Contents

Government of the University ........................................ 7
The Academic Program Committee ................................... 7
The English Secretariat ...................................................... 8
The Schedule of the 2010/2011 academic year ....................... 9
The Examination and Studies Regulations .......................... 11
Faculty of Dentistry Addendum to the Examination and Studies Regulations ...... 11
Group Rule ................................................................. 26
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
Schedule of the new curriculum ......................................... 55
Year 1 .......................................................................... 71
Year 2 .......................................................................... 97
Year 3 ......................................................................... 117
Obligatory elective and elective subjects – schedule of the basic and pre-clinical modules
Year 4 ......................................................................... 169
Year 5 ......................................................................... 191
Elective subjects (basic/pre-clinical/clinical modules) – curricula ...... 217
Obligatory elective and elective subjects – schedule of the clinical module ................................................. 239
Year 6 ......................................................................... 241

Faculty of Dentistry .......................................................... 261
Year 1 .......................................................................... 261
Year 2 .......................................................................... 275
Elective subject, year 2 ...................................................... 282
Year 3 .......................................................................... 285
Year 4 .......................................................................... 337
Year 5 .......................................................................... 337
Elective subjects, years 3, 4, 5 ............................................ 282
Postgraduate courses

Faculty of Pharmacy .......................................................... 357
Year 1 .......................................................................... 357
Year 2 .......................................................................... 377
Year 3 .......................................................................... 393
Year 4 .......................................................................... 409
Year 5 .......................................................................... 425
Evaluation of Progress ....................................................... 445
GOVERNMENT SEMMELWEIS UNIVERSITY

RECTOR:  Prof. Dr. Tivadar Tulassay M. D., Ph.D., D. Sc.

VICE RECTORS:
- Prof. Dr. Ágoston Szél M. D., Ph.D., D. Sc.  General Affairs
- Prof. Dr. Miklós Tóth M. D., Ph.D., D. Sc.  Scientific and Innovation Affairs
- Prof. Dr. Miklós Kellermayer M. D., Ph. D.  Educational and International Affairs

DEANS:
- Prof. Dr. István Karádi M. D., Ph.D., D. Sc.  Faculty of Medicine
- Prof. Dr. Pál Fejérdy D. M. D., Ph. D.  Faculty of Dentistry
- Prof. Dr. Béla Noszáli Ph.D., D. Sc.  Faculty of Pharmacy
- Prof. Dr. József Tihanyi M.D., Ph.D., D.Sc.  Faculty of Physical Education and Sport Sciences
- Prof. Dr. Judit Mészáros Ph.D.  Faculty of Health Sciences

PRESIDENT OF THE DOCTORAL COUNCIL:  Prof. Dr. Károly Rácz M.D., Ph.D., D. Sc.

DIRECTOR GENERAL FOR FINANCE, INVESTMENT AND OPERATION:  Dr. Vilmos Ivády

DIRECTOR GENERAL FOR STRATEGIC AND DEVELOPMENT AFFAIRS:  Dr. Gusztáv Stubnya

DIRECTOR OF THE FOREIGN STUDENTS’ SECRETARIAT

Joint Director  Prof. Dr. Erzsébet Ligeti M.D., Ph.D., D.Sc.

Academic Program Director for Medicine, Dentistry and Pharmacy in English:  Prof. Dr. Márk Kollai M.D., Ph.D, D.Sc.

Academic Program Committee
- Faculty of Medicine:  Prof. Dr. András Csillag M. D., Ph. D., D. Sc.
- Prof. Dr. József Mandl M. D., Ph.D., D. Sc.
- Prof. Dr. László Kalabay M.D., Ph.D.
Faculty of Dentistry: Prof. Dr. István Gera D. M. D., Ph. D.
Faculty of Pharmacy: Prof. Dr. Ágnes Kéry Ph. D.

English Secretariat Office: Basic Medical Science Center
1094 Budapest IX., Tűzoltó u. 37-47, first floor 1604
Phone: (36-1) 266-0452
Fax: (36-1) 266-6734
e-mail: engsec@rekhiv.sote.hu

Head of Secretariat: Mrs. Olga Ványi B. A. (459-1500/ ext 60078;
engsec@rekhiv.sote.hu)

Staff:
Mrs. Orsolya Sajtos (459-1500/ ext 60081;
borsi@rekhiv.sote.hu) On Leave
Mrs. Mártat Reményi (459-1500/ ext 60076;
remart@rekhiv.sote.hu)
Mrs. Zsuzsa Galambos (459-1500/ ext 60079;
galzsu@rekhiv.sote.hu)
Ms. Adrienn Bácskai (459-1500/ ext 60072;
adri@rekhiv.sote.hu)
Ms. Timea Kapisinszky (459-1500/ ext 60074;
kapitimi@rekhiv.sote.hu)
Ms. Jurászik Timea (459-1500 / ext 60080;
dinotimi@rekhiv.sote.hu)
Ms. Edit Kovács (459-1500 / ext 60075;
kovacse@rekhiv.sote.hu)
Mr. Csaba Istvánfi (459-1500 / ext 60077
ics@rekhiv.sote.hu)
Ms. Lilla Szabó (459-1500 / ext 60073;
szabolilla@rekhiv.sote.hu)
Ms. Petronella Szabó (459-1500 / ext 60081;
petra@rekhiv.sote.hu)

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

Student Card: Monday: 1 p.m. – 3 p.m.
Tuesday: 1 p.m. – 2 p.m.
Wednesday: CLOSED
Thursday: 10 a.m. – 11 a.m.
Friday: CLOSED
SCHEDULE FOR THE 2010/2011 ACADEMIC YEAR
(Faculty of Medicine, Faculty of Dentistry, Faculty of Pharmacy)

Opening Ceremony

<table>
<thead>
<tr>
<th>Date</th>
<th>September 5, 2010</th>
</tr>
</thead>
</table>

First Semester

<table>
<thead>
<tr>
<th>Date of registration</th>
<th>August 30 – September 3, 2010</th>
</tr>
</thead>
<tbody>
<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 6, 2010</td>
</tr>
<tr>
<td>Faculty of Dentistry</td>
<td>September 6, 2010</td>
</tr>
<tr>
<td>Faculty of Pharmacy (1st–4th years)</td>
<td>September 6, 2010</td>
</tr>
<tr>
<td>Last day of the semester</td>
<td></td>
</tr>
<tr>
<td>Faculty of Medicine (1st–5th years)</td>
<td>December 10, 2010</td>
</tr>
<tr>
<td>Faculty of Dentistry</td>
<td>December 10, 2010</td>
</tr>
<tr>
<td>Faculty of Pharmacy (1st–4th years)</td>
<td>December 10, 2010</td>
</tr>
</tbody>
</table>

5th year Pharmacy:
- Practical training: August 2, 2010 – September 24, 2010
- The semester lasts for 5th year Pharmacy (12 weeks): September 27 – December 17, 2010

Examination period

<table>
<thead>
<tr>
<th>Faculty of Medicine (1st–5th years)</th>
<th>December 13, 2010 – January 21, 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty of Dentistry</td>
<td>December 13, 2010 – January 21, 2011</td>
</tr>
<tr>
<td>Faculty of Pharmacy (1st–4th years)</td>
<td>December 13, 2010 – January 21, 2011</td>
</tr>
</tbody>
</table>

Examination period for 5th year Pharmacy

Extension (retake exam) period

<table>
<thead>
<tr>
<th>Medicine, Dentistry, (1st–5th years), Pharmacy (1st–4th years)</th>
<th>January 24 – February 4, 2011</th>
</tr>
</thead>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Date of registration (1st–5th years)</th>
<th>January 24 – 28, 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place of registration</td>
<td>English Secretariat</td>
</tr>
<tr>
<td>First day of the semester for 1st–5th years</td>
<td></td>
</tr>
<tr>
<td>Medicine and Dentistry</td>
<td>January 31, 2011</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 13, 2011</td>
</tr>
<tr>
<td>Last day of the semester for 5th year Dentistry</td>
<td>April 29, 2011</td>
</tr>
<tr>
<td>Faculty of Pharmacy</td>
<td></td>
</tr>
<tr>
<td>First day of the semester (1st–5th years)</td>
<td>January 31, 2011</td>
</tr>
<tr>
<td>Last day of the semester (1st–4th years)</td>
<td>May 13, 2011</td>
</tr>
<tr>
<td>Last day of the semester (practice) for 5th year</td>
<td>May 20, 2011</td>
</tr>
</tbody>
</table>
Examination period for Faculty of Medicine, Faculty of Dentistry
1st – 5th year Medicine May 16 – June 30, 2011
1st – 4th year Dentistry May 16 – June 30, 2011
5th year Dentistry May 2 – June 10, 2011

Faculty of Pharmacy
1st – 3rd year May 16 – June 24, 2011
4th year May 16 – July 8, 2011

Autumn examination period for
1st – 4th year Medicine August 15 – 26, 2011
5th year Medicine (starts earlier) July 1 – 8, 2011
1st – 4th year Dentistry August 22 – 26, 2011
1st – 3rd year Pharmacy August 15 – 26, 2011

Extension (retake exam) period
1st – 4th year Medicine and Dentistry August 29 – September 2, 2011
1st – 3rd year Pharmacy August 29 – September 2, 2011
4th year Pharmacy July 11 – 15, 2011

Schedule for 6th year Medicine
July 12, 2010 – May 6, 2011

General Board Examination Period
Faculty of Medicine June 6 – 17, 2011
Faculty of Dentistry August 22 – September 2, 2011
Faculty of Pharmacy June 13 – June 16, 2011
May 23 – June 17, 2011

Holidays
Spring (including Eastern) holidays April 18 – 25, 2011

No lectures or seminars
National/Public holidays:
October 22, 2010 (Friday)
November 1, 2010 (Monday)
March 11, 2011 (Friday)
March 15, 2011 (Tuesday)

Research Students’ Conference:
February 16 - 17 - 18, 2011 (Wednesday, Thursday, Friday)
for Medicine 2nd – 6th year
February 16 – 17, 2011 (Wednesday, Thursday)
for Dentistry 2nd – 5th year

Faculty Day: April 13, 2011 (Wednesday)
for the students of the three faculties

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

NOTE: The translation does not contain the items which refer to the 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.

3. A credit may be obtained only by obtaining a pass (2) in case of a five-scale grade or an acceptable (“megfelelt”) in case of a three-scale grade. The number of credits received does not depend on the evaluation of the student’s knowledge if the performance of the student is accepted. However, a credit is only valid if the criteria of the present regulations are met.

4. In any semester, credit points obtained up to the level of ten percent in excess of the required amount may go on the student’s record. In case the total number of credits for obligatory subjects, obligatory electives, elective and dropped courses in the previous given semester exceed the total number of credits that may be taken, the number of credits in excess may be accounted for in the following semester(s) as benefits the student.

5. It is mandatory to collect a set number of credits from different groups of subjects within the time-limit set for obtaining an undergraduate level or master’s degree and it is also necessary to meet certain criteria. The student may progress in accordance with his or her individual schedule with regard to the pre-studies rules and other regulations and using the options.

6. A criterion is a compulsory task set among studies and graduating criteria for which no credit is given (EG: traineeship).

7. At Semmelweis University a degree may be obtained in a period shorter than 2 semesters in accordance with the pre-studies regulations.
Article 3

The curriculum

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

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

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

Article 5

The periods of studies

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

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

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

Article 7

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

Government Decree 79/2006 (April 5)

Article 24

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

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

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

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

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

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

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

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

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

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

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

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

**Article 8**

**Suspension of studies**

Article 50 of the AHE.

(1) The legal relationship of the student can be suspended for maximum two semesters continuously in case the student reports it in the preceding semester. Such a request can be asked for on divers occasion earliest after the completed first semester.
1. The student is obliged to report in the period designated for this purpose through the student information system in case he/she does not intend to perform his/her obligations as a student in the next period of studies.
2. When the legal relationship of the student and the University is suspended,
   b) the student card of the student may not be validated
3. By request the person admitted may be allowed to delay the commencement of his/her studies by a maximum of 2 years. The student is obliged to declare such an intention in a written form addressed to the English Secretariat. When the period of delay expires, the student is obliged to register even if he or she receives no reminder. In case he/she misses this registration, he/she will lose the right to commence studies.

Article 9

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

Article 76 of the AHE
(1) The legal relationship terminates if
   a) the student is transferred to another institute of higher education (as of the day of transfer)
   b) the student declares that he/she wishes to terminate the legal relationship (as of the day of such declaration)
   d) following the entire period of studies (as of the day of the first final exam period)
   h) the student is excluded by a disciplinary resolution (as of the day the resolution becomes final and non-appealable)

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

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

The legal relationship of the student is terminated by dismissal if
1. The number of credits obtained by the student from obligatory and obligatory elective courses is lower than 50% of all obtainable credits by the end of the 4th active semester from the first registration,
2. The student has used all available active semesters specified in the regulations but fails to complete his/her studies, or the total of the minimum necessary number of semesters for completing studies and used semesters together exceeds the number of available active semesters,
3. Due to 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 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 follow 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 75% of lectures and seminars is necessary for the end-term signature. If the instructor requires a lower tolerable absence rate than 25%, opportunities must be provided for supplementing the missed seminars by the beginning of the exam period.

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

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

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

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

12. For a semi-final exam with a practice connected to the lectures or for just-practice courses the head of the educational organization unit (the instructor of the course) may offer a grade based on the performance of the student in the regular period of the semester (grade 4 “good” or grade 5 “excellent”). The student is not obliged to accept the grade offered, and may request to take the exam.
13. The student obtains the credit if he or she receives a better grade than fail (“1” or “unsatisfactory” = “nem felelt meg”).
14. There is no legal remedy available regarding the evaluation or the grade.
15. It is regarded as dropping the course if the student fails to obtain
   a) the end-semester signature,
   b) obtains the signature, but does not show up at the exam and does not attempt to pass the exam in the examination period,
   c) fails to meet the exam requirements (fails the exam) within the framework of the available retakes within the examination period.
16. In case of a course dropped, the credits may not be obtained later than in two later semesters when the course is announced, except in case the student suspends his or her legal relationship with the university in that period.
17. In case of multi-semester courses with the courses built on each other, by the end of the registration period at the latest, and based on the approval of the head of the organizational unit the head of the Faculty (dean or director) may permit the student solely in one subject to take the next semester of the subject if the student has obtained the end-semester signature but failed to meet the exam requirements.
   Obtaining the exam grade in the next semester, however, is only possible if the student acquires the credit points from the previous semester.

Article 19

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

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

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

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

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

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

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

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

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

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

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

Article 20

The registration and index-numbers of results

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

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

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

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

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

Article 21

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

Article 22

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

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

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

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

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

Article 23

Leaving (pre-degree) certificate – Absolutorium

Article 60 of the AHE:

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

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

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

Article 24

The diploma work

1. In all kinds of programs the student is required to prepare a diploma work for the diploma. The aim of the diploma work is to enable the student by the individual research of the scientific field to improve his or her skills in seeing the significant items, the method of researching literature and express opinions compactly and accurately.
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 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 be an external professor. The head of the Committee and the members are appointed by the dean for one to three years with the approval of the Faculty Council.

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

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

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

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

Article 26

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

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

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

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

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

**Article 27**

**Special permission**

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

**Faculty of Dentistry Addendum to the Examination and Studies Regulations**

1. One CV (just exam) is allowed per semester.
2. Prerequisite of signing up for the CV exam is having at least one failed exam in the preceding semester.
3. The third sign up for a course requires full repeat of it (attendance of lectures and practices, mid-terms, exams).

**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 get information on their payment obligations,
- To manage their finances,
- To receive messages within the system from registry clerks, secretaries of institutions and instructors.

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

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

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

Entering the system

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

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

Upon entering the Neptun.Net system, students have to perform the following operations during a term:
- Registration
- Subject registration
- Exam registration

Registration

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

Subject registration (choosing subjects, choosing courses)

Choose the link “Subject registration” in the “Subjects” menu.

1. Displaying the list of subjects: Select the appropriate semester (e.g. 2010/11/1) and the curriculum, then select “Subject list of the chosen curriculum” under „Subject type” to display compulsory and alternative subjects. The option “Other optional subjects” may be used if the institution concerned manages its optional subjects separated from the curricula. If you do not find any subject in this list, this only means that at your institution these optional subjects are also integrated into the curricula. In this case, you should choose the option “Subject list of the chosen curriculum” at this question. By ticking “Show only those subjects that will be launched” you can make sure that only those subjects appear in the displayed subject list which will be launched in the semester selected. You can display the subject list filtered according to the conditions set by clicking on the “List subjects” button.

2. Display, search and ordering options in the subject list: On the top of the list you can set the number of subjects to be displayed on one page. If the list is longer than one page, you can use the two-way arrows on the top of the list or the drop-down menu to turn pages. By clicking on the printer icon, you can print the page displayed. When you find the subject required, click on any detail and all details of the selected subject will be displayed in a pop-up window.

3. Subject details / Current courses tab: Here you can see the courses launched in the given semester for the selected subject. You can now choose the subject and its course or courses. You can choose the courses by marking the checkbox on the right of the course list, then confirm your choice by clicking on “Save” at the bottom of the page. You have to choose more than one course for the same subject if more than one course type (e.g. theoretical and practical) are announced. In this case, you need to choose one course for each course type. This is not true for exam courses which must be chosen independently in all cases, which means that you cannot choose an exam course and another course type for the same subject at the same time. Course registration will only be successful if:
   - you have fulfilled the requirements for subject and course registration,
   - none of the courses selected is booked out (in the students/limit column the number of students is under the limit),
   - you have selected one course for each course type (e.g. theoretical, practical),
   - it is preliminary or final subject and course registration period,
   - you have not completed the subject so far.

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

4. Deregistering subjects: If for any reason you would like to drop a chosen subject, you can do so under “Registered subjects” in the “Subjects” menu. On this page you can see the subjects you have chosen in the current registration period; you can change courses or deregister subjects here. If in any subject line you click on “Deregister subject”, the system will first ask whether you really want to drop the given subject and if you answer yes, the subject will be dropped and deleted from the list of registered subjects. Naturally, this means that your registration for the courses of the deregistered subjects is also deleted and you will be
informed of this. (Subject deregistration is possible during the preliminary or final subject or 
course registration period.)

