March 29 – May 7, 2010
for all other students: May 24 – July 2, 2010
Extension period (only for re-examination): July 5-9, 2010
Final examination period (June):
Practical and Written parts: May 17 – 28, 2010
Oral part: June 1 - 11, 2010
National/Public holidays: April 5, 2010 (Easter Monday)
May 24, 2010 (Whit Monday)
Most important deadlines for students

Giving back the index book at the Foreign Students Secretariat
- Autumn semester: Jan 29, 2010
- Spring semester: July 9, 2010

Announcement of continuing studies
- Autumn semester: Jan 29, 2010
- Spring semester: July 9, 2010

Announcement of continuing studies after deadline with paying a default charge
- Autumn semester: Sept 4, 2009
- Spring semester: Feb 5, 2010

Withdrawal of announcement of continuing studies within a month after the beginning of the term
- Autumn semester: Oct 7, 2009
- Spring semester: Mar 8, 2010

Signing up for courses/subjects until the end of the exam period of the previous semester
- Spring semester: Jan 29, 2010
- Autumn semester: Jul 9, 2010

Changing of courses/subjects till the end of the zero week
- Autumn semester: Sept 4, 2009
- Spring semester: Feb 5, 2010

Taking the index book for the examination period from the Foreign Students Secretariat earliest
- Autumn semester: Dec 9, 2009
- Spring semester: May 19, 2010

Taking an exam in a subject studied longer than one semester according to permission during the last 3 weeks of the term
- Autumn semester: Nov 23 - Dec 11, 2009
- Spring semester: May 3 - May 21, 2010

Getting a signature in the index after term time till the end of the 2nd week of the exam period
- Autumn semester: Dec 23, 2009
- Spring semester: Jun 4, 2010

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 for final examination in October Aug 13, 2009 for final examination in June Mar 18, 2010

Handing in requests to the Credit Committee
for subjects in the spring semester of 2009/10 Jan 15, 2010
for subjects in the autumn semester of 2010/11 Jul 9, 2010

Handing in requests about paying the tuition fee
for the spring semester of 2009/10 Jan 22, 2010
for the autumn semester of 2010/11 Jul 9, 2010

Handing in requests to the Study Committee
Autumn semester: Jan 29, 2010
Spring semester: Jul 9, 2010

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 registration or the deadline of announcement of continuing studies (for 2009/2010/1: August 31 for first year students, September 01, 2009 for everyone else / for 2009/2010/2: January 29, 2010; 2010/2011/1 July 9, 2010) have to pay a default charge, which is the counter value of USD 100 in HUF.

No payment which arrives after September 04, 2009 / February 5, 2010 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

<table>
<thead>
<tr>
<th>Fee Type</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third or further retake of an examination</td>
<td>3,000 HUF</td>
</tr>
<tr>
<td>Signing up for a course for the third time</td>
<td>5,000 HUF</td>
</tr>
<tr>
<td>Default charges for late payment of the tuition fee:</td>
<td>100 USD</td>
</tr>
<tr>
<td>Failing to keep any deadlines set by the Calendar</td>
<td>5,500 HUF</td>
</tr>
<tr>
<td>Retake of the final exam</td>
<td>10,000 HUF</td>
</tr>
<tr>
<td>Replica of the lecture book</td>
<td>10,000 HUF</td>
</tr>
<tr>
<td>Lost student card: – first time</td>
<td>500 HUF</td>
</tr>
<tr>
<td>– every other occasion</td>
<td>1,500 HUF</td>
</tr>
<tr>
<td>Official transcript of the grades</td>
<td>1,000 HUF/page</td>
</tr>
</tbody>
</table>

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. The students having received their higher professional training certificates can find employment or can study further in the bachelor training (BSc). 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.

In order to meet the objectives set out in the Bologna Declaration, Semmelweis University Faculty of Health Sciences has restructured its training system. 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). This 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.