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

**Exam registration**

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

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

**Message management**

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

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

Semmelweis University, Faculty of Medicine

**Department of Anatomy, Histology and Embryology**
1094 Budapest IX., Tûzoltó u. 58.
Phone: 215-6920 / ext 53601, 53687 Dr. Szélély
Head of the Department: Prof. Dr. András Csillag

**Department of Human Morphology and Developmental Biology**
1094 Budapest IX., Tûzoltó u. 58.
Phone: 215-6920 / ext 53610 Dr. Kiss, 53652 Dr. Csáki (Pharm.)
Head of the Department: Prof. Dr. Ágoston Szél

**Institute of Biophysics and Radiation Biology**
1094 Budapest IX., Tûzoltó u. 58.
Phone: 267-6261 / ext 60211 Dr. Voszka, 60220 Dr. Módos (Pharm.)
Head of the Department: Prof. Dr. Miklós Kellermayer

**Department of Genetics, Cell- and Immunobiology**
1089 Budapest VIII., Nagyvárad tér 4.
Phone: 210-2940 / ext 56236 Dr. Fülöp, 56326 Dr. László
Head of the Department: Prof. Dr. András Falus

**Department of Pharmacology and Pharmacotherapy**
1089 Budapest VIII., Nagyvárad tér 4.
Phone: 210-2930 / ext 56277 Dr. Timár, 56247 Dr. Gyarmati
Head of the Department: Prof. Dr. Klára Gyires

**Department of Forensic Medicine**
1091 Budapest IX., Üllői út 93.
Phone: 215-7300 / ext 53411 Dr. Hubay
Head of the Department: Prof. Dr. Éva Keller

**Department of Medical Biochemistry**
1094 Budapest IX., Tûzoltó u. 37-47.
Phone: 266-2773 / ext 60034 Dr. Léránt, 60066 Dr. Maróthy-Tóth, 60161 Dr. Hrabák
Head of the Department: Prof. Dr. Veronika Ádám

**Department of Medical Chemistry, Molecularbiology and Pathobiochemistry**
1094 Budapest IX., Tûzoltó u. 37-47.
Phone: 266-2615 / ext 60161 Dr. Hrabák
Head of the Department: Prof. Dr. József Mandl

**Institute of Human Physiology and Clinical Experimental Research**
1094 Budapest IX., Tûzoltó u. 37-47.
Phone: 210-0306 / ext 60308 Dr. Ivanics
Head of the Institute: Prof. Dr. Zoltán Benyó
Institute of Human Physiology  
1094 Budapest IX., Tűzoltó u. 37-47.  
Phone: 266-9180 / ext 60439 Dr. Várnai, 60450 Dr. Balla  
Head of the Institute: Prof. Dr. László Hunyady

Department of Pathophysiology  
1089 Budapest VIII., Nagyvárad tér 4.  
Phone: 210-2940 / ext 56357 Dr. Molnár, ext 56180 Dr. Kriston  
Head of the Department: Prof. Dr. László Rosivall

Institute of Public Health  
1089 Budapest VIII., Nagyvárad tér 4.  
Phone: 210-2930 / ext 56313 Dr. Terebessy  
Head of the Institute: Prof. Dr. Károly Cseh

Institute of Behavioral Sciences  
1089 Budapest VIII., Nagyvárad tér 4.  
Phone: 210-2930 / ext 56350 Dr. Kovács, 56403 Dr. Balog  
Head of the Institute: Prof. Dr. Ferenc Túry

Institute of Medical Microbiology  
1089 Budapest VIII., Nagyvárad tér 4.  
Phone: 210-2959 / ext 56225 Dr. Berek, 56364 Dr. Csukás  
Head of the Institute: Prof. Dr. Károly Nagy

I. Department of Pathology and Experimental Cancer Research  
1085 Budapest VIII., Üllői út 26.  
Phone: 266-1638 / ext 54420 Dr. Zalatnai, ext 54425 Dr. Rácz  
Head of the Department: Prof. Dr. András Matolcsy

II. Department of Pathology  
1091 Budapest IX., Üllői út 93.  
Phone: 215-7300 / ext 53454 or 53456 Dr. Kiss  
Head of the Department: Prof. Dr. József Timár

Department of Anesthesiology and Intensive Therapy  
1125 Budapest XII., Kútögyő út 14.  
Phone: 355-6565, 325-1100; / ext 57222, 57223 Dr. Lorx; 57210, 57218 Dr. Madách  
Head of the Department: Prof. Dr. János Gál

I. Department of Internal Medicine  
1083 Budapest VIII., Korányi Sándor u. 2/A  
Phone: 459-1500 / ext 51554 Prof. Szalay, 51554 Dr. Abonyi  
Head of the Department: Prof. Dr. Miklós Szathmári

II. Department of Internal Medicine  
1088 Budapest VIII., Szentkirályi u. 46.  
Phone: 266-0926 ext 55599, 55524 Prof. Sréter  
Head of the Department: Prof. Dr. Károly Rácz
III. Department of Internal Medicine
1125 Budapest XII., Kútölgy út 4.
Phone: 325-1100 ext 291 Dr. Keltai, 216 Dr. Jakab
Head of the Department: Prof. Dr. István Karádi

Department of Dermatology, Dermatooncology and Venerology
1085 Budapest VIII., Mária u. 41.
Phone: 266-0465 / ext 55763 Dr. Ottó (Med.), 55757, 55759 Dr. Erős (Dent.)
Head of the Department: Prof. Dr. Sarolta Kárpáti

Department of Family Medicine
1125 Budapest XII., Kútölgy út 4.
Phone: 355-8530 Dr. Torzsa
Head of the Department: Prof. Dr. László Kalabay

Department of Otorhinolaryngology, Head and Neck Surgery
1083 Budapest VIII., Szérgyi u. 36.
Phone: 334-2384 / ext 52350 Dr. Noszék
Head of the Department: Prof. Dr. Gábor Répássy

I. Department of Pediatrics
1083 Budapest VIII., Bókay J. u. 53.
Phone: 334-3186/ ext 52728 Dr. Horváth
Head of Department: Prof Dr. Tivadar Tulassay

II. Department of Pediatrics
1094 Budapest IX., Tüzoltó. ú. 7-9.
Phone: 215-1380 ext 52958; 52926; 52976 Dr. Hauser, Dr. Bánsági,
59285 Dr. Kelecsényi, 59243 Dr. Bense
Head of the Department: Prof. Dr. András Szabó

Heart Center
Department of Cardiology
1122 Budapest XII., Városmajor. u. 68.
Phone: 458-6847; 458-6810 Dr. Bárczi
Head of the Department: Prof. Dr. Béla Merkely

Department of Neurology
1088 Budapest VIII., Balassa u. 6.
Phone: 210-0330 / ext 51123 Prof. Kamondi, Dr. Scheidl
Head of the Department: Prof. Dr. Dániel Bereczki

Department of Orthopedics
1113 Budapest XI., Karolina út 27.
Phone: 466-6059, Fax: 466-8747 Dr. Holnagy
Head of the Department: Prof. Dr. Miklós Szendrői

Department of Psychiatry and Psychotherapy
1083 Budapest VIII., Balassa u. 6.
Phone: 210-0330 / ext 51264 Dr. Unoka, 51243 Dr. Polgár, 51217 Dr. Hidasi
Head of the Department: Prof. Dr. István Bitter
Department of Pulmonology
1125 Budapest XII., Diósárok u. 1/C
Phone: 355-9733 ext 57055 Dr. Orosz
Head of the Department: Prof. Dr. György Losonczy

Department of Diagnostic Radiology and Oncotherapy
1082 Budapest VIII., Üllői út 78/A
Phone: 210-0300 / ext 53303 Dr. Péter Magyar
Head of the Department: Prof. Dr. Viktor Bárczi

I. Department of Surgery
1082 Budapest VIII., Üllői út 78.
Phone: 313-5216 / ext 52167 Dr. Kokas
Head of the Department: Prof. Dr. Péter Kupcsulik

I. Department of Surgery Department Section of Surgery
1096 Budapest IX., Nagyvárad tér 1.
Phone: 215-1489 / ext 55864 Prof. Sándor
Head of the Department: Prof. Dr. József Sándor

Department of Ophthalmology
1085 Budapest VIII., Mária u. 39.
Phone: 266-0513 / ext 54500 Dr. Tóth, Dr. Récsán
Head of the Department: Prof. Dr. János Németh

I. Department of Obstetrics and Gynecology
1082 Budapest VIII., Baross u. 27.
Phone: 266-0473 / ext 54250 Dr. Nagy, 54332 Dr. Joó
Head of the Department: Prof. Dr. János Rigó

II. Department of Obstetrics and Gynecology
1082 Budapest VIII., Üllői út 78/A
Phone: 210-0290 / ext 53106 Dr. Ács
Head of the Department: Prof. Dr. Attila Pajor

Department of Traumatology
1081 Budapest, VIII. Fiumei út 17.
Phone: 461-4723/ ext 218 Dr. Szabó Dr. László Hangody

Department of Urology
1082 Budapest VIII., Üllői út 78/B
Phone: 210-0280 / ext 51158 Dr. Nyirády
Head of the Department: Prof. Dr. Imre Romics

Institute of Development and Higher Education in the field of Health Informatics
1082 Budapest VIII., Üllői út 78/b.
Phone/fax: 210-0328 / ext 51835 Dr. Dinya
Director: Dr. Elek Dinya

SEMMELEWS UNIVERSITY
Center of Physical Education and Sport Sciences
1107 Budapest X., Zágrábi út 14.
Phone: 215-9337, 262-5529, 264-1408, 262-5529
Director and tutor: Dr. Kálmán Kiss

Semmelweis University, Faculty of Dentistry

Department of Prosthodontics
Dental Centre
1088 Budapest VIII., Szentkirályi u. 47.
Phone: 318-0011 ext 59374 Dr. Nemes
Head of the Department: Dr. Péter Hermann

Independent Section of Radiology
Dental Centre
1088 Budapest VIII., Szentkirályi u. 47.
Phone: 459-1500 ext 59128; 59374 Dr. Nemes
Head of the Department: Prof. Dr. Csaba Dobó Nagy

Department of Pedodontics and Orthodontics
Dental Centre
1088 Budapest VIII., Szentkirályi u. 47.
Phone: 318-0011 ext 59374 Dr. Nemes
Head of the Department: Prof. Dr. Ildikó Tarján

Department of Conservative Dentistry
Dental Centre
1088 Budapest VIII., Szentkirályi u. 47.
Phone: 318-0011 ext 59374 Dr. Nemes
Head of the Department: Prof. Dr. Ida Nyárasdy

Department of Oral Biology
1089 Budapest VIII., Nagyvárad tér 4.
Phone: 210-4415
Head of the Department: Prof. Dr. Gábor Varga

Section of Oral Diagnostics
Dental Centre
1088 Budapest VIII., Szentkirályi u. 47.
Phone: 459-1500/9161; 317-1044 ext 59374 Dr. Nemes
Head of the Department: Prof. Dr. Gábor Nagy

Department of Oral and Maxillofacial Surgery and Dentistry
1085 Budapest VIII., Mária u. 52.
Phone: 266-0457/ ext 55866, 55867 Dr. Szűcs, ext 55861 Dr. Németh
Head of the Department: Prof. Dr. József Barabás
Department of Periodontology
Dental Centre
1085 Budapest VIII., Szentkirályi u. 47.
Phone: 318-00-11 ext 59374 Dr. Nemes
Head of the Department: Prof. Dr. István Gera

Semmelweis University, Faculty of Pharmacy

University Pharmacy, Department of Pharmacy Administration
1092 Budapest IX., Hőgyes Endre u. 9.
Phone: 476-3600 / ext 53010 Dr. Mesko, 3049 Dr. Mészáros
Head of the Institute: Prof. Dr. Romána Zelkó

Institute of Pharmacognosy
1085 Budapest VIII., Üllői út 26.
Phone: 317-2979 / ext 55307 Dr. Balázs
Head of the Institute: Dr. Anna Blázovics

Department of Pharmaceutics
1092 Budapest IX., Hőgyes Endre u. 7.
Phone: 476-3600 Dr. Hajdú, Dr. Antal, Prof. Marton
Head of the Department: Prof. Dr. Imre Klebovich

Institute of Pharmaceutical Chemistry
1092 Budapest IX., Hőgyes Endre u. 9.
Phone: 476-3600; 217-0891 Prof. Takács–Novák, Dr. Horváth
Head of the Institute: Prof. Dr. Béla Noszál

Department of Pharmacodynamics
1089 Budapest VIII., Nagyvárad tér 4.
Phone: 210-4411, 210-2927 / ext 56108 Prof. Tekes,
56413 Dr. Tóthfalusi , 56219 Dr. Pálfi
Head of the Department: Prof. Dr. György Bagdy

Department of Organic Chemistry
1092 Budapest IX., Hőgyes Endre u. 7.
Phone: 476-3600 / ext 53025 Dr. Tétényi
Head of the Institute: Prof. Dr. Péter Mátyus

Departments of Loránd Eötvös University of Natural Sciences

Department of Analytical Chemistry
1117 Budapest XI., Pázmány Péter sétány 1/A
Phone: 372-2548; 372-2500 / ext 1241 Dr. Kurin-Csörgei, Dr. Béni 459-1500/53062 ext
Fax: 372-2592
Head of the Department: Prof. Dr. Gyula Zárány
SEMELWEIS UNIVERSITY

Department of Biology, Plant Anatomy
1117 Budapest XI., Pázmány Péter sétány 1/A
Phone: 381-2179 Dr. Dános
Head of the Department: Prof. Dr. Béla Bóddi

Department of Physical Chemistry
1117 Budapest XI., Pázmány Péter sétány 1/A
Phone: 372-2548 Dr. Takács
Fax: 372-2592
Head of the Department: Prof. Dr. András Baranyai D.Sc.

National Ambulance Service
1134 Budapest XIII., Róbert Károly krt. 77.
Phone: 350-3737, Dr. Gorove, Dr. Márton; 350-6931, Dr. Engelbrecht; 311-9850/ ext 113
Director-General: Dr. Gábor Göbl M. D.

Department of Foreign Languages – Faculty of Health Sciences
1088 Budapest VIII., Vas u. 17.
Head of the Department: Assoc. Prof. Margit Orbán
Phone: 486-4890 Fax: 486-4895

EMBASSIES
To find the contact information of your Embassy in Hungary, please visit:
Academic Staff

Faculty of Medicine

Department of Anatomy, Histology and Embriology

1094 Budapest, IX. Tûzoltó u. 58.
โทรศัพท์: 215-6920
Head of the Department: Prof. Dr. András Csillag M.D., Ph. D., D.Sc.
Professor emeritus: Prof. Dr. Miklós Réthelyi, Prof. Dr. Miklós Palkovits,
Prof. Dr. Teréz Tömböl, Prof. Dr. Kálmán Majorossy
Associate professor: Dr. Gábor Gerber, Dr. Mihály Kálmán, Dr. Árpád Kiss,
Dr. György Somogyi, Dr. Andrea Székely (tutor)
Assistant professor: Dr. Álán Alpár, Dr. Károly Altdorfer, Dr. Katalin Galliazt,
Dr. Géza Tótfalvi,
Assistant lecturer: Dr. Viktória Vereczki
Scientific advisor: Dr. Magda Madárász, Dr. László Simon, Dr. János Barna

Department of Human Morphology and Developmental Biology

IX. Tûzoltó u. 58, H-1094 Budapest, Hungary)
Head of the Department: Prof. Dr. Ágoston Szél M.D, Ph.D., D.Sc.
(Phone: 459-1592)
Full professor: Prof. Dr. Ida Gerendai, Prof. Dr. Katalin Köves,
Prof. Dr. György Nagy, Prof. Dr. Tibor Wenger
Professor emeritus: Prof. Dr. Béla Halász, Prof. Dr. Pál Röhrlich, Prof. Dr. Béla Vigh,
Prof. Dr. Imre Oláh
Associate professor: Dr. Anna L. Kiss (tutor), Dr. Ágnes Nemeskéri
Assistant professor: Dr. Zsolt Csaba, Dr. Ágnes Csáki, Dr. Judith Molnár,
Dr. Katalin Kocsis
Assistant lecturer: Dr. Ákos Lukáts, Dr. Krisztina Minkó, Dr. Nándor Nagy
Instructor by contract: Dr. Gábor Szeiffert
PhD student: Dr. Ágnes Berta Ida, Dr. Éva Bíró, Dr. Erzsébet Botos,
Dr. Zoltán Hajdú, Botond Igyártó, Dr. Márika Oláh, Dániel Székács

Institute of Biophysics and Radiation Biology

1094 Budapest IX., Tûzoltó u. 37-47.
โทรศัพท์: 267-6261
Head of the Department: Prof. Dr. Miklósi Kellermayer M.D., Ph.D., D.Sc.
Full Professor: Prof. Dr. Judit Fidy
Associate professor: Dr. Andrea Fekete, Dr. Katalin Blaskó,
Dr. Gabriella Csík, Dr. Levente Herényi
Assistant professor: Dr. István Voszka (tutor), Dr. Károly Módos (tutor),
Dr. Éva Hári, Dr. Szabolcs Osáth, Dr. Érika Balog
Department of Genetics, Cell- and Immunobiology
1089 Budapest, VIII. Nagyvárad tér 4.
☎ 210-2940, 210-2929

Head of the Department: Prof. Dr. András Falus Ph.D., D.Sc.
Professor Emeritus: Prof. Dr. György Csaba
Associate professor: Dr. Edit Buzás, Dr. Zsuzsanna Darvas,
Dr. András K. Fülöp (tutor for immunology), Dr. László Köhidalai,
Dr. Valéria László (tutor for biology), Dr. Sára Tóth,
Dr. Ema Pap
Assistant professor: Dr. Marianna Holub, Dr. Viola Tamási
Lecturer: Dr. Orsolya Láng

Department of Pharmacology and Pharmacotherapy
1089 Budapest, VIII. Nagyvárad tér 4.
☎ 210-2930, 210-4416

Head of the Department: Prof. Dr. Klára Gyires M. D., Ph.D., D.Sc.
Full professor: Prof. Dr. Sándor Kerpel-Fronius
Professor emeritus: Prof. Dr. Zsuzsanna Fürst, Prof. Dr. Valéria Kecskeméti
Associate professor: Dr. Júlia Timár (tutor), Dr. László Köles
Assistant professor: Dr. Zsuzsanna Gyarmati (tutor), Dr. András Rónai,
Assistant lecturer: Dr. Andrea Szebeni

Department of Forensic Medicine
1091 Budapest, IX. Üllői út 93.
☎ 218-0437, 215-7300

Head of the Department: Prof. Dr. Éva Keller M. D., Ph. D., D.Sc.
Professor emeritus: Prof. Dr. Péter Sótonyi
Associate professor: Dr. Klára Törő, Dr. László Szabó
Assistant professor: Dr. Márta Hubay (tutor)

Institute of Medical Biochemistry
1094 Budapest IX., Tûzoltó u. 37-47.
☎ +36-1-266-2773

Head of the Department: Prof. Dr. Veronika Ádám M.D.,
Member of Hungarian Academy of Sciences
Full professor: Prof. Dr. Raymund Machovich, Prof. Dr. László Tretter
Associate professor: Dr. Pál Bauer, Dr. Kraszimir Kolev,
Dr. László Csanády
Senior lecturer: Dr. István Léránt (teaching secretary)
Assistant professor: Dr. Christos Chinopoulos
Pharmacist: Dr. Erzsébet Maróthy-Tóth (tutor for Pharmacy
of 2nd and 3rd years)
Department of Medical Chemistry, Molecular Biology and Pathobiochemistry
1094 Budapest IX., Túzoltó u. 37-47.
☎ 266-2615

Head of the Department: Prof. Dr. József Mandl M.D., Ph.D., D.Sc.
Full professor: Prof. Dr. Anna Faragó, Prof. Dr. Miklós Tóth, Prof. Dr. László Buday
Associate professor: Dr. Mária Sassvári, Dr. András Hrabák (tutor), Dr. Ágota Vér, Dr. Nándor Müller, Dr. Miklós Csala

Institute of Human Physiology and Clinical Experimental Research
1094 Budapest IX., Túzoltó u. 37-47.
☎ 210-0306

Head of the Department: Prof. Dr. Zoltán Benyó M.D, Ph.D., D.Sc.
Full professor: Prof. Dr. Márk Kollai, Prof. Dr. Péter Sándor,
Professor emeritus: Prof. Dr. Emil Monos
Associate professor: Dr. András Eke, Dr. György Nádasy, Dr. Tamás Ivanics (course coordinator),
Assistant professor: Dr. Komélia Ikrényi, Dr. Ákos Zsembery
Assistant lecturer: Dr. Levente Kiss, Dr. Eszter Mária Horváth,
Dr. Tamás Horváth

Department of Physiology
1094 Budapest IX., Túzoltó u. 37-47.
☎ 266-9180

Head of the Department: Prof. Dr. László Hunyady M.D, Ph.D., D.Sc.
Full professor: Prof. Dr. Péter Enyedi, Prof. Dr. Erzsébet Ligeti Prof. Dr. András Spat
Professor emeritus: Prof. Dr. Attila Fonyó
Associate professor: Dr. Miklós Geiszt, Dr. Csilla Hably, Dr. Attila Mócsai, Dr. Hilda Tost, Dr. Péter Vármai (course director)
Assistant professor: Dr. Gábor Czirják, Dr. Zoltán Jakus, Dr. Gábor Petheő
Assistant lecturer: Dr. Zsuzsanna Gáborik
Scientific advisor: Dr. András Balla (tutor)
Department of Pathophysiology

1089 Budapest, VIII. Nagyvárad tér 4.
☎: 210-2940

Head of the Department: Prof. Dr. László Rosivall M.D., Ph.D., D.Sc.
Full professor: Prof. Dr. Lajos Szollár, Prof. Dr. Ákos Koller
Associate professor: Dr. Miklós Molnár (tutor)
Assistant professor: Dr. Péter Hamar, Dr. Miklós Mózes, Dr. László Tornóci
Assistant lecturer: Dr. Tünde Kristen

Institute of Public Health

1089 Budapest, VIII. Nagyvárad tér 4.
☎: 210-2930
Homepage: www.kozegeszsegtan.sote.hu

Head of the Department: Prof. Dr. Károly Cseh M.D., Ph.D., D.Sc.
Full professor: Prof. Dr. Tamás Simon, Prof. Dr. Anna Tompa
Associate professor: Dr. Judit Forrai, Dr. Péter Jakabfi, Dr. József Ongrády
Assistant professor: Dr. Eleonóra Leffelholcz, Dr. Miklós Lelekes
Assistant lecturer: Dr. Katalin Antmann, Dr. András Terebessy (tutor)
Dr. Bence Komáromi T.

Institute of Behavioral Sciences

1089 Budapest, VIII. Nagyvárad tér 4.
☎: 210-2930

Head of the Department: Prof. Dr. Ferenc Túry M.D., Ph. D.
Full professor: Prof. Dr. Mária Kopp, Prof. Dr. József Kovács (tutor)
Assistant professor: Dr. Ágnes Dósa, Dr. Jenő Lőrincz, Dr. Zsuzsa Szántó (tutor), Dr. Mártia Novák, Dr. Adrienne Stauder, Dr. István Mucsi
Assistant lecturer: Dr. Piroska Balog (tutor), Dr. Mónika Kovács, Dr. György Purebl

Institute of Medical Microbiology

1089 Budapest, VIII. Nagyvárad tér 4.
☎: 210-2959, 210-2930, 210-2940

Head of the Department: Prof. Dr. Károly Nagy M.D., Ph. D., D.Sc.
Full professor: Prof. Dr. Ferenc Rozgonyi, Prof. Dr. Éva Ádám
Professor emeritus: Prof. Dr. Piroska Anderlik
Associate professor: Dr. Miklós Füzzi
Scientific advisor: Dr. Zsuzsanna Csukás (tutor for Dentistry and Pharmacy)
Dr. Zsuzsanna Bános
Assistant professor: Dr. Csaba Jeney, Dr. Dóra Szabó
I. Department of Pathology and Experimental Cancer Research

☎: 459-1500, 266-1638

Head of the Department: **Prof. Dr. András Matolcsy** M.D., Ph.D., D.Sc.
Full professor: Prof. Dr. Ilona Kovařszky, Prof. Dr. László Kopper,

Professor emeritus: Prof. Dr. Károly Lapis, Prof. Dr. Béla Szende,

Associate professor: Dr. Attila Zalatnai (tutor)
Assistant professor: Dr. Lajos Berczi, Dr. Judit Pápay, Dr. Ágota Szepesi
Assistant lecturer: Dr. Csaba Diczházi, Dr. Anita Mohos, Dr. Gergely Rácz (tutor)

Dr. Anita Mohos

II. Department of Pathology

1091 Budapest, IX. Üllői út 93.
☎: 215-7300

Head of the Department: **Prof. Dr. József Timár** M.D., Ph.D., D.Sc.
Full Professor: Prof. Dr. Zsuzsa Schaff, Prof. Dr. Janina Kulka

Professor emeritus: Prof. Dr. Anna Kádár
Scientific advisor: Prof. Dr. Tibor Kerényi, Dr. Margit Kovács

Associate professor: Dr. György Illyés,

Assistant professor: Dr. Balázs Járay, Dr. Eszter Székely
Assistant lecturer: Dr. Hajnalka Győrfy, Dr. Magdolna Kardos, Dr. Lilla Madaras

Department of Anesthesiology and Intensive Therapy

1125 Budapest, XII. Kútvölgyi út 4.
☎: 355-6565, 325-1100

Head of the Department: **Prof. Dr. János Gál** M.D., Ph.D., D.Sc.
Full Professor: Prof. Dr. István Pénzes

Associate professor: Dr. Balázs Hauser, Dr. Csaba Hermann
Assistant professor: Dr. Gábor Élő,

Assistant lecturer: Dr. András Lorx (tutor), Dr. László Zubek,
Dr. Krisztina Madách (tutor)
I. Department of Internal Medicine

1083 Budapest, VIII. Korányi S. utca 2/A.
☎: 459-1500

Head of the Department: Prof. Dr. Miklós Szathmári M. D., Ph.D., D.Sc.
Full professor: Prof. Dr. Rudolf de Châteel, Prof. Dr. László Gerő,
Prof. Dr. János Papp, Prof. Dr. Ferenc Szalay (tutor),
Prof. Dr. Gyula Tamás, Prof. Dr. Péter Kempler,
Prof. Dr. Judit Demeter
Associate professor: Dr. Margit Abonyi (tutor), Dr. István Barna, Dr. Csaba Horváth,
Dr. Andras Trafilé
Assistant professor: Dr. Gabriella Györi, Dr. István Takács, Dr. Erika Márton,
Dr. Fatima Varga,
Dr. Andras Váradi
Assistant lecturer: Dr. Zsolt Hermányi, Dr. Péter Fuszek,
Dr. Katalin Keresztes, Dr. Zsolt Nagy, Dr. Gábor Speer,
Dr. Ádám Tabák, Dr. Péter Lakatos

II. Department of Internal Medicine

1088 Budapest, VIII. Szentkirályi u. 46.
☎: 266-0926

Head of the Department: Prof. Dr. Károly Rácz M.D., Ph.D., D.Sc.
Full professor: Prof. Dr. Zsolt Tulassay,
Prof. Dr. László Engloner,
Prof. Dr. Lídia Sréter (tutor), Prof. Dr. Anikó Somogyi
Associate professor: Dr. László Kórnya, Dr. Györgyi Mózes,
Dr. Szusznána Aszalós, Dr. Gábor Békési, Dr. Gabriella Lengyel
Assistant professor: Dr. László Herszényi
Assistant lecturer: Dr. Károly Horvát-Karajz, Dr. Péter Igaz,
Dr. Márk Juhász, Dr. Pál Miheller, Dr. István Pregun

III. Department of Internal Medicine

1125 Budapest, XII. Kútvölgyi út. 4.
☎: 325-1100

Head of the Department: Prof. Dr. István Karádi M.D., Ph.D., D.Sc.
Full professor: Prof. Dr. László Romics, Prof. Dr. Béla Fekeete,
Prof. Dr. György Füst, Prof. Dr. István Szilvási
Associate professor: Dr. Livia Jánoskuti, Dr. Pál Pánczél, Dr. Teréz Pozsonyi,
Dr. Gábor Tarkovács, Dr. András Verecke, Dr. Ernese Kiss
Assistant professor: Dr. Nóra Hosszúfalusi, Dr. Gábor Pálos, Dr. Pál Sármán,
Dr. Judit Várkonyi, Dr. Katalin Keftai (tutor), Dr. András Zsáry
Assistant lecturer: Dr. Zoltán Böröcz, Dr. Péter Farkas, Dr. László Jakab (tutor),
Dr. Judit Kocsis, Dr. Ágnes Nagy, Dr. Zsuzsa Nébenführer,
Dr. Éva Palik,
Department of Dermatology, Dermatooncology and Venerology

1085 Budapest, VIII. Mária u 41.
☎: 266-0465

Head of the Department: Prof. Dr. Sarolta Kárpáti M.D., Ph. D., D.Sc.
Professor: Prof. Dr. Erzsébet Temesvári
Prof. Dr. Attila Horváth
Associate professor: Dr. Mára Marschalék, Dr. Beáta Somlai, Dr. Norbert Wikonkál
Senior lecturer: Dr. Krisztina Becker, Dr. Judit Hárseg, Dr. Péter Holló,
Dr. Klaudia Preisz
Assistant professor: Dr. Nóra Erdős (tutor), Dr. Márta Medvecz,
Dr. Győrgyi Pónyai
Clinical doctors: Dr. Péter Bogár, Dr. Ferenc Harmos,
Dr. Bernadett Hídvégi, Dr. Csilla Kaszab,
Dr. Daniella Kuzmanovszki, Dr. Andrea Lukác, Dr. Ágnes I. Ottó (tutor), Dr. Katinka Pónyai, Dr. Andrea Sas,
Dr. Pálma Silló, Dr. Béla Tóth, Dr. Veronika Tóth

Department of Family Medicine

1125 Budapest, XII. Kútölgyi út. 4.
☎: 325-1100

Head of the Department: Prof. Dr. László Kalabay M.D., Ph.D., D.Sc.
Assistant professor: Dr. Péter Torzs (tutor)

Department of Otorhinolaryngology, Head and Neck Surgery

1083 Budapest, VIII. Szigony u.36.
☎: 355-8530

Head of the Department: Prof. Dr. Gábor Répássy M.D., Ph.D., D.Sc.
Professor emeritus: Prof. Dr. Ottó Ribári
Associate professor: Dr. Marianna Küstel, Dr. Ágnes Szirmai
Assistant professor: Dr. László Noszak (tutor), Dr. Zoltán Fent
Assistant lecturer: Dr. Béla Bencsik, Dr. Magdolna Szonyi, Dr. Balázs Szabó,
Dr. Helga Kraxner, Dr. Anita Gáborján, Dr. Gábor Polony

I. Department of Pediatrics

1083 Budapest, VIII. Bókay János u. 53.
☎: 334-3186

Head of the Department: Prof. Dr. Tivadar Tulassay M.D., Ph.D., D.Sc.
Full professor: Prof. Dr. András Arató, Prof. Dr. Tamás Machay,
Prof. Dr. László Madácsy, Prof. Dr. Tibor Verebély,
Prof. Dr. Reusz György, Prof. Dr. Antal Szabó
Professor emeritus: Prof. Dr. Miklós Miltényi
II. Department of Pediatrics

Head of the Department: Prof. Dr. Andrász Szabó M.D., Ph.D., D.Sc.
Full professor: Prof. Dr. Rozália Kálmánchey, Prof. Dr. János Sólyom,
Professor emeritus: Prof. Dr. Dezső Schuler
Associate professor: Dr. Tamás Szamosi, Dr. Erika Tomsits, Dr. Miklós Garami,
Dr. Mónika Csőka
Assistant professor: Dr. Mária Ablonczy, Dr. Zita Halász,
Dr. Margit Pataki, Dr. Veronika Kovács
Assistant lecturer: Dr. Noémi Csoszánszki, Dr. Gabriella Filiczki,
Dr. Péter Hauser (tutor), Dr. Zoltán Jenővári, Dr. László Jókúti,
Dr. Andrea Luczay, Dr. Judit Müller, Dr. Gergely Sárközi,
Dr. Edit Varga, Dr. Andrea Tölgyesi, Dr. Tamás Bense (tutor),
Dr. András Kelecsényi (tutor), Dr. Boglárka Bánsági (tutor)

Heart Center Department of Cardiology

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

Department of Neurology

1083 Budapest, VIII. Balassa u. 6.
☎: 210-0330, 210-0337

Head of the Department: Prof. Dr. Dániel Bereczki M.D., Ph.D., D.Sc.
Full professor: Prof. Dr. Imre Szirmai, Prof. Dr. Anita Kamondi (tutor)
Professor emeritus: Prof. Dr. Endre Csanda, Prof. Dr. Mátyás Papp
Associate professor: Dr. Tibor Kovács
Assistant professor: Dr. Zsuzsanna Arányi, Dr. Csaba Ertsey,
Dr. Róbert Debreczeni
Assistant lecturer: Dr. Sándor Ilinczy,
Dr. Magdolna Simó, Dr. Ildikó Vastagh, Dr. Erika Scheidl (tutor)

Department of Orthopedics

1113 Budapest, XI. Karolina út 27.
☎: 466-6059 Fax: 466-8747

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

Department of Psychiatry and Psychotherapy

1083 Budapest, VIII. Balassa u. 6.
☎: 210-0330

Head of the Department: Prof. Dr. István Bitter M.D., Ph.D., D.Sc.
Full professor: Prof. Dr. Péter Rajna
Professor emeritus: Prof. Dr. László Tringer
Associate professor: Dr. Lajos Simon, Dr. Pál Czobot
Assistant professor: Dr. Judit Harangozó, Dr. Zsolt Unoka (tutor)
Assistant lecturer: Dr. Zoltán Bejek (tutor), Dr. Zoltán Kovács,
Dr. Annamária Rihmer, Dr. Patricia Polgár
Department of Pulmonology

1125 Budapest, XII. Diósárok u. 1/C.
☎: 355-9733

Head of the Department: Prof. Dr. György Losonczy M.D., Ph.D., D.Sc.
Professor emeritus: Prof. Dr. Imre Hutás, Prof. Dr. Endre Vastag
Associate professor: Dr. Ákos Somoskövi, Dr. Mártá Orozs (tutor),
Dr. Veronika Müller
Assistant professor: Dr. Zoltán Bártfai, Dr. Gabriella Gálfy, Dr. Gábor Horváth,
Dr. Zoltán Süttő, Dr. Klára Szondy, Dr. Erika Vajda,
Dr. Katalin Vardi Visy, Dr. András Woliáik, Dr. Gabriella Zsámboiki
Assistant lecturer: Dr. Anikó Bohács, Dr. Judit Füzy, Dr. Ildikó Géczi,
Dr. Tarnási Komáromi, Dr. Csaba Mátě, Dr. Gabriella Muraközy,
Dr. Andrea Nagy,
Dr. Zsuzsanna Orozs, Dr. Lilla Tamási

Department of Diagnostic Radiology and Oncotherapy

1082 Budapest, VIII. Ullói út 78/A.
☎: 210-0300

Head of the Department: Prof. Dr. Viktor Bérczi M.D., Ph.D., D.Sc.
Full Professor: Prof. Dr. Kálmán Hüttl
Associate professor: Dr. Zoltán Vígály, Dr. Zsolt Harád, Dr. Kinga Karling,
Dr. Adám Mester
Assistant professor: Dr. Zsuzsa Dömötöri, Dr. Katalin Kiss,
Dr. Géza Tóth, Dr. Klára Szalai, Dr. László Duffek,
Dr. Béla Kári, Dr. László Torgyi
Assistant lecturer: Dr. Erika Borbényi, Dr. Szabolcs Farkas,
Dr. Péter Magyar (tutor), Dr. Tarnási Györke,
Dr. Györgyver Szentmártoni, Dr. Júlia Szilvasi, Dr. Éva Zserényi
Senior resident: Dr. Pál Batta, Dr. Anikó Bögér, Dr. Gábor Erdel,
Dr. Ernő Frank, Dr. Ágnes Stefán, Dr. Andrea Vágó

I. Department of Surgery

1082 Budapest, VIII. Ullói út 78.
☎: 313-5216

Head of the Department: Prof. Dr. Péter Kupcsulik M.D., Ph.D., D.Sc.
Full professor: Prof. Dr. Katalin Darvas,
Prof. Dr. Tibor Tihanyi
Professor emeritus: Prof. Dr. Lajos Flautner
Associate professor: Dr. László Harsányi, Dr. Péter Kokos (tutor), Dr. István Pulay,
Dr. Mária Tarján, Dr. Ambrus Magyar, Dr. János Horányi
I. Department of Surgery Department Section of Surgery

1096 Budapest, IX. Nagyvárad tér 1.
☎: 215-1489

Head of the Department: Prof. Dr. József Sándor M.D., Ph.D., D.Sc. (tutor)
Associate professor: Dr. Tihamér Tóth, Dr. András Bálint

Department of Ophthalmology

1085 Budapest, VIII. Mária u. 39.
☎: 266-0513

Head of the Department: Prof. Dr. János Németh M.D., Ph.D., D.Sc.
Full professor: Prof. Dr. György Salacz, Prof. Dr. Zoltán Zsolt Nagy, Prof. Dr. Gábor Holló
Professor emeritus: Prof. Dr. Ildikó Süveges
Associate professor: Dr. Ágnes Farkas, Dr. Mária Bausz, Dr. Olga Lukáts, Dr. Jeannette Tóth (tutor for Medicine), Dr. Ágnes Füst, Dr. Zsuzsa Récsán (Program Director for Dentistry)
Assistant lecturer: Dr. Orsolya Fiedler, Dr. Ágnes Borbándy, Dr. Béla Csákány, Dr. Attila Nagymihály, Dr. András Papp, Dr. András Seres, Dr. Antal Szabó, Dr. János Hargitai, Dr. Illés Kovács, Dr. Zsófia Hargitai (tutor for Dentistry)

I. Department of Obstetrics and Gynecology

1088 Budapest, VIII. Baross u. 27.
☎: 266-0473

Head of the Department: Prof. Dr. János Rigó M.D., Ph.D
Full professor: Prof. Dr. Zoltán Papp, Prof. Dr. Júlia Hajdú
Professor emeritus: Prof. Dr. Sándor Csömör
Associate professor: Dr. Péter Patkós (Deputy Director), Dr. András Szántó (Deputy Director), Dr. Zsolt Csapó, Dr. Emma C. Molnár, Dr. Éva Görbe, Dr. János Urbancsek, Dr. Anna Beke, Dr. Csaba Papp, Dr. István Sziller, Dr. István Szabó, Dr. Ernő Tóth-Pál, Dr. Bálint Nagy, Dr. Petronella Hupuczi
Assistant professor: Dr. Sándor Konrád, Dr. János Hidvégi, Dr. Mártina Lipták, Dr. Péter Somos, Dr. István Varga, Dr. László Csabay, Dr. Mihály Szilhavy, Dr. György Szentedi, Dr. Márta Gávai,
II. Department of Obstetrics and Gynecology

1082 Budapest, VIII. Üllői út 78/a.
☎: 210-0290

Head of the Department: Prof. Dr. Attila Pajor M.D., Ph.D., D.Sc.

Associate professor: Dr. András Újházy, Dr. Zorán Belics, Dr. Ákos Csaba, Dr. József Gábor Joó (tutor), Dr. Barbara Köhalmi, Dr. Norbert Sipos, Dr. Tamás Bőze, Dr. Zoltán Báns, Dr. Anikó Boda, Dr. Éva Csatlós, Dr. Zoltán Garamvölgyi, Dr. István Karasznai, Dr. Péter Fancsovits, Dr. Tibor Fekete, Dr. Gábor Mezei, Dr. Ákos Murker, Dr. Levente Lázár, Dr. Nándor Than, Dr. Adnenni Horváth, Dr. Attila Rab, Dr. Gabriella Demeter, Dr. Lilla Sassi, Dr. Attila Halmos, Dr. Szabolcs Máté, Dr. Gyula Richárd Nagy (tutor), Dr. Zsanett Szigeti, Dr. Zoltán Derzsy, Dr. Erik Hauzman, Dr. Barbara Pete

Department of Traumatology

1081 Budapest, VIII. Fiumei út 17.
☎: 461-4723; Fax: 461-4724

Head of the Department: Dr. László Hangody M.D., Ph.D., D.Sc.

Full professor: Prof. Dr. András Sánváry, Prof. Dr. Tibor Mózes

Assistant professor: Dr. Miklós Szébeny (tutor), Dr. István Baráth

Department of Urology

1082 Budapest, VIII. Üllői út 78/B.
☎: 210-0330

Head of the Department: Prof. Dr. Imre Romics M.D., Ph.D., D.Sc.