Our programmes are as follows:
Degree Programs

B.Sc. Programmes

1. **Specialty:** Nursing and Patient Care
   **Specialized programs:** Nurse (in English), Dietician, Physiotherapist (in English), Midwife (in English/German), Paramedic

2. **Specialty:** Health Care and Prevention
   **Specialized programs:** Health Visitor, Public Health Inspector

3. **Specialty:** Medical Laboratory and Diagnostic Imaging Analyst
   **Specialized programs:** Optometrist (in English), Medical Laboratory and Diagnostic Imaging Analyst

**Nursing and Patient Care Programme**

**What is the aim of training?**
We aim to train nurses and patient-care professionals who are able to participate with full responsibility, at all levels of social care, in the work related to prevention, medication, nursing care and rehabilitation – not necessarily belonging to the physician’s competence – 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 to continue studies in the second cycle of training (at master’s level).

**Length of study**
8 terms, 240 credits

**Degree**
BSc (basic degree)

**NURSE**
Graduates in the specialist nursing programme are able to render help in patients using the services available to them in health and social care,
– explore the special needs of the sick person, make the nursing diagnosis and perform their tasks professionally on the basis of priorities,
– cooperate in planning, developing and implementing health care and social services,
– select models of nursing and apply them,
– explore information and resources necessary to perform the nursing process.

**Qualification**
Nurse and patient-care professional in the specialist Nursing Programme

**Job opportunities**
primary care
– out-patient clinic network
– in-patient care
– visitor of surgeries, chemists and hospitals
– transplantation coordinator
– clinics
– hospitals
PHYSIOTHERAPIST

Graduates in the specialist Physiotherapy Programme are able to perform physiotherapy activity on their own on the basis of medical diagnosis in the field of prevention, medical treatment and rehabilitation:

- register the status of a locomotor disease and document it,
- make plans for physiotherapy and rehabilitation, implement rehabilitation programmes in various clinical areas,
- apply therapeutic procedures in the treatment of locomotor diseases (rheumatology, orthopedics, traumatology),
- apply the curative and preventive procedures in the treatment of cardiovascular diseases,
- apply the curative and preventive procedures in the treatment of neurological diseases,
- apply physiotherapy in other clinical areas such as oncology, psychiatry, obstetrics, gynaecology, general surgery.

Qualification
Nurse and patient-care professional in the specialist Physiotherapy Programme

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 are able to conduct the process of delivery by: registering the data of the woman to deliver a child, preparing her for the delivery, noticing signs of delivery and documenting them, examining her externally and internally, making CTG and evaluating it, conducting the delivery on their own, giving local anaesthetic, performing episiotomy, protecting the perineum, examining the placenta, making sutures (i.e. sewing up the wound), examining vital signs of the newborn child after birth, defining the Apgar scale, looking after and observing the newborn child after birth (postnatal & postoperative observation), recognising signs indicating complicated delivery, providing for the early direct relationship between mother and newborn baby, taking the newborn child to the neonatal unit,

- monitor mother and newborn child in childish, look after them, help with breastfeeding,
- look after female patients,
- perform task of prenatal care, examine the psychic state and the environment of the expectant mother, prepare her for examinations, interventions, monitor and evaluate the vital signs of the foetus, recognise any sign of a complicated delivery, take the necessary steps in case it happens, prepare the mother-to-be for delivery and receiving her newborn baby and breastfeeding,
- perform general nursing tasks, meet the needs for hygiene, monitor the patient, evaluate parameters, insert and remove a bladder catheter, give irrigation, administer medicine enterally and parenterally.
Qualification
Nurse and patient-care professional in the specialist Midwife Programme

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

Medical laboratory and diagnostic imaging analyst programme

What is the aim of training?
To train those health care professionals who give high priority to their knowledge of natural sciences, technology and information technology to be able to practise their profession. The 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 practising 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 required skills to continue their studies in the master cycle.