Full professor: Prof. Dr. Zsolt Kelemen

Associate professor: Dr. Antal Harmas, Dr. József Plnovics, Dr. Péter Nyírady (tutor)

Assistant professor: Dr. Sándor Lovász, Dr. Miklós Szűcs; Dr. Attila Keszthelyi, Dr. Krisztina Szabó, Dr. Lajos Joó

Assistant lecturer: Dr. Stelios Mavrogenis, Dr. András Rusz, Dr. Attila Majoros, Dr. Péter Riesz, Dr. Erzsébet Pénzes, Dr. Gergely Bánfi
Faculty of Dentistry
Department of Prosthodontics
1088 Budapest, VIII. Szentkirályi u. 47.

Head of the Department: Dr. Péter Hermann D. M. D.
Full professor: Prof. Dr. Pál Fejéródy, Prof. Dr. Miklós Kaán
Professor emeritus: Prof. Dr. Tibor Fábián
Associate professor: Dr. Péter Kivovics, Dr. Csaba Dobó Nagy,
Dr. Andráš Kóbó, Dr. Melinda Madléna,
Dr. Tibor Károly Fábián
Assistant professor: Dr. János Gerle, Dr. László Kádár, Dr. Endre Somogyi
Assistant lecturer: Dr. Péter Faluhelyi, Dr. Marianna Jánmad, Dr. Katalin Kalocsai,
Dr. Katalin Károlyházy, Dr. Mercédés Linnering,
Dr. Krisztina Márton, Dr. Zsuzsanna Tóth, Dr. Pál Sajgó,
Dr. Katalin Nemes, Dr. Judit Borbély

Independent Section of Radiology
1088 Budapest, VIII. Szentkirályi u. 47.

Head of the Department: Prof. Dr. Csaba Dobó Nagy D. M. D.

Department of Pedodontics and Orthodontics
1088 Budapest, VIII. Szentkirályi u. 47.

Head of the Department: Prof. Dr. Ildikó Tarján D. M. D., Ph.D.
Associate professor: Dr. Katalin Gabris, Dr. Gábor Fábián
Assistant: Dr. Miklós Kaán, Dr. Noémi Rózsa,
Dr. Péter Balaton, Dr. Ibolya Kéri
Assistant lecturer: Dr. Mária Budai, Dr. Beáta Szádeczky, Dr. Gergely Balaton,
Dr. Adrienn Barta, Dr. Attila Soós, Dr. Kinga Deseő

Department of Conservative Dentistry
1088 Budapest, VIII. Szentkirályi u. 47.

Head of the Department: Prof. Dr. Ida Nyárasdy D. M. D., Ph.D.
Full professor: Prof. Dr. Árpád Fazekas Ph.D.
Associate professor: Dr. Károly Bartha, Dr. Mária Albrecht,
Dr. Adrienne Györgyi, Dr. Zsuzsanna Tóth
Assistant professor: Dr. Máta Bernath, Dr. Júlia Nemes (tutor),
Dr. János Vág
Assistant lecturer: Dr. Anna Herczegh, Dr. Zsuzsanna Csillai,
Dr. Mária Csillai, Dr. Ágnes Grigári, Dr. Ádám Gombos,
Dr. Milán Gyurkovics, Dr. Eszter Veszprémi
Semmelweis University

Department of Oral Biology
1089 Budapest, VIII. Nagyvárad tér 4.
☎: 210-4415

Head of the Department: Prof. Dr. Gábor Varga Ph.D., D.Sc.
Full professor: Prof. Dr. György Simon
Professor emeritus: Prof. Dr. Jolán Bánóczy, Prof. Dr. Tivadar Zelles
Associate professor: Dr. József Blazsek
Assistant professor: Dr. Kristóf Kádár (tutor – 1st semester),
Dr. Beáta Kerémi (tutor – 2nd semester)

Section of Oral Diagnostics
1088 Budapest, VIII. Szentkirályi u. 47.
☎: 459-1500/59161, 317-1044, fax: 459-1500/59165
Email: oral@fok.usn.hu

Head of the Department: Prof. Dr. Gábor Nagy D. M. D., Ph.D.

Department of Oral and Maxillofacial Surgery and Dentistry
1085 Budapest, VIII. Mária u. 52.
☎: 266-0457

Head of the Department: Prof. Dr. József Barabás D. M. D., D.Sc.
Full professor: Prof. Dr. Tamás Divinyi, Prof. Dr. Zsuzsanna Suba
Professor emeritus: Prof. Dr. György Szabó
Associate professor: Dr. Zsolt Németh (tutor for Medicine), Dr. Árpád Joób Fancsaly
Assistant professor: Dr. Judit Janosdi, Dr. Gábor B. Simon, Dr. Katalin Martonify,
Dr. Emese Fulop, Dr. Levente Pataky, Dr. Attila Fodor,
Dr. Attila Szücs (tutor for Dentistry), Dr. Tamás Vízkelety,
Dr. Szabolcs Gyulai-Gaál, Dr. Márta Ujpál,
Assistant lecturer: Dr. Sándor Bogdán, Dr. Norbert Velich, Dr. Tamás Huszár

Department of Periodontology
1085 Budapest, VIII. Szentkirályi u. 47.
☎: 318-0011

Head of the Department: Prof. Dr. István Gera D. M. D., D.Sc.
Associate professor: Dr. Péter Windisch, Dr. György Kövesi, Dr. Erika Benedek,
Dr. Ferenc Dóri
Assistant professor: Dr. Tibor Keglevich
Faculty of Pharmacy
University Pharmacy, Department of Pharmacy Administration

1082 Budapest, IX. Hőgyes Endre u. 9.
☎: 476-3600

Head of the Department: Prof. Dr. Romána Zelkó D.Sc.
Full professor: Prof. Dr. Zoltán Vincze Ph.D.
Professor emeritus: Prof. Dr. Károly Zalai
Associate professor: Dr. Lajos Gergő
Assistant professor: Dr. Mária Nikolics, Dr. Andrea Meskó (tutor),
Dr. Judit Balogh, Dr. Ágnes Mészáros (tutor)
Assistant lecturer: Dr. Mónika Hantos, Dr. Balázs Hankó

Institute of Pharmacognosy

☎: 266-0120, 317-2979

Head of the Department: Dr. Anna Blázovics Ph.D., D. Sc.
Full professor: Prof. Dr. Éva Szőke, Prof. Dr. Éva Lemberkovics
Professor honorary: Prof. Dr. Ágnes Kéry
Associate professor: Dr. László Kursinszki
Assistant professor: Dr. Andrea Balázs (tutor)

Department of Pharmaceutics

1092 Budapest, IX. Hőgyes Endre u. 7.
☎: 476-3600, (v/c: 217-0914

Head of the Department: Prof. Dr. Imre Klebovich D. Sc.
Full professor: Prof. Dr. Sylvia Marton (tutor of the 5th year),
Prof. Dr. Miklós Zrínyi
Associate professor: Dr. István Antal (tutor of the 4th year), Dr. Judit Dredán,
Dr. Krisztina Ludányi
Assistant professor: Dr. Mária Hajdu (tutor of the 3rd year),
Dr. Marianna Budai, Dr. Emese Bertalan-Balogh
Assistant lecturer: Dr. Katalin Pápai, Dr. Miléna Lengyel, Dr. Nikolett Kállai

Institute of Pharmaceutical Chemistry

1092 Budapest, IX. Hőgyes Endre u. 7.
☎: 217-0891

Head of the Department: Prof. Dr. Béla Noszál D. Sc.
Full professor: Prof. Dr. Krisztina Takács-Novák (tutor)
Associate professor: Dr. András Gergely,
Dr. Péter Horváth (tutor), Dr. László Őrő
Assistant professor: Dr. Károly Mazák, Dr. Márta Mazák-Krasznai, Ákos Rácz
Department of Pharmacodynamics

1089 Budapest, VIII. Nagyvárad tér 4.
Tel: 210-2930

Head of the Department: Prof. Dr. György Bagdy D. Sc.
Full professor: Prof. Dr. Tamás Török, Prof. Dr. Kornélia Tekes (course director, tutor), Dr. Éva Szőkö (course director)
Professor emeritus: Prof. Dr. Kálmán Magyar (member of the Academy)
Associate professor: Dr. László Tóthfalusi (tutor)
Assistant lecturer: Dr. Tamás Tábi, Dr. Melinda Pálfi (tutor)

Department of Organic Chemistry

1092 Budapest, IX. Hőgyes Endre u. 7.
Tel: 476-3600

Head of the Department: Prof. Dr. Péter Mátyus Ph. D.
Professor emeritus: Prof. Dr. László Szabo
Assistant professor: Dr. Péter Tétényi (tutor), Dr. Pál Tapolcsányi
Assistant lecturer: Olivér Elías

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

1082 Budapest, VIII. Ullói út 78/b.
Tel: 210-0328

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

Centre of Physical Education and Sport Sciences

Tel: 215-9337, 262-5529, 264-1408, 262-5529

Director and tutor: Dr. Kálmán Kiss

Sport establishments:
Sports Ground and Gymnastic Hall
Phone/fax: 262-5529, 264-1408
Népliget Tennis-court
Budapest, X. Vajda Péter u. 38.
Tel: 262-9570
Fencing Hall
Budapest, V. Semmelweis u. 2.
Tel: 267-0377
National Ambulance Service

1134 Budapest, XIII. Róbert Károly krt. 77.
☎ 350-3737, 350-0388

Director-General: Dr. Gábor Göbl M. D.
Dr. László Gorove (tutor), Dr. Erzsébet Márton (tutor),
Dr. Imre Engelbrecht (tutor)

Department of Foreign Languages – Faculty of Health Sciences

1088 Budapest, VIII. Vas u. 17.
☎ 486-4890; 486-4895

Head of the Department: Assoc. Prof. Margit Orbán

Central Library

1085 Budapest, VIII. Mikszáth Kálmán tér 5.
☎ 317-5030

General Director: Dr. Lívia Vasas PhD.
Senior Lecturer: Dr. József Geges PhD.
Science secretary: Éva Juhász
Head of the computer-system: Péter Szluka

Information on language courses

For students starting their studies in the academic year 2010/2011 Hungarian is a compulsory subject. Students of Medicine and Pharmacy study Hungarian (Hungarian Medical Terminology) for 5 semesters, whereas for students of Dentistry the subject is compulsory for 6 semesters (Hungarian Medical terminology in semesters 1-4 and Hungarian Dental Terminology in semesters 5-6).

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 the 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. The final exam is a prerequisite for starting the fourth year.

The system described above is also valid for students who are in their second year in the academic year 2010/11.

For students in their 3rd year in the academic year 2010/11 the previous system is in effect. For students of Medicine and Pharmacy, Hungarian (Hungarian Medical terminology) is an elective subject in semester 5, with 4 classes per week and 2 credits per semester. In semester 6 the subject 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. The final exam is a prerequisite for starting the fourth year.
For Dentistry students, Hungarian (Hungarian Dental Terminology) is compulsory in semesters 5-6 with a practical course grade and 2 credits at the end of semester 5. At the end of semester 6 students are required to take the final exam and will be granted 2 credits for successfully completing the exam. The final exam is a prerequisite for starting the fourth year.

Medical terminology is compulsory in the first semester of the first year with 2 lessons per week and 2 credits for the semester.

ATTENTION TO ALL STUDENTS

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

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

#### STUDY PROGRAMME

**First year**

<table>
<thead>
<tr>
<th><strong>Compulsory Subjects</strong></th>
<th><strong>Lectures</strong></th>
<th><strong>Practicals</strong></th>
<th><strong>Credit Points</strong></th>
<th><strong>Examination</strong></th>
<th><strong>Prerequisite</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Chemistry</td>
<td>3,00</td>
<td>3,50</td>
<td>6</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>Anatomy, Cell, Histology and Embryology I.</td>
<td>3,00</td>
<td>6,00</td>
<td>9</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>Basics of Biostatistics</td>
<td>1,50</td>
<td>2,00</td>
<td>3</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>Medical Sociology</td>
<td>0,66</td>
<td>1,33</td>
<td>2</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>First Aid</td>
<td>1,00</td>
<td>–</td>
<td>0</td>
<td>signature</td>
<td>–</td>
</tr>
<tr>
<td>Physical Education I.</td>
<td>–</td>
<td>1,00</td>
<td>0</td>
<td>signature</td>
<td>–</td>
</tr>
<tr>
<td>Hungarian Medical Terminology I.</td>
<td>–</td>
<td>4,00</td>
<td>4</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Medical Terminology (Latin)</td>
<td>–</td>
<td>2,00</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
</tbody>
</table>

**Total Number of Credit Points from Obligatory Subjects** 26

**Obligatory elective subjects**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lectures</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of Medicine</td>
<td>2</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Information Retrieval</td>
<td>2</td>
<td>3</td>
<td>pract. mark</td>
<td>–</td>
</tr>
</tbody>
</table>

**Elective Subjects**

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

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

#### 2nd semester

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

#### Obligatory elective subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Medical Informatics</td>
<td>–</td>
<td>1</td>
<td>1</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Medical Profession</td>
<td>0.67</td>
<td>1.33</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>History of Medical Professionalism</td>
<td>2.5</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>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>Work within the union of * research students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

### Second Year

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

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

<table>
<thead>
<tr>
<th>Obligatory elective subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Clinical Medicine</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Profession</td>
</tr>
</tbody>
</table>

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

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

Second Year

<table>
<thead>
<tr>
<th>4th semester</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy, Cell, Histology and Embryology IV.</td>
<td>1.00</td>
<td>2.00</td>
<td>3</td>
<td>final</td>
<td>Anatomy, Cell, Histology and Embryology III. Physiology I.</td>
</tr>
<tr>
<td>Physiology II.</td>
<td>6.00</td>
<td>5.00</td>
<td>11</td>
<td>final</td>
<td>Anatomy, Cell, Histology and Embryology III. Physiology I.</td>
</tr>
<tr>
<td>Biochemistry, Molecular and Cell Biology III.</td>
<td>3.00</td>
<td>3.00</td>
<td>6</td>
<td>final</td>
<td>Biochemistry, Molecular and Cell Biology II.</td>
</tr>
<tr>
<td>Internal medicine - propedeutics I.</td>
<td>1.00</td>
<td>2.00</td>
<td>3</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology III. Physiology I. Medical Communication</td>
</tr>
<tr>
<td>Hungarian Medical Terminology IV.</td>
<td>–</td>
<td>1.00</td>
<td>–</td>
<td>signature</td>
<td>–</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Obligatory elective subject</th>
</tr>
</thead>
</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
OBLIGATORY ELECTIVE AND ELECTIVE SUBJECTS – SCHEDULE OF THE BASIC AND PRE-CLINICAL MODULES

OBLIGATORY ELECTIVE SUBJECTS

<table>
<thead>
<tr>
<th>1st semester</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>History of Medicine</td>
<td>2 – 2 pract. mark –</td>
<td>2</td>
<td></td>
<td>pract. mark</td>
<td>–</td>
<td>exclusively from the 2nd year</td>
</tr>
<tr>
<td>Developmental Biology I.</td>
<td>2 – 2 pract. mark –</td>
<td>2</td>
<td>3</td>
<td>pract. mark</td>
<td>–</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2nd semester</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>History of Medicine</td>
<td>2 – 2 pract. mark –</td>
<td>2</td>
<td></td>
<td>pract. mark</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Anatomy of Diagnostic Imaging</td>
<td>2 – 2 pract. mark –</td>
<td>2</td>
<td></td>
<td>pract. mark</td>
<td>–</td>
<td></td>
</tr>
</tbody>
</table>
## ELECTIVE SUBJECTS

### 1st semester

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem based medical physiology</td>
<td>2.5</td>
<td>–</td>
<td>4</td>
<td>pract. mark</td>
<td>Medical Physiology II. with a grade of 4 (good) or 5 (excellent)</td>
</tr>
<tr>
<td>Traditional Chinese Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>For 3rd, 4th &amp; 5th year students only</td>
</tr>
<tr>
<td>Basic Cell Biology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Work within the union of research students (TDK munka)</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>pract. mark</td>
<td>at least a grade of 4 (good) in the relevant, completed subject</td>
</tr>
<tr>
<td>Bases of Medical Physics</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Jewish Medical Ethics I.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>History of Medical Professionalism</td>
<td>2.5</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Basics of Medical Chemistry</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>pract. mark</td>
<td>–</td>
</tr>
</tbody>
</table>

### 2nd semester

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

### STUDY PROGRAMME

#### Third Year

<table>
<thead>
<tr>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Pricals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operative Surgery</td>
<td>1.00</td>
<td>1.50</td>
<td>2</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV.</td>
</tr>
<tr>
<td>Pathophysiology and Clinical Lab. Diagnostics</td>
<td>1.50</td>
<td>3.00</td>
<td>5</td>
<td>semi-final</td>
<td>Physiology II. Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>Microbiology I.</td>
<td>2.00</td>
<td>2.00</td>
<td>4</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV.</td>
</tr>
<tr>
<td>Pathology I.</td>
<td>3.00</td>
<td>4.00</td>
<td>7</td>
<td>semi-final</td>
<td>Physiology II. Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>Basic Immunology</td>
<td>2.00</td>
<td>2.00</td>
<td>4</td>
<td>semi-final</td>
<td>Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>Internal medicine - propedeutics II.</td>
<td>1.00</td>
<td>3.00</td>
<td>4</td>
<td>semi-final</td>
<td>Internal medicine - propedeutics I.</td>
</tr>
<tr>
<td>Disaster Protection &amp; Civil Defence</td>
<td></td>
<td></td>
<td></td>
<td>Signature</td>
<td></td>
</tr>
</tbody>
</table>

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

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

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

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

**Total Number of Credit Points from Obligatory elective / Elective subjects:** 4
<table>
<thead>
<tr>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology and Pharmacotherapy I.</td>
<td>2.50</td>
<td>2.50</td>
<td>5</td>
<td>semi-final</td>
<td>Pharmacology II, Biochemistry, Molecular and Cell Biology II,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pathophysiology and Clinical Lab, Diagnostics II.</td>
</tr>
<tr>
<td>Public Health (I.)</td>
<td>1.00</td>
<td>2.50</td>
<td>4</td>
<td>semi-final</td>
<td>Pathology II, Pathophysiology and Clinical Lab, Diagnostics II, Microbiology II.</td>
</tr>
<tr>
<td>Internal Medicine II. (nephrology, immunology, rheumatology)</td>
<td>1.50</td>
<td>3.00</td>
<td>4</td>
<td>semi-final</td>
<td>Internal Medicine I. Pathology II, Pathophysiology and Clinical Lab, Diagnostics II.</td>
</tr>
<tr>
<td>Medical Imaging</td>
<td>1.00</td>
<td>1.00</td>
<td>2</td>
<td>semi-final</td>
<td>Medical Biophysics, Anatomy, Cell, Histology and Embryology IV.</td>
</tr>
<tr>
<td>Surgery I.</td>
<td>2.00</td>
<td>1.50</td>
<td>3</td>
<td>semi-final</td>
<td>Pathology II, Operative Surgery Pathophysiology and Clinical Lab, Diagnostics II.</td>
</tr>
<tr>
<td>Otorhinolaryngology</td>
<td>1.00</td>
<td>2.00</td>
<td>3</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV, Operative Surgery Surgery I.</td>
</tr>
<tr>
<td>Dermatology</td>
<td>1.50</td>
<td>2.50</td>
<td>4</td>
<td>semi-final</td>
<td>Pathophysiology and Clinical Lab, Diagnostics II, Internal Medicine I, Pharmacology and Pharmacotherapy I.</td>
</tr>
<tr>
<td>Oral Surgery and Dentistry</td>
<td>1.00</td>
<td>1.00</td>
<td>2</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV, Operative Surgery Surgery I.</td>
</tr>
<tr>
<td>Bioethics - Medical Ethics</td>
<td>1.00</td>
<td>1.00</td>
<td>2</td>
<td>semi-final</td>
<td>Medical Sociology Medical Communication</td>
</tr>
<tr>
<td>Behavioural Science</td>
<td>final#</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disaster Protection &amp; Civil Defence III.</td>
<td>signature</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Number of Credit Points from Compulsory Subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>29</strong></td>
</tr>
</tbody>
</table>

**Obligatory elective / Elective subjects**

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

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

#### 8th semester

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

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

**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
<table>
<thead>
<tr>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Pricals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Medicine IV. (gastroenterology, oncology)</td>
<td>1.50</td>
<td>3.00</td>
<td>4</td>
<td>semi-final</td>
<td>Internal Medicine III, Pharmacology and Radiology</td>
</tr>
<tr>
<td>Surgery III.</td>
<td>1.00</td>
<td>1.00</td>
<td>2</td>
<td>semi-final</td>
<td>Surgery II, Surgery practice (in summer)</td>
</tr>
<tr>
<td>Obstetrics and Gynecology I.</td>
<td>2.00</td>
<td>1 week internship</td>
<td>4</td>
<td>pract. mark</td>
<td>Pathology II, Pathophysiology and Clinical Lab, Diagnostics II.</td>
</tr>
<tr>
<td>Paediatrics I.</td>
<td>2.00</td>
<td>3.00</td>
<td>5</td>
<td>semi-final</td>
<td>Pathology II, Pharmacology and Pharmacotherapy II, Internal Medicine III.</td>
</tr>
<tr>
<td>Neurology I.</td>
<td>2.00</td>
<td>1.50</td>
<td>3</td>
<td>pract. mark</td>
<td>Anatomy, Cell, Histology and Embryology IV, Pathology II, Internal Medicine III.</td>
</tr>
<tr>
<td>Psychiatry I.</td>
<td>1.50</td>
<td>2.00</td>
<td>3</td>
<td>semi-final</td>
<td>Pharmacology and Pharmacotherapy II, Neurology I.</td>
</tr>
<tr>
<td>Health Law, Accident Insurance</td>
<td>1.00</td>
<td>1.50</td>
<td>2</td>
<td>pract. mark</td>
<td>General Public Health II.</td>
</tr>
<tr>
<td>Emergency Medicine - Oxylogy</td>
<td>1.50</td>
<td>1</td>
<td>semi-final</td>
<td>Internal Medicine III, Surgery II.</td>
<td></td>
</tr>
<tr>
<td>Urology</td>
<td>1.00</td>
<td>2.00</td>
<td>3</td>
<td>semi-final</td>
<td>Surgery II, Radiology</td>
</tr>
<tr>
<td>Basics of Family Medicine</td>
<td>1.00</td>
<td>1.00</td>
<td>semi-final</td>
<td>Internal Medicine III, General Public Health II,</td>
<td></td>
</tr>
<tr>
<td>Anaesthesiology and Intensive Therapy</td>
<td>1.50</td>
<td>1.00</td>
<td>2</td>
<td>semi-final</td>
<td>Surgery II.</td>
</tr>
</tbody>
</table>

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

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

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

#### 10th semester

<table>
<thead>
<tr>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Medicine IV. (haematology, infectology)</td>
<td>2,00</td>
<td>3,00</td>
<td>5</td>
<td>semi-final</td>
<td>Internal Medicine IV. Neurology II. Forensic Medicine</td>
</tr>
<tr>
<td>Traumatology</td>
<td>1,00</td>
<td>2,00</td>
<td>3</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV. Radiology Surgery II.</td>
</tr>
<tr>
<td>Obstetrics and Gynecology II.</td>
<td>2,00</td>
<td>2</td>
<td>2</td>
<td>semi-final</td>
<td>Obstetrics I.</td>
</tr>
<tr>
<td>Neurology II.</td>
<td>2,00</td>
<td>1,50</td>
<td>4</td>
<td>semi-final</td>
<td>Neurology I.</td>
</tr>
<tr>
<td>Psychiatry II.</td>
<td>1,50</td>
<td>2,00</td>
<td>4</td>
<td>pract. mark</td>
<td>Psychiatry I.</td>
</tr>
<tr>
<td>Forensic Medicine</td>
<td>1,00</td>
<td>2,00</td>
<td>3</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV. Genetics and genomics Pathology II.</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>2,00</td>
<td>2,00</td>
<td>4</td>
<td>semi-final</td>
<td>Anatomy, Cell, Histology and Embryology IV. Internal Medicine III. Surgery II.</td>
</tr>
<tr>
<td><strong>Total Number of Credit Points from Compulsory Subjects:</strong></td>
<td></td>
<td></td>
<td><strong>31</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

## Obligatory Elective Subjects

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

## Elective Subjects

### 1st semester

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

First year

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKFIZ005_1A</td>
<td>Bases of Biostatistics and Informatics</td>
<td>1,5</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>AOKBI001_1A</td>
<td>Medical Chemistry</td>
<td>3</td>
<td>3.5</td>
<td>6</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>AOKAM003_1A</td>
<td>Anatomy, Histology, Embryology I.</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>AOKLEK228_1A</td>
<td>Hungarian Medical Terminology I.</td>
<td>–</td>
<td>4</td>
<td>4</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOKTS002_1A</td>
<td>Medical Terminology (Latin)</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
</tbody>
</table>

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>AOVGEN083_1A</td>
<td>Basic Cell Biology</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>pract. mark</td>
<td>(Detailed curriculum in the 3rd year)</td>
</tr>
<tr>
<td>AOVKOZ084_1A</td>
<td>History of Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVKIK088_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>

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>AOSN3246_1A</td>
<td>History of Medical Professionalism</td>
<td>2,5</td>
<td>–</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOVFZO90_1A</td>
<td>Bases of Medical Physics</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>pract. mark</td>
<td>Only for first year</td>
</tr>
<tr>
<td>AODVM093_1A</td>
<td>Basics of Medical Chemistry</td>
<td>2</td>
<td>–</td>
<td>3</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></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.
## STUDY PROGRAMME

### First year

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKFIZ012_1A</td>
<td>Medical Biophysics</td>
<td>2,5</td>
<td>3</td>
<td>6</td>
<td>semi-final</td>
<td>Bases of Biostatistics and Informatics</td>
</tr>
<tr>
<td>AOKOBIO10_1A</td>
<td>Medical Biochemistry, Molecular and Cell Biology I.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>semi-final</td>
<td>Medical Chemistry I.</td>
</tr>
<tr>
<td>AOKANT003_2A</td>
<td>Anatomy, Histology, Embryology II.</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>semi-final</td>
<td>Anatomy, Histology, Embryology I.</td>
</tr>
<tr>
<td>AOKOMS218_1A</td>
<td>First Aid</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>signature</td>
<td>–</td>
</tr>
<tr>
<td>AOKIFK228_2A</td>
<td>Hungarian Medical Terminology II.</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology I.</td>
</tr>
<tr>
<td>AOKTSI019_2A</td>
<td>Physical Education II.</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>signature</td>
<td>–</td>
</tr>
<tr>
<td>AOKNSG014_1A</td>
<td>Summer Nursing Practice</td>
<td></td>
<td></td>
<td></td>
<td>signature</td>
<td>–</td>
</tr>
<tr>
<td>AOMAGSZ0_1A</td>
<td>Medical Sociology</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>(detailed curriculum in the 2nd year)</td>
</tr>
</tbody>
</table>

**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>AOKMAGO07_1A</td>
<td>Medical Communication ***</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>Medical Profession</td>
</tr>
<tr>
<td>AOVINF244_1A</td>
<td>Introduction to Medical Informatics ***</td>
<td>–</td>
<td>1</td>
<td>1</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVCSA248_1A</td>
<td>Medical Profession ***</td>
<td>0.67</td>
<td>1.33</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Communication</td>
</tr>
<tr>
<td>AOVGEN247_1A</td>
<td>Basic Genetics</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>pract. mark</td>
<td>(detailed curriculum in the 3rd year)</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>AOSNEI246_1A</td>
<td>History of Medical Professionalism</td>
<td>2.5</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOSMAG139_2A</td>
<td>Jewish Medical Ethics II.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVTDK158E1A</td>
<td>Work within the union of ** research students</td>
<td></td>
<td></td>
<td></td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

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

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

**The two subjects must be taken at the same time.**

---

**Faculty of Medicine**
**BASIC MODULE**

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

### 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>AGENBIO_1A</td>
<td>Medical Biology I.</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
<td>–</td>
</tr>
</tbody>
</table>

### 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>
</tr>
<tr>
<td>AGENBIO_2A</td>
<td>Medical Biology II.</td>
<td>1,5</td>
<td>2</td>
<td>3</td>
<td>semi-final #</td>
<td>Medical Biology I.</td>
</tr>
<tr>
<td>AGENIMM_1A</td>
<td>Basic Immunology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>semi-final</td>
<td>Medical Biology I.</td>
</tr>
</tbody>
</table>

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

10. Tóth: Concise Inorganic Chemistry for Medical Students. 8p. SOTE
11. Laboratory Manual I-II. (Bp.)
13. Hrabák: Selected Collection of Chemical calculations. (Bp.) SOTE.
14. 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
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>Microscope. Simple epithelia I.</td>
</tr>
<tr>
<td>2.</td>
<td>General osteology.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>General syndesmology and myology</td>
<td>Bones of the upper limb.</td>
</tr>
<tr>
<td>5.</td>
<td>Characterization and classification of the epithelial tissue. Membrane specialization of epithelial cells.</td>
<td>Simple epithelia II.</td>
</tr>
<tr>
<td>8.</td>
<td>Connective tissue, connective tissue cells and ground substance.</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Connective tissue fibers.</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Classification of connective tissue. Adipose, chordoid tissue.</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Morula, blastula, implantation.</td>
<td></td>
</tr>
<tr>
<td>LECTURE</td>
<td>LAB</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td><strong>13.</strong> Molecules of adhesion.</td>
<td>Muscles on the ventral and dorsal surface of the upper limb. Cross sections of the upper limb. (except for vessels and nerves).</td>
<td></td>
</tr>
<tr>
<td><strong>14.</strong> Cartilage.</td>
<td>Connective tissue I.</td>
<td></td>
</tr>
<tr>
<td><strong>15.</strong> Molecular bases of gastrulation. Homeobox genes.</td>
<td>Connective tissue II.</td>
<td></td>
</tr>
<tr>
<td><strong>16.</strong> Bone tissue.</td>
<td>MID-TERM TEST.</td>
<td></td>
</tr>
<tr>
<td><strong>17.</strong> Ossification, bone growth.</td>
<td>Bones of the trunk and lower limb.</td>
<td></td>
</tr>
<tr>
<td><strong>18.</strong> Axes of the body, right-left asymmetry.</td>
<td>Cartilage, bone tissue.</td>
<td></td>
</tr>
<tr>
<td><strong>19.</strong> Muscle tissue, smooth muscle, cardiac muscle, conducting system.</td>
<td>Joints of the trunk and lower limb.</td>
<td></td>
</tr>
<tr>
<td><strong>20.</strong> Striated muscle.</td>
<td>Muscles of the back and the dorsal surface of the lower limb.</td>
<td></td>
</tr>
<tr>
<td><strong>21.</strong> Formation of the placenta. Fetal membranes.</td>
<td>Ossification.</td>
<td></td>
</tr>
<tr>
<td><strong>22.</strong> Vertebral column, axial musculature of the trunk.</td>
<td>Muscles on the dorsal surface of the trunk and lower limb.</td>
<td></td>
</tr>
<tr>
<td><strong>23.</strong> Diaphragm.</td>
<td>Demonstration of the diaphragm.</td>
<td></td>
</tr>
<tr>
<td><strong>24.</strong> Germinai layers, Neurulation.</td>
<td>Muscle tissue.</td>
<td></td>
</tr>
<tr>
<td><strong>25.</strong> Histology of blood vessels.</td>
<td>Muscles on the dorsal surface of the trunk and the lower limb.</td>
<td></td>
</tr>
<tr>
<td><strong>26.</strong> Blood, blood cells.</td>
<td>Demonstration of the diaphragm.</td>
<td></td>
</tr>
<tr>
<td><strong>27.</strong> Formation of primary tissues.</td>
<td>Blood smear, bone marrow.</td>
<td></td>
</tr>
<tr>
<td><strong>28.</strong> Bone marrow, hemopoiesis.</td>
<td>Muscles on the ventral surface of the lower limb.</td>
<td></td>
</tr>
<tr>
<td><strong>29.</strong> Granuloipoiesis.</td>
<td>Review.</td>
<td></td>
</tr>
<tr>
<td><strong>31.</strong> Pelvic diaphragm.</td>
<td>Muscles on the ventral surface of the lower limb. Muscles on the ventral surface of the trunk.</td>
<td></td>
</tr>
<tr>
<td><strong>32.</strong> Thoracic cavity, Respiratoric movements.</td>
<td>Demonstration of the pelvic diaphragm.</td>
<td></td>
</tr>
<tr>
<td><strong>33.</strong> Development of the limbs and muscles.</td>
<td>Review.</td>
<td></td>
</tr>
<tr>
<td><strong>34.</strong> Lymphatic tissue, Thymus, Mucosal lymphatic tissue, tonsils.</td>
<td>Muscles on the dorsal surface of the trunk and lower limb. Cross sections of the lower limb. (except for vessels and nerves).</td>
<td></td>
</tr>
<tr>
<td><strong>35. MID-TERM TEST.</strong></td>
<td>Bones of the skull. Base of the skull. Cranial fossae.</td>
<td></td>
</tr>
<tr>
<td><strong>36.</strong> Development of the vertebral column and the trunk.</td>
<td>Tonsils, thymus.</td>
<td></td>
</tr>
<tr>
<td><strong>37.</strong> Histology and circulation of the spleen and the lymph nodes.</td>
<td>Facial skeleton, orbit, nasal cavity, pterygoalaline fossa.</td>
<td></td>
</tr>
<tr>
<td><strong>38.</strong> Abdominal wall, inguinal canal.</td>
<td>Lymph node, spleen.</td>
<td></td>
</tr>
<tr>
<td><strong>39.</strong> Anatomy and development of the skull.</td>
<td>Review.</td>
<td></td>
</tr>
<tr>
<td><strong>40.</strong> Subinguinal hiatus, hemial canals.</td>
<td>Joints and muscles of the head.</td>
<td></td>
</tr>
<tr>
<td><strong>41.</strong> Pelvis,Statics of the pelvis, Mechanism of walking.</td>
<td>Review.</td>
<td></td>
</tr>
</tbody>
</table>
Second Semester

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


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>Topic</th>
<th>LECTURE</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Development of the face.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Trachea, lung, pleura, branchial apparatus, branchial pouches and derivatives, development of the lung.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Histology of the respiratory tract and lung.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Cardiac wall, anulus fibrosus, cardiac valves.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Conducting system, innervation and blood supply of the heart.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Pericardium, surface projection of the heart.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Development of great veins. Early development of the heart.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LECTURE</td>
<td>LAB</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td><strong>Topic</strong></td>
<td><strong>Anatomy</strong></td>
<td><strong>Histology</strong></td>
</tr>
<tr>
<td>17. Histology of the stomach.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Development of the heart, partitioning of cardiac chambers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Large intestine and rectum - gross anatomy and histology.</td>
<td>Review.</td>
<td></td>
</tr>
<tr>
<td>23. Histology of the liver.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Fetal circulation, perinatal changes in circulation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Division of the embryonic body cavity. Septum transversum.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. Histology of the testis and the epididymis.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. Development of the digestive tract, development of the foregut, hindgut, the liver and the pancreas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32. Female reproductive tract - overview, histology of the ovary.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. Development of the peritoneum.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34. Uterus - parts, topography, blood supply.</td>
<td>Retroperitoneum.</td>
<td>Review.</td>
</tr>
<tr>
<td>35. Histology of the uterus, uterine cycle.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36. Pronephros, mesonephros, and metanephros.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic</td>
<td>Anatomy</td>
<td>Histology</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>38. Lymphatic drainage of the abdomen and pelvis.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MID-TERM TEST.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41. Clinical anatomy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42. Migration of germ cells, sex determination, development of the gonads.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44. Congenital anomalies of the reproductive system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45. Pregnancy, delivery.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### First Semester