Length of study
8 terms, 240 credits

Qualification
BSc (basic degree)

OPTOMETRIST

Graduates in the specialist Optometrist Programme are able to
- recognize and evaluate disorders of the eye, and disturbances of growth concerning the eye
- determine visual acuity objectively and subjectively, estimate refractive medium, refractive ability, errors of refraction, the way eye muscles function, the ability of heterophoria and convergence and examine binocular vision, examine the chamber of the eye, crystalline lens, vitreous humour and the eye fundus with the help of a slit lamp, estimate ocular tension
- prescribe the necessary lens or contact lenses after having done the appropriate examination to correct ocular refraction
- use their clinical and nursing knowledge during their daily activities
- actively participate in improving the culture of vision for the individuals, communities and the population
- conduct and evaluate screening tests
- conduct business or be engaged in commercial jobs relying on legal measures

Qualification
Clinical laboratory diagnostic imaging specialist with optometrist specialisation
Requirements for applicants

Optician qualification (employment is not a condition)

Recommended subject
Basics of optometry and its place in the health service system

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

Partial training
Duration: 3+1 years
Qualification: B.Sc. (basic degree) – EU diploma
In the frame of the partial training (3+1) students perform the first 3 years of their studies in the home institution, and the last 1 year in Hungary. Students successfully graduating from the programme get a diploma accepted in the European Union.

Conditions of participating in the partial training:
– three successfully finished years of Nursing training;
– adequate level – at least intermediate – knowledge of English or Hungarian;
– students have to be able to accomplish the difference between the curricula of the two partner universities during the last 1 year.

Preparatory course (in English or in Hungarian)

Duration: 1 year
The aim of the course is to prepare applicants to successfully start their basic training in English or Hungarian. This program principally serves the raising of the level of the language knowledge of applicants; by providing intensive courses for them to reach the adequate knowledge of the language. It also includes professional preparation.

The programme of the preparatory course:
– intensive language course (English or Hungarian): 2 x 15 weeks, 20 hours/week (total 600 hours)
– professional preparation (Anatomy, Chemistry, Medical Latin, Study Methodology, Library): 3 weeks, 20 hours/week (total 60 hours)
Participants successfully graduating from the course can continue their studies in a basic training (B.Sc.) in the chosen language (English or Hungarian).
## CURRICULUM from 2009/2010
(differentiated specialized material)

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Accepted by the Faculty Board with the number of regulation # 10/2009. ETK KT. (21 May, 2009)
Modified by the Faculty Board with the number of regulation # 19/2009. ETK KT. (15 June, 2009.)

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Pr = Practice
In = Individual hours
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CURRICULUM
and System of Preliminary Studies
for the years starting in
### Semmelweis University

**Faculty of Health Sciences**  
(basic knowledge, specialized core material)  
Full-time course

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Hungarian Language for Health Care Purposes: In semester V-VI. in hours 0 + 56, 6 + 56 with a value of 8 ECTS

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Personality Development, Collective Effectiveness

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Accepted by the Faculty Board with the number of regulation # 3/2007. ETKK. (24 May, 2007)
Modified by the Faculty Board with the number of regulation # 7/2008. ETKK. (13 March, 2008)
Modified by the Faculty Board with the number of regulation # 24/2009. ETKK. (24 June, 2009)

Th = Theory
Pr = Practice
In = Individual hours
Comp. = Comprehensive exam
End of t. = End of term exam
Pract. = Practical mark
# Semmelweis University
## Faculty of Health Sciences
### (differentiated specialized material)
#### Full-time course

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#### Basic Methods of Physiotherapy Module

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### Specialist program: physiotherapist

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**Total Contact hours**

- III: 78, 42
- IV: 182, 252
- V: 126, 326
- VI: 166, 296

**Individual preparation**

- III: 128
- IV: 496, 508
- V: 506, 478, 428
- VI: 2544

**Credit (ECTS)**

- III: 8
- IV: 31
- V: 32, 30
- VI: 28

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Accepted by the Faculty Board with the number of regulation # 3/2007. ETK KT. (24 May, 2007)
Modified by the Faculty Board with the number of regulation # 7/2008. ETK KT. (13 March, 2008)
Modified by the Faculty Board with the number of regulation # 24/2009. ETK KT. (24 June, 2009)

Th = Theory
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Comp. = Comprehensive exam
End of t. = End of term exam
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# System of Preliminary Studies

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**Personality Development, Collective Effectiveness**

Cardinal Regina, the Faculty of Health Sciences.