**Lectures:** 3 hours per week  
**Laboratory:** 6 hours per week, 4 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 place of anatomy, histology and embryology in the medical curriculum, their nomenclature</td>
<td>Bones of the shoulder girdle and the upper extremity.</td>
<td>Behaviour in the dissecting room, Bones and joints of the upper extremity.</td>
</tr>
<tr>
<td>2. Structure of the limbs (bone skeleton, joints, muscles, groups of muscles, fasciae, fascial compartments, arteries, superficial and deep veins, nerves, innervation of the muscles and the skin</td>
<td>Rules of the dissection and prevention of accidents.</td>
<td>Preparation of the histological specimens.</td>
</tr>
<tr>
<td>4. Stratified epithelia</td>
<td>Dissection of the joints of the upper extremity.</td>
<td>SIMPLE EPITHELIA: Simple squamous (mesothel, pleura); simple cuboidal (kidney); simple columnar (gallbladder); pseudostratified (trachea)</td>
</tr>
<tr>
<td>5. Types and composition of joints (general arthrology)</td>
<td>Dissecting of the upper extremity: removal of the skin, fascia brachii and antebrachii</td>
<td>STRATIFIED EPITHELIA: squamous, non-ceratinizing (esophagus); squamous ceratinizing (skin); columnar (male urethra); transitional epithelium (urinary bladder)</td>
</tr>
<tr>
<td>6. Features of the skeletal musculature (general myology)</td>
<td>Muscles of the shoulder region, flexor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles.</td>
<td>Glandular epithelium (prostate); glandular epithelium (salivary gland); glandular epithelium (male urethra)</td>
</tr>
<tr>
<td>7. Shoulder joint and the muscles acting upon it</td>
<td>Palmar aponeurosis.</td>
<td>PIGMENT EPITHEL (retina)</td>
</tr>
<tr>
<td>8. Bones and joints of the hand</td>
<td>Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles.</td>
<td>Collagen fibers (tendon); elastic fibers (vessel wall); reticular fibers (liver); differential staining of the fibers (skin); ground substance (umbilical cord)</td>
</tr>
<tr>
<td>9. Glandular epithelium</td>
<td>Muscles, vessels and nerves</td>
<td>CONNECTIVE TISSUE, CELLS. Various types of cells (scar tissue); mast cells peri- (oneum); fat cells (tongue, skin). CONNECTIVE TISSUE, TYPES. Mesenchyme umbilical cord; dense connective tissue (tendon); reticular tissue (lymph node); cell rich tissue (uterus).</td>
</tr>
<tr>
<td>10. Muscles of the hand</td>
<td>TEST. Upper extremity</td>
<td></td>
</tr>
<tr>
<td>11. Connective tissue, cells</td>
<td>Vertebræ, ribs, sternum</td>
<td></td>
</tr>
<tr>
<td>12. Connective tissue: fibers; types of the connective tissue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Blood, hematopoiesis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Supporting tissue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Bone formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Vertebræ, sacrum, vertebral column</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Superficial and deep muscles of the back</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Thorax, pectoral and intercostal muscles</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ANATOMY, HISTOLOGY AND EMBRYOLOGY**  
Department of Anatomy, Histology & Embryology  
Tutor: Dr. Andrea Székely
<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. Hyaline cartilage (rib); fibrous cartilage (meniscus); elastic cartilage (epiglottis).</td>
</tr>
<tr>
<td>21. Diaphragm</td>
<td></td>
<td>BONE, BONE FORMATION.</td>
</tr>
<tr>
<td>22. Gametogenesis, fertilization</td>
<td>Bones of the lower extremity.</td>
<td>Bone, cross and longitudinal sections.</td>
</tr>
<tr>
<td>24. Development and differentiation of</td>
<td>Fascia lata, fascia cruris, plantar aponeurosis</td>
<td>REVIEW</td>
</tr>
<tr>
<td>25. Hip joint and the muscles acting upon it</td>
<td>Knee joint, joints of the foot.</td>
<td></td>
</tr>
<tr>
<td>26. Knee joint and the muscles acting upon it</td>
<td>Flexor muscles of the thigh and calf, muscles of the sole.</td>
<td>TEST. Epithelial, connective and calf. Peroneal muscles.</td>
</tr>
<tr>
<td>27. Foot</td>
<td></td>
<td>and supporting tissues.</td>
</tr>
<tr>
<td>28. Neurulation. Folding of the embryo. Fetal membranes</td>
<td>Extensor muscles of the thigh</td>
<td></td>
</tr>
<tr>
<td>29. Early embryonic and placental circulation. Structure of the placenta</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The motor system</td>
<td></td>
</tr>
<tr>
<td>31. Muscle tissue I.</td>
<td>Completion of the dissection</td>
<td>PLACENTA.</td>
</tr>
<tr>
<td>32. Muscle tissue II.</td>
<td></td>
<td>UMBILICAL CORD</td>
</tr>
<tr>
<td>33. Herniae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34. Neuronal tissue: neurons and supporting cells derived from the neural tube</td>
<td>TEST. Trunk, lower extremity.</td>
<td>MUSCLE TISSUE. Smooth muscles (gut); striated muscle (skeletal muscle); cardiac muscle (heart)</td>
</tr>
<tr>
<td>35. Neuronal tissue: neurons and supporting cells derived from the neural crest</td>
<td>Skull</td>
<td></td>
</tr>
<tr>
<td>36. Neuronal tissue: synapses, effectors, receptors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37. Sphenoid and ethmoid bones</td>
<td>Skull</td>
<td>NEURAL TISSUE. CELLS,</td>
</tr>
<tr>
<td>38. Temporal bone</td>
<td></td>
<td>Multipolar neurons (spinal cord, autonomous ganglion, cerebral cortex, cerebellar cortex); pseudounipolar neurons (spinal ganglion)</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 and infratemporal fossae</td>
<td></td>
<td>GLIAL CELLS.</td>
</tr>
<tr>
<td>42. Oral cavity, pterygopalatine and infratemporal fossae</td>
<td>Skull</td>
<td>Peripheral nerve, glial cells (spinal cord, cerebral cortex)</td>
</tr>
<tr>
<td>43. Mandible, temporomandibular joint</td>
<td></td>
<td>EFFECTORS, RECEPTORS,</td>
</tr>
<tr>
<td>44. Atlantooccipital and atlantoaxial joints. Suboccipital muscles</td>
<td>Skull</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>
</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>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. Lymph node, spleen</td>
</tr>
<tr>
<td>3. Lymphatic organs: lymph node, spleen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Surface structures of the heart, anulus fibrosus, myocard</td>
<td></td>
<td>HEART. Wall structure, conducting system. DIGESTIVE SYSTEM. Lip, tongue, filiforme, fungiform and vallate papillae.</td>
</tr>
<tr>
<td>6. Chambers of the heart, valves</td>
<td></td>
<td>Foliate papilla (demonstration) DIGESTIVE SYSTEM. Salivary glands (parotid, submandibular, sublingual); tooth (demonstration)</td>
</tr>
<tr>
<td>7. Vessels of the heart, conducting system, topography. Pericard</td>
<td></td>
<td>DIGESTIVE SYSTEM. Tooth development, esophagus</td>
</tr>
<tr>
<td>8. Development of the heart and the pericard I.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Development of the heart and the pericard II.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Malformations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Muscles of mastication. Tongue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Development and histology of the teeth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Development of the face, malformations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Pharynx, structure of the wall, soft palate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Infrafacial muscles, cervical fascia, para- and retropharyngeal space</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Esophagus, aorta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Development of the foregut</td>
<td>Abdominal organs, peritoneum. Hepatoduodenal ligament, mesentery</td>
<td>DIGESTIVE SYSTEM. Stomach, cardia, pylorus</td>
</tr>
<tr>
<td>20. Small intestine: anatomy and histology</td>
<td>Unpaired branches of the abdominal aorta, tributaries of the portal vein</td>
<td>DIGESTIVE SYSTEM. Duodenum, jejunum, ileum, colon, appendix</td>
</tr>
<tr>
<td>22. Liver and biliary apparatus: anatomy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Liver and biliary apparatus: histology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Development of the middle and hindgut</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. Peritoneum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Cartilages, joints and muscles of the larynx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. Skeleton of the larynx, laryngeal inlet, rima glottidis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. Histology of the lung, Development of the respiratory system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32. Histology and vascular structure of the kidney</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. Urinary bladder: anatomy and histology. Female urethra</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34. Development of the uroepoietic system, malformations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**SEMMELWEIS UNIVERSITY / FACULTY OF MEDICINE**

---

83
35. Testis, spermiogenesis, epididymis
   Lectures: Retroperitoneum
   Dissecting room
   Demonstration: ureter
   Histology lab.

36. Ductus deferens, spermatic cord, seminal vesicle, prostate, male urethra: anatomy and histology
   Pelvic organs.
   Peritoneum in the pelvis.
   MALE GENITAL SYSTEM.

37. Penis: anatomy and histology.
   Male perineum
   Oogenesis.
   MALE GENITAL SYSTEM.

38. Ovary and uterine tube: anatomy and histology.
   Pelvic organs, topography.
   MALE GENITAL SYSTEM.

39. Anatomy of the uterus, broad ligament
   Histology of the uterus, mensurational cycle
   Perineum
   Penis.
   MALE GENITAL SYSTEM.

40. Penis: anatomy and histology.
   Pelvic organs, topography.
   MALE GENITAL SYSTEM.

41. Vagina, outer female genital organs.
   Female perineum
   Review
   FEMALE GENITAL SYSTEM.

42. Development of the genital organs
   Male perineum
   Ovary, uterine tube
   FEMALE GENITAL SYSTEM.

43. Malformation of the gender, bisexuality
   Uterus, vagina,
   FEMALE GENITAL SYSTEM.

44. Anatomy of the uterus, broad ligament
   and veins. Fetal circulation
   TEST. Urogenital system
   mammary gland

Semester examination (semi-final)

**MEDICAL BIOLOGY I. - In 2010/11 exclusively for those who did not complete the subject in 2009/10**

Tutor: Dr. Valéria László

**First Semester**

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

84
### 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 genome</td>
<td>Cytogenetics I</td>
</tr>
<tr>
<td>4.</td>
<td>Mutations and polymorphisms.</td>
<td>Cytogenetics II</td>
</tr>
<tr>
<td>5.</td>
<td>Epigenetics</td>
<td>Introduction to human genetics; special methods of human genetics</td>
</tr>
<tr>
<td>6.</td>
<td>Cytogenetics I</td>
<td>Molecular genetics I</td>
</tr>
<tr>
<td>7.</td>
<td>Cytogenetics II</td>
<td>Midterm I (written)</td>
</tr>
<tr>
<td>8.</td>
<td>Autosomal (monogenic) inheritance</td>
<td>Molecular genetics II</td>
</tr>
<tr>
<td>9.</td>
<td>Role of sex in inheritance</td>
<td>Gene expression analysis on protein level</td>
</tr>
<tr>
<td>10.</td>
<td>Genetics of sex</td>
<td>Medical applications of genetic methods: monogenic inheritance</td>
</tr>
<tr>
<td>11.</td>
<td>Genetics and genomics of complex traits (disorders)</td>
<td>Medical 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 who have started their studies in the 2009/2010 and in the 2010/2011 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 website: www.dgci.sote.hu

BASES OF BIOSTATISTICS AND INFORMATICS
Tutor: Dr. István Voszka

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

Tutor: **Dr. István Voszka**

<table>
<thead>
<tr>
<th>Lecture (2.5 hours/week)</th>
<th>Practice (3 hours/week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduction. Structure of living matter</td>
<td>Introduction</td>
</tr>
<tr>
<td>2. Muscle function</td>
<td>Electrocardiography</td>
</tr>
<tr>
<td>3. Molecular bases of biological motion</td>
<td>Optics of the eye</td>
</tr>
<tr>
<td>4. Biophysics of blood circulation and heart function</td>
<td>Coulter-counter</td>
</tr>
<tr>
<td>5. Transport processes</td>
<td>Diffusion</td>
</tr>
<tr>
<td>6. Radiations</td>
<td>Light absorption</td>
</tr>
<tr>
<td>7. Luminescence</td>
<td>Gamma energy determination</td>
</tr>
<tr>
<td>8. X-radiation</td>
<td>X-ray measurement</td>
</tr>
<tr>
<td>9. Radioactivity, dosimetry</td>
<td>Imaging with ionizing radiations</td>
</tr>
<tr>
<td>10. Sound, ultrasound</td>
<td>Ultrasound</td>
</tr>
<tr>
<td>11. Examination of biomolecular systems</td>
<td>Gamma-absorption, dosimetry</td>
</tr>
<tr>
<td>12. Bioelectric phenomena</td>
<td>Audiometry</td>
</tr>
<tr>
<td>13. Sensory function. Biophysics of vision and hearing</td>
<td>Sensory function</td>
</tr>
<tr>
<td>14. Biophysical research in medicine</td>
<td>Repetition</td>
</tr>
</tbody>
</table>

# BASES OF MEDICAL PHYSICS

**Elective course only for 1st year students**

Tutor: **Dr. István Voszka**

<table>
<thead>
<tr>
<th>Lecture (1 hour/week)</th>
<th>Practice (1 hour/week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Physical quantities, scales</td>
<td>Mechanics calculations</td>
</tr>
<tr>
<td>2. Dynamics</td>
<td>Force measurement</td>
</tr>
<tr>
<td>3. Thermodynamics 1.</td>
<td>Thermodynamics calculations</td>
</tr>
<tr>
<td>5. Geometric optics</td>
<td>Optics calculations</td>
</tr>
<tr>
<td>6. Physical optics</td>
<td>Image formation of lenses</td>
</tr>
<tr>
<td>7. Electric charge, current</td>
<td>Electric calculations</td>
</tr>
<tr>
<td>8. Resistances, capacitors</td>
<td>Measurement of resistance</td>
</tr>
<tr>
<td>9. Electromagnetic induction</td>
<td>Atomic physics calculations</td>
</tr>
<tr>
<td>10. Atomic physics</td>
<td>Measurement of light emission</td>
</tr>
<tr>
<td>11. Atomic nucleus, radioactivity</td>
<td>Nuclear physics calculations</td>
</tr>
<tr>
<td>12. Decay law</td>
<td>Nuclear measurement</td>
</tr>
<tr>
<td>13. Multiatomic systems</td>
<td>Multiatomic systems calculations</td>
</tr>
<tr>
<td>14. Basic electric circuits</td>
<td>Measurement with amplifier</td>
</tr>
</tbody>
</table>
### MEDICAL PHYSICS AND STATISTICS

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

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

#### First Semester

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

#### 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>Week</td>
<td>Lecture (2.5 hours per week)</td>
<td>Laboratory (2.5 hours per week)</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------</td>
<td>--------------------------------</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</td>
<td>Inorganic chemistry, nomenclature</td>
</tr>
<tr>
<td>8–9</td>
<td>Electrochemistry (Mortimer pp 542–584)</td>
</tr>
<tr>
<td>10–14</td>
<td>Organic chemistry (Erđő: manuscript)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction, safety rules</td>
</tr>
<tr>
<td>2</td>
<td>Acid-base titrations I.</td>
</tr>
<tr>
<td>3</td>
<td>Acid-base titrations II.</td>
</tr>
<tr>
<td>4</td>
<td>Acid-base titrations III.</td>
</tr>
<tr>
<td>5</td>
<td>Conductometric determination of NaCl concentration. Titrations based on precipitation.</td>
</tr>
<tr>
<td>6</td>
<td>1st Midterm exam.</td>
</tr>
<tr>
<td>7</td>
<td>Titration based on complex formation. Double and complex salts.</td>
</tr>
<tr>
<td>8</td>
<td>Conductometry. *</td>
</tr>
<tr>
<td>9</td>
<td>Spectrophotometry. *</td>
</tr>
<tr>
<td>10</td>
<td>Electrochemistry. *</td>
</tr>
<tr>
<td>11</td>
<td>Discussion. *</td>
</tr>
<tr>
<td>12</td>
<td>2nd Midterm exam.</td>
</tr>
<tr>
<td>13</td>
<td>Permanganometric titration.</td>
</tr>
<tr>
<td>14</td>
<td>Iodometric titration.</td>
</tr>
</tbody>
</table>

*according to a schedule issued later.
MEDICAL BIOCHEMISTRY, MOLECULAR AND CELL BIOLOGY I.
The new curriculum is under preparation, it is to be finalized in September, 2010. It will be available on the website of the department.

MEDICAL PROFESSION
Lecturer: Prof. László Kalabay MD PhD
Institute: Department of Family Medicine
Duration: One semester, lectures: 6x2 hours, practices: 6x3 hours/semester
Exam: Practical mark (written exam)
Credit value: 2 credit points
Minimum/maximum group size: 55/210
Thematic:
- An overview of medical profession,
- Formation of the consciousness of profession, personal careers.
- The attitude of the medical doctor. Communication with colleagues and the members of the medical staff.
- An overview of different levels of health care.
- The organization, function activity of the clinical department and general medicine praxis.
- Characteristics of the clinical work.
- Overview of the scientific activity of the clinical department. Raising interest on joining to it.
Application: Péter Torzsa MD Tel: 355-8530 e-mail: ptorzsa@gmail.com
Application date: 30th January
Precondition: Only for students in the 1st year.

MEDICAL COMMUNICATION
Institute of Behavioral Sciences
Type of the course: compulsory
credit: 2 credits
Presenter of the course: Dr. habil. Németh Erzsébet
Course leader: Dr. Pilling János
Semester: 2010/2011 II. semester

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

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

Participation and making up for absences:
A signature will be given with the prerequisite of participation (minimum 75% of the lectures and seminars). It is possible to make up for an absence by participating in another seminar group the same week. One absence can be overlooked by the teacher if the student writes an essay. The topic of the essay must be discussed with the seminar leader in advance.

Certifying absence from lessons and exam:
Participation list will be recorded at the end of every lecture/seminar. In case of absence medical certificate has to be presented within three workdays to the course leader.

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

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

Type of the exam: semi final exam
Requirements for the exam:
Exam topics:

“A” list
1. Basic definitions in communication and their role in medical practice: basic elements, axioms and levels in communication; verbal communication.
2. The role of non-verbal communication.
3. The role of active listening and the role of empathy.
5. Communication issues of patient information.
6. Patient education and shared decision making.
7. Convincing strategies in medical practice: learning theories and cognitive models;
9. The role of suggestions in doctor-patient communication.
“B” list
1. Communication with acute patient.
2. Communication with ill children.
3. Communication with elderly patients.
4. Communication with somatizing patients.
5. Communication with alcohol and drug addictive patients.
6. Communication about sexual problems.
7. Communication aspects with patients committing suicide attempt.
8. Communication possibilities in prevention and handling aggression.
10. Intercultural communication in medical practice.

Application for the exam: Through the Neptun system.
Changing the application for the exam: Through the Neptun system.
Justification of the absence from the exam: Medical certificate has to be presented within three workdays to the course leader.

Course and recommended text books:
Course text book:

Recommended text books:

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

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

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

   5. (3 hours) Preparation of the final 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

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)

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


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

HUNGARIAN LANGUAGE, TERMINOLOGY
See information before the Study Programs

COMPULSORY SUMMER PRACTICE
Nursing Course - 1 month, 186 hours

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

**Week 2**
(practicing the things learnt in the previous week)

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

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

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

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

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

Before starting the practice, it is advisable that the head nurse or an experienced nurse should give introductory explanations.
### 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>AO4NTANA13A1</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>
</tr>
<tr>
<td>AOHUMA23A2</td>
<td>Anatomy, Histology, Embryology II.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<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. Medicine, Medical Physics and Statistics II.</td>
</tr>
<tr>
<td>AOOBBKIM_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>
</tr>
<tr>
<td>AOMAGS20_1A</td>
<td>Medical Sociology</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>AOLEKMSZ_3A</td>
<td>Hungarian Medical Terminology III.</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology II.</td>
</tr>
<tr>
<td>ATOTSISN_3A</td>
<td>Physical Education III.</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>signature</td>
<td>Physical Education II.</td>
</tr>
</tbody>
</table>

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

**Obligatory elective subject**

<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>AO4NTANA233_1A</td>
<td>Introduction to Clinical Medicine</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td>Medical Profession</td>
</tr>
</tbody>
</table>

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

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

---

1. Department of Anatomy, Histology and Embryology
2. Department of Human Morphology and Developmental Biology
<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>
</tr>
<tr>
<td>AOHUMANA24A2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOKIKELT_2A</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>AOBIKBM_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>AOLEKMSZ_4A</td>
<td>Hungarian Medical Terminology IV.</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology III.</td>
</tr>
<tr>
<td>AOTSITSN_4A</td>
<td>Physical Education IV.</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>signature</td>
<td>Physical Education III.</td>
</tr>
<tr>
<td>Total Number of Credit Points from Compulsory Subjects</td>
<td></td>
<td></td>
<td></td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obligatory elective subject</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOVHUM097_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>AOVANT095_1A</td>
<td>Anatomy of Diagnostic Imaging</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Anatomy, Histology, Embryology III.</td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Number of Credit Points from Obligatory elective / Elective Subjects</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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: Dr. Andrea Székely

First Semester

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

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 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>
<td>Development: dura mater, Sinuses</td>
<td>Lateral ventricles, third ventricle</td>
</tr>
<tr>
<td>5. Blood supply of the brain.</td>
<td>Spinal cord, brain stem. Brain stem, fourth ventricle, cerebellum</td>
<td>Spinal cord, spinal ganglion, medulla oblongata,</td>
</tr>
<tr>
<td>6. Differentiation of the neural tube, development of the spinal cord</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Anatomy of the spinal cord, spinal segment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Neuronal architecture of the spinal cord: proprioceptive and withdrawal reflex arches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Neuronal architecture of the spinal cord: mesecephalon, autonomous reflex arch, spinal pathways</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Nuclei and pathways in the brain stem I.</td>
<td>Cross sections of the brain stem.</td>
<td>Demonstration: spinal cord</td>
</tr>
<tr>
<td>11. Nuclei and pathways in the brain stem II.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Nuclei and pathways in the brain stem III.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Microscopic structure and connections of the thalamic nuclei</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Sensory pathways</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Neural correlates of the pain sensation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Cerebellar cortex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Cerebellar pathways</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Structure and connections of the basal nuclei (extrapyramidal system)</td>
<td>Test. Anatomy of the brain and the spinal cord; nuclei, pathways (tracts), embryology. Regio (r.) frontalis, r. infraorbitalis et buccalis, r. supracavicularis, r. Axialis</td>
<td></td>
</tr>
<tr>
<td>19. Motor pathways</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Patient demonstration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Cerebral cortex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Trigeminal nerve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Facial nerve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Glossopharyngeal, vagus, accessory and hypoglossal nerves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Olfactory and gustatory systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. Outer and middle coats of the eyeball</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Lens, chambers of the eye, vitreous body, accommodation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. Inner coat of the eyeball, retina</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. Outer eye muscles, movement of the eye</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SEMMELEWS UNIVERSITY / FACULTY OF MEDICINE
<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 scalenotrachealis.</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>In situ dissection of the brain</td>
<td>Skin. Palmar (non-hairy) skin, hairy skin. Demonstration: axillary skin</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.) ruchae, 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>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. brachi post., r. antebrachii post., r. dorsalis scapulae, r. femoris post., r. cubiti post., r. cruris post., retromalleolar regions</td>
<td>Review I.</td>
</tr>
<tr>
<td>Surface- and sectional anatomy II. Head</td>
<td>R. brachi post., r. antebrachii post., r. dorsalis scapulae, r. femoris post., r. cubiti 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. brachi ant., r. antebrachii ant., r. Subinguinalis, r. femoris ant., r. cruris ant. Projection of the thoracic organs into the anterior thoracic wall</td>
<td></td>
</tr>
<tr>
<td></td>
<td>R. brachi ant., r. antebrachii ant.,</td>
<td></td>
</tr>
</tbody>
</table>
ANATOMY, HISTOLOGY AND EMBRYOLOGY

Third Semester

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


Credits: 8

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

<table>
<thead>
<tr>
<th>Topic</th>
<th>LECTURE</th>
<th>Anatomy</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Nervous system - Introduction.</td>
<td>Spinal cord, its blood supply, Meninges, sinuses, cisternae.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Interneuronal synapses, chemical neurotransmission.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Peripheral sensory receptors and peripheral effector nerve endings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Structural organization of the spinal cord. Gray matter.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>White matter of the spinal cord. Pathways of the spinal cord.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Internal organization of the brain stem.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>The dorsomedial (medial lemniscus) sensory system. Somatosensory cortex.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>The ventrolateral (spinothalamic) sensory system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>Limbic system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Motor unit, lower and upper motoneuron, somatomotor cortex.</td>
<td>Nerves and blood vessels of the upper and lower limb, Brachial plexus.</td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Pyramidal tract.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>Histology of cerebellar cortex.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>Autonomic nervous system. I. Thoracolumbar sympathetic system.</td>
<td>Review (internal organization of the central nervous system, peripheral nerves).</td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>Craniosacral parasympathetic system.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MID-TERM TEST**

- Base of the skull, cranial nerves. Cavernous sinus. Brain in situ.
31. Development of the nervous system, II. Histogenesis, craniocaudal and dorsoventral differentiation.
32. Development of the nervous system, III. Development of the brain stem and cerebellum.
33. Development of the nervous system, IV. Development of the telencephalon, basal ganglia, choroid plexus
34. Development of the nervous system, V. Neural crest and its derivatives.
36. Development of the eye.
40. Clinical anatomy.
41. Clinical anatomy.
42. Auditory apparatus, outer ear, middle ear
44. Organ of Corti. Auditory pathway.
45. Development of the auditory apparatus.

MID-TERM TEST
Eye, orbit dissection.

LAB
Eye, orbit dissection.

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

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>
</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>
</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>
</tr>
<tr>
<td>12. Topography and CT of the abdomen.</td>
<td>Topography of the rectum. Pelvis, perineum. Digestive tract II.</td>
<td></td>
</tr>
</tbody>
</table>
# Medical Physiology

**Institute of Human Physiology and Clinical Experimental Research**

**Tutor:** Dr. Tamás Ivanics

## First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture (6 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Cardiac functions: Biomechanical basis of cardiac functions. Cardiac pump. Signal transduction in the cardiomyocytes.</td>
</tr>
<tr>
<td>6</td>
<td>Cardiac cycle. Electrical activity of the heart. Transmembrane potentials. Conduction in cardiac fibers, cardiac excitability, cardiac rhythmicity, electrocardiography, echocardiography.</td>
</tr>
<tr>
<td>8</td>
<td>Cardiovascular control mechanisms: Systemic control mechanisms. Control of cardiac output.</td>
</tr>
<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>
</tr>
<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>
</tr>
</tbody>
</table>
**Practice** (5 hours weekly)

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

**MEDICAL PHYSIOLOGY**

**Second Semester**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</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>
<tr>
<td>Week</td>
<td>Lecture (6 hours per week)</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>14</td>
<td>“Higher functions of the nervous system”. Conditioned reflexes. Learning and memory. Integrative functions of the neocortex.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practice (5 hours weekly)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood groups</td>
</tr>
<tr>
<td>Respiratory function and circulatory responses during aerobic exercise</td>
</tr>
<tr>
<td>Clinical respiratory function</td>
</tr>
<tr>
<td>Adaptation of the cardio-respiratory system during clinical exercise testing</td>
</tr>
<tr>
<td>Kidney function</td>
</tr>
<tr>
<td>Determination of parameters of acid/base equilibrium</td>
</tr>
<tr>
<td>Nephrology case report</td>
</tr>
<tr>
<td>Endocrinology lab</td>
</tr>
<tr>
<td>Endocrinology case report</td>
</tr>
<tr>
<td>Registration of a human EEG</td>
</tr>
<tr>
<td>Investigation of eye movements (EOG) and vestibular system</td>
</tr>
<tr>
<td>Echocardiography</td>
</tr>
</tbody>
</table>
### 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.</td>
</tr>
<tr>
<td>6</td>
<td>Biosynthesis of steroid hormones. Biosynthesis and biological role of eicosanoids</td>
</tr>
<tr>
<td>7</td>
<td>Degradation of proteins. Catabolism of amino acids I.</td>
</tr>
<tr>
<td>8</td>
<td>Catabolism of amino acids II. Urea cycle. Biosynthesis of amino acids.</td>
</tr>
<tr>
<td>9</td>
<td>Metabolism of nucleotides I. Metabolism of nucleotides II.</td>
</tr>
<tr>
<td>10</td>
<td>Metabolism of porphyrins. Biotransformation I.</td>
</tr>
<tr>
<td>11</td>
<td>Biotransformation II. Integration of metabolism.</td>
</tr>
<tr>
<td>12</td>
<td>Intermediary metabolism of tissues I. Intermediary metabolism of tissues II.</td>
</tr>
<tr>
<td>13</td>
<td>Regulation of intermediary metabolism in fasting and in well-fed state I.</td>
</tr>
<tr>
<td>14</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>
<tr>
<td>Week</td>
<td>Topic</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
</tr>
<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.
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 accessible on the homepage of the Institute of behavioural Sciences: www.magtud.sote.hu.
INTRODUCTION TO CLINICAL MEDICINE
Lecturer: Prof. László Kalabay MD PhD
Institute: Department of Family Medicine
Duration: One semester, practices: 12x2.5 hours/semester
Exam: Written. Practical mark (written exam)
Credit value: 2 credit points
Minimum/maximum group size: 55/210
Thematic:
- Formation of the consciousness of profession.
- Most frequent diseases in the clinical department and the general practitioner’s office. Case reports.
- Referral of patients. The medical consultation.
- Communication with the patient and his/her relatives. The role of the family in treatment and care for acute and chronic diseases.
- Effective cooperation with patients. Means to improve compliance.
- The importance of prevention of disease.
- Team work in medicine.
- Overview of the scientific activity of the clinical department. Raising interest on joining to it.

Application: Péter Torzsa MD Tel: 355-8530 e-mail: ptorzsa@gmail.com
Application date: 1st September
Precondition: Only for students in the 2nd year, following completion of Medical Profession

DEVELOPMENTAL BIOLOGY: from gene to newborn. I.

“Our real teacher has been and still is the embryo, who is, incidentally, the only teacher who is always right.”
Hamburger 1900-2001

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

Department of Human Morphology and Developmental Biology

Introduction to developmental biology
Comparative embryology, epigenesis and preformation, evolutionary embryology, medical implications

Regulatory elements of the ontogenesis I.
Hormones, growth factors, transcription factors, instructive and permissive interactions

Regulatory elements of the ontogenesis II.
DNA-methylation, X chromosome inactivation, genomic imprinting

Cell-cell and cell-extracellular matrix interactions
Adhesion molecules, integrins, cytoskeleton and cell movement, cell polarization

Cell lineages
Fate map, stem cells, peripheral blood fibrocytes, cell specification, polarity in biological system
Neurogenesis
Origin of neural cells, switch between neuronal and glial fates, axonal specificity, synaptic plasticity

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

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

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

Primordial germ cells (PGC)
Origins, migration, mitosis, differences between male and female PGC, maturations

Fertilization
Acrosome reaction, prevention of polyspermy, activation of egg metabolism

Embryonic induction
Spermann 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.
Vascularogenesis, blood formation, hematopoietic stem cell.

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

Lateral plate mesoderm, somatopleura
Development of the limb, evolutionary and ontogenetic aspects, clinical correlations
Branchiogenic arches and their derivatives
Clinical correlations

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

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

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

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

Development of eye
Retina, lens

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

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

ANATOMY OF DIAGNOSTIC IMAGING
obligatory elective course

Short title: Imaging anatomy
Elective course

Second Semester

Language: English
Course Director: Dr. András Csillag, Professor in Anatomy

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

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

Faculty of Medicine
3rd 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>AOKORKOR_1A</td>
<td>Pathophysiology and Clinical Lab. Diagnostics I.</td>
<td>2.5</td>
<td>2.5</td>
<td>5</td>
<td>semi-final</td>
<td>Anatomy, Histology, Embryology IV., Medical Physiology II, Medical Biochemistry, Molecular Biology III.</td>
</tr>
<tr>
<td>AOMIKM1K_1A</td>
<td>Medical Microbiology I.</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>semi-final</td>
<td>Anatomy, Histology, Embryology IV., Medical Physiology II, Medical Biochemistry, Molecular Biology III.</td>
</tr>
<tr>
<td>AOPTKPAT11A AOPTKPAT21A</td>
<td>Pathology and Histopathology I.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>semi-final</td>
<td>Anatomy, Histology, Embryology IV., Medical Physiology II, Medical Biochemistry, Molecular Biology III.</td>
</tr>
<tr>
<td>AOBLL1BEL11A AOBLL2BEL11A AOBLL3BEL11A AOBLL3BE131A</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</td>
<td>18/sem</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  
Hungarian is an elective subject
<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, Pathology and Histopathology I, Immunology</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, Pathophysiology and Clin. Lab. Diagn.I, Pathology and Histopathology 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>Medical Microbiology I, Pathophysiology and Clin. Lab. Diagn.I, Pathology and Histopathology I,</td>
</tr>
<tr>
<td>AOPATPAT22A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOBBL1BEL12A</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>AOBBL2BEL22A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOBBL3BEL32A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOMAGPSZ_2A</td>
<td>Medical Psychology II.</td>
<td>10/sem</td>
<td>18/sem</td>
<td>2</td>
<td>final #</td>
<td>Medical Psychology I.</td>
</tr>
<tr>
<td>AOLEMXSZ_6A</td>
<td>Hungarian Medical Terminology VI.</td>
<td>-</td>
<td>4</td>
<td>2</td>
<td>final #</td>
<td>Hungarian Medical Terminology I.</td>
</tr>
<tr>
<td>AOMAGOET_1A</td>
<td>Medical Ethics (Bioethics)</td>
<td>2</td>
<td></td>
<td>2</td>
<td>semi-final</td>
<td>basic module</td>
</tr>
<tr>
<td>AOFRMFRM_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
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
<table>
<thead>
<tr>
<th>Lectures</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Pathophysiology of Circulation</strong></td>
<td></td>
</tr>
<tr>
<td>Heart Failure I</td>
<td>The normal electrocardiogram</td>
</tr>
<tr>
<td>Heart Failure II</td>
<td>Arrhythmias I: Disorders of impulse</td>
</tr>
<tr>
<td></td>
<td>Formation</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>II. Pathophysiology of Fluid and Electrolyte Balance</strong></td>
<td>Arrhythmias II: Disorders of impulse</td>
</tr>
<tr>
<td></td>
<td>Conduction</td>
</tr>
<tr>
<td>Disturbances in Fluid, Na⁺ and K⁺ Balance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>III. Pathophysiology of Acid-Base Balance</strong></td>
<td>Arrhythmias III: Complex Arrhythmias</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiratory and Metabolic Disturbances</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IV. Pathophysiology of the Kidney</strong></td>
<td>ECG Abnormalities in Cardiac</td>
</tr>
<tr>
<td>Acute Renal Failure</td>
<td>Hypertrophy and Metabolic Disorders</td>
</tr>
<tr>
<td>Chronic Renal Failure</td>
<td>ECG Sign of the Abnormalities of</td>
</tr>
<tr>
<td></td>
<td>Coronary Circulation</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>V. Pathophysiology of Respiration</strong></td>
<td>ECG Signs and Laboratory Diagnosis of</td>
</tr>
<tr>
<td></td>
<td>Myocardial Infarction</td>
</tr>
<tr>
<td>Respiratory Insufficiency</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>VI. Pathophysiology of the Peripheral Circulation</strong></td>
<td>Practice, Examples, Exam</td>
</tr>
<tr>
<td></td>
<td>Laboratory Evaluation of Fluid and Electrolyte Disorders</td>
</tr>
<tr>
<td>Shock</td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>VII. Pathophysiology of Metabolic Disorders</strong></td>
<td>Laboratory Evaluation of Acid-Base</td>
</tr>
<tr>
<td>Metabolic Disturbances in Diabetes</td>
<td>Disorders</td>
</tr>
<tr>
<td>Hepatic Insufficiency</td>
<td>Laboratory Evaluation of Kidney Diseases</td>
</tr>
<tr>
<td>Nutritional Disorders, Obesity</td>
<td>Laboratory Evaluation of Hemostatic</td>
</tr>
<tr>
<td></td>
<td>Disorders</td>
</tr>
<tr>
<td>Disturbances in Protein, Amino Acid and</td>
<td>Laboratory Evaluation of Carbohydrate</td>
</tr>
<tr>
<td>Metabolism Purine Metabolism Disorders</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>VIII. Pathophysiology of the Gastrointestinal Tract</strong></td>
<td>Laboratory Diagnosis of Hepatobiliary Diseases</td>
</tr>
<tr>
<td>Gastric and Duodenal Ulcer</td>
<td>Laboratory Evaluation of GI-Tract</td>
</tr>
<tr>
<td></td>
<td>Function</td>
</tr>
<tr>
<td>Malabsorption-Maldigestation</td>
<td></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></td>
<td></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></td>
<td></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></td>
<td>Evaluation of Lymphoproliferative Disorders</td>
</tr>
<tr>
<td></td>
<td>Tour in a Routine Clinical Laboratory</td>
</tr>
<tr>
<td><strong>XII. Pathophysiology of Endocrine Disorders</strong></td>
<td></td>
</tr>
<tr>
<td>Disturbances in Pituitary Function</td>
<td>Practice, Examples, Exam</td>
</tr>
<tr>
<td>Disturbances in Thyroid Function</td>
<td>Laboratory Evaluation of Plasma Proteins and Enzymes</td>
</tr>
<tr>
<td>Disturbances in Adrenal Gland and Sexual Function</td>
<td>Laboratory Evaluation of Lipid and Lipoprotein Disorders</td>
</tr>
<tr>
<td>Metabolic Bone Diseases</td>
<td>Hypothalamic-Pituitary Tests</td>
</tr>
<tr>
<td><strong>XIII. Pathophysiology of the Nervous System</strong></td>
<td></td>
</tr>
<tr>
<td>Motor and Sensory Disturbances</td>
<td>Thyroid Function Tests</td>
</tr>
<tr>
<td>Disturbances in “Higher” CNS Function</td>
<td>Laboratory Evaluation of Ca++ and Phosphate Metabolism</td>
</tr>
<tr>
<td>Pathophysiology of Pain</td>
<td>Practice, Examples, Exam</td>
</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 typhi and paratyphi), 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 Mycoplasmatales</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>
<td>------</td>
<td>------------------------------</td>
</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>10.</td>
<td>• Clinical Bacteriological Diagnosis – 2: Respiratory tract infections</td>
</tr>
<tr>
<td>11.</td>
<td>• Clinical Bacteriological Diagnosis – 3: Infections of the uro-genital tract, Abdominal and Enteral infections, Sexually transmitted diseases</td>
</tr>
<tr>
<td>12.</td>
<td>• Clinical Bacteriological Diagnosis – 4: Bacteraemia, sepsis, endocarditis, meningitis</td>
</tr>
<tr>
<td>13.</td>
<td>Summary and review</td>
</tr>
<tr>
<td>14.</td>
<td>Practical exam</td>
</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)

1. Introduction
   - Autopsy demonstration
   - Nutmeg liver H&E (1)
   - Cardiac fibrosis in liver H&E (7)
   - Pulmonary edema H&E (2)

2. Cell injury
   - Hematosiderin in alveolar macrophages H&E (8)

3. Cell injury
   - Thromboembolism H&E (3)
   - Hemorrhagic infarction of the lung H&E (4)
   - Anemic infarction of the kidney H&E (5)
   - Edematous brain H&E (6)
   - Fatty degeneration of the liver H&E (12)

4. Inflammation
   - Phlegmon H&E (13)

5. Inflammation
   - Cerebral abscess H&E (14)
   - Fibrous pericarditis H&E (15)
   - Pseudomembranous colitis (16)

6. Wound healing, regeneration and fibrosis
   - Actinomycosis H&E (98)

7. Immunopathology
   - Candidiasis PAS (17)
   - Aspergillosis (slide demonstration)
   - Acute appendicitis H&E (66)
   - Oxyuris in appendix H&E (67)

8. Neoplasia
   - Chronic polypous sinusitis H&E (18)

9. Neoplasia
   - Chronic abscess (9)
   - Granulation tissue H&E (19)
   - Foreign-body granuloma H&E (20)

10. Neoplasia
    - Metaplasia (slide demonstration)

11. Genetic diseases
    - Dysplasia of the cervical epithelium (CIN) H&E (24)
    - In-situ carcinoma of the cervix H&E (25)
    - Invasive squamous cell carcinoma of the cervix H&E (26)

12. Hemodynamic disorders
    - Squamous cell papilloma H&E (23)
    - Squamous cell carcinoma of the larynx H&E (10)
    - Tubulovilious adenoma of the colon H&E (30)
    - Adenocarcinoma of the colon H&E (31)
    - Metastasis in lymph node H&E (38)
    - Metastatic carcinoma in the lung (slide demonstration)

13. Hemodynamic disorders
    - Leiomyoma H&E (37)
    - Liposarcoma (slide demonstration)
    - Lipoma H&E (11)
    - Malignant fibrous histiocytoma H&E (38)
    - Immunohistochemistry (slide demonstration)
### Lectures (3 hours per week)

14. Environmental and nutritional pathology
- Atherosclerosis of the aorta H&E (45)
- Benign nephrosclerosis H&E (46)
- Coronary-sclerosis H&E (47)
- Polycystic kidney H&E (48)
- Giant cell arteritis H&E (49)
- Cystic medial necrosis of the aorta H&E (46)

15. Blood vessels
- Fatty infiltration of the myocardium H&E (41)

16. Blood vessels
- Myocardial infarction, early H&E (42)
- Myocardial infarction, old H&E (43)
- Myocarditis H&E (44)
- Endocarditis H&E (45)

17. Heart
- IRDS H&E (50)

18. Heart
- Lobar pneumonia H&E (51)
- Bronchopneumonia H&E (52)
- Pneumococcal pneumonia H&E (53)
- Pleurafibrosis H&E (97)

19. Respiratory system
- Miliary tuberculosis in lung H&E (55)

20. Respiratory system
- Tuberculous lymphadenitis H&E (56)
- Sarcoidosis H&E (57)
- Oat cell carcinoma of the lung H&E (58)
- Mesothelioma H&E (59)
- Nasopharyngeal carcinoma (slide demonstration)
- Warthin’s tumor (slide demonstration)
- Mucous gland carcinoma (slide demonstration)
- Adenoid cystic carcinoma (slide demonstration)
- Chronic peptic ulcer H&E (60)
- Chronic gastritis H&E (61)
- Bremsa (62)
- Signet ring cell carcinoma of the stomach H&E (63)
- Peritoneal lymphoma (slide demonstration)