Modified by the Faculty Board by the regulation #8/2008. ETK KT. (13 March, 2008)
### System of Preliminary Studies

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**Specialist Programme: Physiotherapy**

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**Clinical Demonstration and Practice**

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**Rehabilitation Physiotherapy Module**

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<td>Cardiorespiratory Rehabilitation</td>
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<td>EBNPHFTT28A</td>
<td>Rehabilitation in Neurology</td>
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"p" in front of the code means that the subject has to be studied in parallel with its prerequisite(s), that is, in the same term.

Modified by the Faculty Board by the regulation #8/2008. ETK KT. (13 March, 2008)
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 Sőtonyi 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 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 12 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 2008, altogether 1004 Ph.D. theses had been defended at the School of Ph.D. Studies. The number of enrolled students at that time was 356 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.

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President of the Doctoral Council

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Thursday, 13.00 p.m. - 16.00 p.m.
Wednesday, 8.30 a.m. - 12.00 a.m.

470
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Dr. József Tihanyi  Ph.D. School of Sport Sciences
Dr. Bereczki Dánel  János Szentágothai Neurosciences Ph.D. School
Dr. József Mandl  Ph.D. School of Molecular Medical Sciences
Dr. László Kopper  Ph.D. School of Pathology (former President)
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Dr. Gábor Varga  Representative of Faculty of Dentistry
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Dr. Iván Forgács  College of Health Care
Zoltán Cserháti  President of the Doctoral Students’ Union
Dr. Éva Csákvari  Ministry of Education

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University School of Ph. D. Studies

President: Prof. Ágoston Szél MD, PhD, DSc

BRANCHES:

I. BASIC MEDICINE

Chairman: Prof. László Rosivall MD, PhD, DSc  
E-mail: rosivall@net.sote.hu

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<tr>
<th>Programs</th>
<th>Co-ordinators</th>
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<tr>
<td>Biological Effects of Ionizing and Non-Ionizing Radiations</td>
<td>Dr. Mikiós Kellermayer MD, PhD</td>
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<tr>
<td>Cardiovascular Disorders: Physiology and Clinic of Ischaemic Circulatory Diseases</td>
<td>Prof. Béla Merkely MD, PhD, DSc</td>
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<tr>
<td>Clinical and Experimental Cardiology/Atherosclerosis</td>
<td>Dr. Zoltán Prohászka MD, PhD</td>
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<td>The Mechanisms of Normal and Pathologic Functions</td>
<td>Prof. Emil Monos MD, PhD, DSc</td>
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<tr>
<td>Functions of the Circulatory System Physiology and Pathophysiology of the Regulation of Fluids and Electrolyte Homeostasis</td>
<td>Prof. László Rosivall MD, PhD, DSc</td>
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### II. CLINICAL MEDICINE

Chairman: **Prof. Zsolt Tulassay** MD, PhD, DSc  
E-mail: tulassay@bel2.sote.hu

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<td>Clinical Haematology</td>
<td>Prof. Lídia Sréter MD, PhD, DSc</td>
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<td>Dental Research</td>
<td>Prof. Gábor Varga MD, PhD, DSc</td>
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<td>Fetal and Neonatal Medicine</td>
<td>Prof. Zoltán Papp MD, PhD, DSc</td>
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<td>Gastroenterology</td>
<td>Prof. Zsolt Tulassay MD, PhD, DSc</td>
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<td>Ophthalmology</td>
<td>Prof. Ildikó Süveges MD, PhD, DSc</td>
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<td>Oxidative Stress and Immunological Reaction in Liver Diseases</td>
<td>Prof. János Fehér MD, PhD, DSc</td>
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<td>Physiology and Pathology of the Musculoskeletal System</td>
<td>Prof. Miklós Szendrői MD, PhD, DSc</td>
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<td>Prevention of Chronic Diseases in Childhood</td>
<td>Prof. Tivadar Tulassay MD, PhD, DSc</td>
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<td>Pulmonology</td>
<td>Prof. György Losonczy MD, PhD, DSc</td>
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<td>Hormonal regulations</td>
<td>Prof. Károly Rácz MD, PhD, DSc</td>
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<td>Urology</td>
<td>Prof. Imre Romics MD, PhD, DSc</td>
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<td>Clinical and Experimental Research in Angiology</td>
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<td>Prof. Sarolta Kárpáti MD, PhD, DSc</td>
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<td>Molecular Genetics, Pathomechanism and Clinical Aspects of Metabolic Disorders</td>
<td>Prof. Péter Lakatos MD, PhD, DSc</td>
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### III. PHARMACEUTICAL SCIENCES

Chairwoman: **Prof. Éva Szőke** MSc, PhD  
E-mail: szokee@drog.sote.hu

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<tr>
<td>Modern Trends in Pharmaceutical Scientific Research</td>
<td>Dr. István Antal MSc, PhD</td>
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SEMMELWEIS UNIVERSITY / SCHOOL OF PH.D. STUDIES
### IV. MENTAL HEALTH SCIENCES

**Chairman:** Prof. István Bitter MD, PhD, DSc  
E-mail: bitter@psych.sote.hu

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<td>Clinical Psychology and Psychiatry</td>
<td>Prof. László Tringer MD, PhD, DSc</td>
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<tr>
<td>Behavioral Sciences</td>
<td>Prof. Mária Kopp MD, PhD, DSc</td>
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### V. SPORT SCIENCES

**Chairman:** Prof. József Tihanyi MD, DSc, PhD  
E-mail: tihanyi@mail.hupe.hu

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<td>Training and Adaption</td>
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<td>Physical Training, Regulation, Metabolism</td>
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<td>Sport and Social Sciences</td>
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### VI. NEUROSCIENCES

**Chairman:** Prof. Dániel Bereczki MD, PhD, DSc  
E-mail: bereczki@neur.sote.hu

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<td>Neuroendocrinology</td>
<td>Prof. Zsolt Liposits MD, PhD, DSc</td>
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<td>Functional Neurosciences</td>
<td>Prof. E. Szilveszter Vizi MD, PhD, DSc</td>
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<td>Prof. Zoltán Nagy MD, PhD, DSc</td>
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<td>Prof. Imre Szirmai MD, PhD, DSc</td>
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<td>Biological Psychiatry</td>
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VII. MOLECULAR MEDICINE

Chairman: **Prof. József Mandl** MD, PhD, DSc  
E-mail: mandl@puskin.sote.hu

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<td>Basis of Human Molecular Genetics and Gene Diagnostics</td>
<td>Prof. András Falus MD, PhD, DSc</td>
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<td>Cellular and Molecular Physiology</td>
<td>Prof. Erzsébet Ligeti MD, PhD, DSc</td>
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<td>Embryology, Theoretical, Experimental and Clinical Developmental Biology</td>
<td>Prof. Imre Oláh MD, PhD, DSc</td>
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<td>Immunology</td>
<td>Prof. Péter Gergely MD, PhD, DSc</td>
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<td>Pathobiocchemistry</td>
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VIII. PATHOLOGICAL SCIENCES

Chairman: **Prof. László Kopper** MD, PhD, DSc  
E-mail: kopper@korb1.sote.hu

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<td>Alterations of Cells, Fibres and Extracellular and Diagnostic Pathomorphological Studies Matrix in the Course of Heart and Vascular Diseases and in Certain Tumours Experimental and Diagnostic Pathomorphological Studies</td>
<td>Prof. Zsuzsanna Schaff MD, PhD, DSc</td>
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<td>Experimental Oncology</td>
<td>Prof. László Kopper MD, PhD, DSc</td>
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<tr>
<td>Public Health Science</td>
<td>Prof. Péter Sotonyi MD, PhD, DSc</td>
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<tr>
<td>Study of the Immunobiological Effects of Micro-organisms and of their Components at Molecular and Cellular Level and in the Microorganisms</td>
<td>Prof. Károly Nagy MSc, PhD</td>
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<tr>
<td>Clinical and experimental transplantation Health Sciences</td>
<td>Prof. Jenő Járay MD, PhD, DSc</td>
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<td>Prof. István Szabolcs MD, PhD, DSc</td>
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