22. Infectious diseases
- Villous atrophy in small intestine (65)

23. Infectious diseases
- Ulcerative colitis H&E (68)

24. Infectious diseases
- Crohn’s disease H&E (69)
- Carcinoid H&E (72)
- Peritoneal carcinosis H&E (99)

25. Gastrointestinal tract
- Adenoma H&E (70)

26. Gastrointestinal tract
- Carcinoma H&E (71)

27. Gastrointestinal tract
- Liver cirrhosis H&E (72)

28. Pancreas
- Liver cirrhosis H&E (73)
- Cavernous haemangiomata of liver H&E (35)
- Chronic relapsing pancreatitis H&E (74)

### Histopathology practices

14. Environmental and nutritional pathology
- Atherosclerosis of the aorta H&E (45)
- Benign nephrosclerosis H&E (46)
- Coronary-sclerosis H&E (47)
- Polycystic kidney H&E (48)
- Giant cell arteritis H&E (49)
- Cystic medial necrosis of the aorta H&E (46)

15. Blood vessels
- Fatty infiltration of the myocardium H&E (41)

16. Blood vessels
- Myocardial infarction, early H&E (42)
- Myocardial infarction, old H&E (43)
- Myocarditis H&E (44)
- Endocarditis H&E (45)

17. Heart
- IRDS H&E (50)

18. Heart
- Lobar pneumonia H&E (51)
- Bronchopneumonia H&E (52)
- Pneumococcal pneumonia H&E (53)
- Pleurafibrosis H&E (97)

19. Respiratory system
- Miliary tuberculosis in lung H&E (55)

20. Respiratory system
- Tuberculous lymphadenitis H&E (56)
- Sarcoidosis H&E (57)
- Oat cell carcinoma of the lung H&E (58)
- Mesothelioma H&E (59)
- Nasopharyngeal carcinoma (slide demonstration)
- Warthin’s tumor (slide demonstration)
- Mucous gland carcinoma (slide demonstration)
- Adenoid cystic carcinoma (slide demonstration)
- Chronic peptic ulcer H&E (60)
- Chronic gastritis H&E (61)
- Bremsa (62)
- Signet ring cell carcinoma of the stomach H&E (63)
- Peritoneal lymphoma (slide demonstration)

22. Infectious diseases
- Villous atrophy in small intestine (65)

23. Infectious diseases
- Ulcerative colitis H&E (68)

24. Infectious diseases
- Crohn’s disease H&E (69)
- Carcinoid H&E (72)
- Peritoneal carcinosis H&E (99)

25. Gastrointestinal tract
- Adenoma H&E (70)

26. Gastrointestinal tract
- Carcinoma H&E (71)

27. Gastrointestinal tract
- Liver cirrhosis H&E (72)
- Cavernous haemangiomata of liver H&E (35)
- Chronic relapsing pancreatitis H&E (74)
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 (82)

35. Male genital system
- Acute pyelonephritis H&E (81)
- Renal cell carcinoma H&E (83)
- Normal adrenal cortex (slide demonstration)
- Wilms’ tumor H&E (84)
- Transitional cell carcinoma H&E (85)
- Endometriosis H&E (86)

36. Gynecologic pathology
- Chronic pyelonephritis H&E (82)
- Adenocarcinoma of prostate H&E (87)
- Seminoma H&E (88)
- Embryonal carcinoma (slide demonstration)
- Teratoma H&E (89)

37. Gynecologic pathology
- Placenta retention H&E (90)
- Extraverted gravidity H&E (91)
- Arias-Stella phenomenon (slide demonstration)
- Hydatiform mole H&E (92)
- Choriocarcinoma H&E (93)
- Endometrial hyperplasia H&E (94)
- Endometriosis (slide demonstration)
- Endometrium carcinoma H&E (95)

38. Neonatology
- 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)

39. Breast
- Fibrocystic disease of the breast H&E (126)
- Mucinous cystadenocarcinoma (slide demonstration)
- Borderline serous papillary cystadenoma of the ovary H&E (126)
- Serous papillary cystadenocarcinoma of the ovary (slide demo)

40. Blood and lymphoid organs
- Granulosa cell tumor (slide demonstration)

41. Blood and lymphoid organs
- Fibrocystic disease of the breast H&E (101)

42. 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)

43. Blood and lymphoid organs
- FNAB of the breast (cytol. smear demonstration)

44. Endocrinology
- Normal bone marrow H&E (127)

45. Endocrinology
- Leukemic bone marrow H&E (128)

46. Skin
- Leukemic infiltration of parenchymal organs (slide demonstration)

47. Skin
- Multiple myeloma H&E (106)
- Amyloidosis Congo (21)
**48. Head and neck**
- Non Hodgkin lymphoma (low grade) H&E (107)
- Non Hodgkin lymphoma (high grade) H&E (108)
- Follicular lymphoma (slide demonstration)
- Tonsillar lymphoma (slide demonstration)
- MALT lymphoma (slide demonstration)
- Hodgkin lymphoma H&E (109)
- Hodgkin lymphoma histologic types (slide demonstration)

**49. Bones and joints**
- Colloid goiter H&E (110)
- Graves disease H&E (111)
- Follicular adenoma of the thyroid gland H&E (112)
- Follicular carcinoma (slide demonstration)
- Papillary carcinoma of the thyroid gland H&E (113)
- Medullary carcinoma (slide demonstration)
- Adrenal cortical adenoma H&E (105)
- Parathyroid adenoma (slide demonstration)

**50. Bones and joints**
- Osteosarcoma H&E (114)
- Rhabdomyosarcoma H&E (115)
- Rheumatoid arthritis H&E (116)
- Osteosarcoma H&E (114)
- Basal cell carcinoma H&E (27)
- Verruca vulgaris H&E (100)
- Naevus pigmentosus H&E (39)
- Metastatic melanoma (slide demonstration)
- Bowens disease (slide demonstration)
- Capillary haemangiomata of the skin H&E (34)
- Purulent meningitis H&E (117)
- Meningoencephalitis H&E (118)

**51. Bones and joints**
- Glioblastoma multiforme H&E (120)
- Meningoencephalitis H&E (118)
- Neuroblastoma H&E (122)
- Ganglioneuroblastoma (slide demonstration)
- Paraganglioma (slide demonstration)

**52. Eye**
- Basal cell carcinoma H&E (27)
- Verruca vulgaris H&E (100)
- Naevus pigmentosus H&E (39)
- Metastatic melanoma (slide demonstration)
- Bowens disease (slide demonstration)
- Capillary haemangiomata of the skin H&E (34)

**53. Skeletal muscle**
- Purulent meningitis H&E (117)
- Meningoencephalitis H&E (118)

**54. Nervous system**
- Glioblastoma multiforme H&E (120)
- Meningoencephalitis H&E (118)
- 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, essay, 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 - 2010

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

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

09.13. M.3. lecture
Dr. Schaff

09.15. W. 4. lecture
Dr. Timár

09.20. M. 5. lecture
Dr. Lotz
Inflammation II. Chronic inflammation, fibrosis, scarring. Granulomatous inflammations: (tuberculosis, syphilis, etc.)
09.22. W. 6. lecture
Dr. Lotz

09.27. M. 7. lecture
Dr. Tímár
**Immunopathology.** Constituents of the immune system

09.29. W. 8. lecture
Dr. Tímár
**Immunopathology.** Autoimmune diseases. Etiology. Monosystemic diseases (e.g. chr. Athrophic gastritis, myasthenia gravis, Basedow dis., Hashimoto thyroiditis, Addison dis., insulin dependent diabetes mellitus, sclerosis multiplex) and oligo-polysystemic diseases (e.g. SLE, Sjögren sy, RA, scleroderma, dermatomyositis).

10.04. M. 9. lecture
Dr. Schaff

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

10.11. M. 11. lecture
Dr. Tímár
**Neoplasia III.** Tumor growth, tumor progression, metastasis.

10.13. W. 12. Lecture
Dr. Schaff

10.18. M. 13. Lecture
Dr. Kuika
**Neoplasia V.** Prognostic factors in tumor pathology. Staging and grading of tumors. TNM. Handling of surgical biopsy material.

10.20. W. 14. lecture
Dr. Dank
10.25. M. 15. lecture
Dr. Kiss
**Neoplasia VI. - Clinical Pathology.** Outlines of tumor therapy: chemos-, radio- and surgical therapy

10. 27. W. 16 lecture
Dr. Kiss
**Methods of diagnostic pathology.** Diagnostic parameters, requirements, which guide the clinical protocols. Molecular diagnostics of tumors. Targeted therapy.

11.03. W. 17 lecture
Dr. Verényi
**Environmental and nutritional pathology.** Smoking, alcoholism, drugs, iatrogenic injuries. Environmental chemical and physical factors. Obesity, protein malnutrition, vitamins.

11.08. M. 18. lecture
Dr. Glasz

11.10. W. 19. lecture
Dr. Kádár

11.15. M. 20. lecture
Dr. Glasz
**The heart I.** Congenital heart diseases. Ischemic heart disease. Heart failure.
11.17. W.  21. lecture
Dr. Glasz
The heart II.
Rheumatic heart disease.
Inflammatory diseases of the endocardium and myocardium.
Cardiomyopathies. Systemic diseases involving the heart.

11.22. M.  22. lecture
Dr. Tímár
Head and neck
Oral cavity, lips, tongue, salivary gland. Nose and sinuses, nasopharynx.
Ears of the esophagus. Developmental disorders, diverticulosis, esophagitis,
tumors of the esophagus. Larynx and trachea. (Developmental abnormalities,
Infections/Inflammation, Trauma, Tumors).

11.24. W.  23. lecture
Dr. Kerényi
Respiratory system I.
Conducting airways (congenital abnormalities, infections, bronchial obstructions
and aspiration).
Lung parenchyma (congenital abnormalities, infections, pneumonias). Diffuse
alveolar damage (ARDS, iatrogenic damage, hemorrhage). Chronic obstructive
pulmonary diseases (COPD - obstruction, bronchitis, asthma, bronchiolitis,
emphysema). Restrictive lung diseases: e.g. pneumoconiosis, sarcoidosis).

11.29. M.  24. lecture
Dr. Tímár
Respiratory system II.
Development of lung cancer. Neoplasia (primary cancer of the lung,
metastasis, benign tumors). Epidemiology, genetic abnormalities. Diseases of the
pleura.

12.01. W.  25. lecture
Dr. Schaff
Gastrointestinal tract I.
Esophagus (anatomy and developmental disorders, inflammation, trauma,
tumors). Stomach (congenital abnormalities, inflammations, peptic ulcer,
neplasms).

12.06. M.  26. lecture
Dr. Schaff
Gastrointestinal tract II.
Small intestine (congenital disorders, infections, vascular diseases,
Crohn-disease, malabsorption, Whipple’s disease, neoplasms, pneumatoysis
cystoides).

12.08. W.  27. lecture
Dr. Schaff
Gastrointestinal tract III.
Colon (congenital disorders, infections, diverticular disease,
inflammation, Crohn-disease, ulcerative colitis, vascular diseases, neoplasms,

12.11. M.  28. lecture
Dr. Schaff
Liver and biliary system I.
Anatomy of the liver, function. Bilirubin-metabolism and jaundice. Hepatic

Dr. Schaff
Liver and biliary system II.
Neoplasms.

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

12.21. W.  31. lecture
Dr. Székely
Pancreas
Pathology of the exocrine pancreas: Developmental abnormalities,
inflammations, tumors of the exocrine pancreas.

12.24. W.  32. lecture
Dr. Székely
Endocrinology I.
Pathology of the endocrine pancreas: Diabetes mellitus.

01.31. M.  28. lecture
Dr. Schaff
Liver and biliary system I.
Anatomy of the liver, function. Bilirubin-metabolism and jaundice. Hepatic

02.02. W.  29. lecture
Dr. Schaff
Liver and biliary system II.
Neoplasms.

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

02.09. W.  31. lecture
Dr. Székely
Pancreas
Pathology of the exocrine pancreas: Developmental abnormalities,
inflammations, tumors of the exocrine pancreas.

02.14. M.  32. lecture
Dr. Székely
Endocrinology I.
Pathology of the endocrine pancreas: Diabetes mellitus.

02.16. W.
### Endocrinology II


### Kidney I


### Kidney II


### Urinary tract


### Male genital system

Diseases of the epididymis, testis, prostate, penis and scrotum.

### Neonatology - Pediatric tumors


### Gynecologic pathology I


### Gynecologic pathology II


### Breast I

Symptoms and diagnosis of breast diseases. Malformations. Benign symptomatic lesions (inflammations, fibrocystic disease, epithelial dysplasia and its significance, benign tumors)

### Breast II


### Cytodiagnostics – 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).

### Blood and lymphoid organs I


### Blood and lymphoid organs II


### Blood and lymphoid organs III

Lymphomas (Hodgkin, non-Hodgkin). Metastatic tumors in bone marrow and lymph nodes.
04.11. M.  47. lecture  
Dr. Arató  
**Bones and joints.**  
The structure of the bone and cartilage. Osteogenesis.  
Growth and maturation disorders of the skeleton.  
Aseptic bone necrosis, Reactive osteogenesis.  
Osteomyelitis and specific inflammations.  
Metabolic disorders. Tumors and tumor-like lesions of the bones.  
Joints

04. 13. W.  
Dean’s Day

04.27. W.  48. lecture  
Dr. Schaff  
**Nervous system I.**  

05.02. H.  49. lecture  
Dr. Schaff  
**Nervous system II.**  
Demyelinating diseases. Neurodegenerative diseases. Pathology of the eye and ear. Metabolic diseases

05.04. W.  50. lecture  
Dr. Schaff  
**Nervous system III.**  
Neoplasms (neuroectodermal, mesenchymal, embryonic, ectopic tissue, metastasis). Peripheral nervous system (neuropathies, inflammations, trauma, tumors). Skeletal muscle and soft tissue tumors  
Muscular dystrophies, myopathies, diseases of neuromuscular junction, fatty tumors, fibrous tumors, fibrohistiocytic tumors, tumors of skeletal muscles.

05.09. M.  51. lecture  
Dr. Tímár  
**Skin.**  
Basic notions in skin pathology.  
Manifestations of systemic diseases of the skin.

05.11. W.  52. 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. May, 2000- Histopathology exam slides-CD
7. Székely E: Practice on Histopathology I-H. (Semmelweis Univ. of Medicine)- video
Histopathology practices and slides for the final examination

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

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

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

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

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

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

7. practice
- Leiomyoma H&E (24)
- Leiomyosarcoma (slide demonstration)
- Lipoma H&E (25)
- Liposarcoma (slide demonstration)
- Rhabdomyosarcoma H&E (26)
- Capillary haemangioma of the skin H&E (27)

8. practice
DIAGNOSTIC METHODS IN PATHOLOGY – IMMUNOHISTOCHEMISTRY

9. practice
- Benign nephrosclerosis H&E (28)
- Coronary-sclerosis H&E (31)
- Myocardial infarction, early H&E (32)
- Myocardial infarction, old H&E (33)
- Endocarditis H&E (34)
<table>
<thead>
<tr>
<th>Practice</th>
<th>Cases</th>
</tr>
</thead>
</table>
| 10. | IRDS H&E (35)  
Bronchopneumonia H&E (36)  
Lobar pneumonia H&E (slide demonstration)  
Miliary tuberculosis in lung H&E (37)  
Tuberculous lymphadenitis H&E (38) |
| 11. | Small cell carcinoma of the lung H&E (39)  
Squamous cell carcinoma of the lung (40)  
Adenocarcinoma of the lung (42)  
Mesothelioma H&E (41)  
Pneumoconiosis H&E - slide demonstration  
Lung metastasis H&E (60) |
| 12. | Mixed tumor of the parotid gland H&E (43)  
Squamous cell carcinoma of the oesophagus (63)  
Chronic peptic ulcer H&E (44)  
Chronic gastritis, Helicobacter pylori H&E (45)  
Giemsa (45/G)  
Signet ring cell carcinoma of the stomach H&E (46)  
PAS (46/P) |
| 13. | Gastric GIST H&E (30)  
Villous atrophy in small intestine (47)  
Ulcerative colitis H&E (48)  
Crohn’s disease H&E (49)  
Pseudomembranous colitis (10) |
| 14. | Organ Demonstration |
| 15. | Alcoholic hepatitis H&E (50)  
Viral hepatitis – HCV/HBV H&E - slide demonstration  
Liver cirrhosis H&E (52)  
Hepatocellular carcinoma H&E (53)  
Cavernous haemangioma of liver H&E (51)  
Colorectal adenocarcinoma metastasis in liver (23) |
| 16. | Colloid goiter H&E (86)  
Hashimoto thyroiditis (85)  
Follicular adenoma of the thyroid gland H&E (88)  
Follicular carcinoma (slide demonstration)  
Papillary carcinoma of the thyroid gland H&E (89)  
Carcinoid tumor in small intestine H&E (58)  
Adrenal cortical adenoma H&E (59) |
| 17. | Acute pancreatitis H&E (56)  
Chronic pancreatitis H&E (55)  
Adenocarcinoma of pancreas H&E (57)  
Islet cell tumor of pancreas H&E (16) |
| 18. | Acute purulent pyelonephritis H&E (62)  
End stage kidney H&E (64)  
Renal cell carcinoma H&E (65)  
Transitional cell carcinoma H&E (66) |
19. practice
Nodular hyperplasia of the prostate H&E (67)
Adenocarcinoma of prostate H&E (68)
Seminoma H&E (69)
Non-seminoma / Embrional carcinoma H&E (63) !!!
Choriocarcinoma of testis H&E (61)

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

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

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

23. practice
Normal bone marrow H&E – slide demonstration
Reactive lymph node H&E (87)
Leukemic bone marrow H&E - slide demonstration
Hodgkin lymphoma H&E (83)
Non Hodgkin lymphoma (high grade) H&E (84)
Squamous cell carcinoma metastasis in lymph node H&E (22)

24. practice
DIAGNOSTIC METHODS IN PATHOLOGY – MOLECULAR PATHOLOGY

25. practice
Purulent meningitis H&E (90)
Meningioma H&E (92)
Glioblastoma multiforme H&E (93)
Brain metastasis H&E (91)

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

27. practice
Childhood tumors
Osteosarcoma H&E (98)
Neuroblastoma H&E (99)
Wilms tumor H&E (100)
Rhabdomyosarcoma (26)

28. practice
Repetition - consultation
List of oral questions

A

2. Morphologic reaction to persistent stress (Atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia).
5. Chemical (vasoactive) mediators in inflammation.
6. The role of neutrophil leukocytes in inflammation.
7. Chronic and granulomatous inflammation.
8. Vascular inflammatory 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 parathyroid gland.
52. Pathology of the thymus and pineal gland.
53. Diseases affecting the epididymis.
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).
28. Diseases caused by bacteria (staphylococcal, streptococcal infections, filamentous bacteria)
29. Diseases caused by mycobacteria.
30. Diseases caused by protozoans.
31. Diseases caused by fungi.
32. Diseases caused by nematodes.
33. Diseases caused by trematodes, cestodes, arthropods.
34. Opportunistic infections.

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.

C
1. Atherosclerosis.
2. Hypertensive vascular and heart disease.
4. Aneurysms and diseases of the veins.
7. Rheumatic and other “hypersensitivity” diseases of the heart.
8. Inflammatory, nutritional, endocrine and metabolic diseases of the heart.
15. Pneumoconiosis.
16. Restrictive, infiltrative or interstitial lung disease.
17. Diseases of the pleura.
18. Diseases of the pulmonary vasculature.
20. Pathology of esophagus (except congenital disorders and tumors).
22. Peptic ulcer disease.
25. Pathology of the appendix.

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.
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 on 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 from histology in the final. The first three ranked students – the winners - will be awarded.

Consultation

Upon request there is a possibility for a consultation with the tutor. The students are welcome to autopsy practices of other groups for retake or extra occasion as long as it does not disturb the ongoing practice. 2 weeks before and during the exam period there are histopathology consultations. The exact schedule will be displayed in the institute. There is no autopsy consultation during the exam period.

Examinations

SEMMIFINAL:

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. Similarly, copying the questions and the answer sheet is not permitted. Your scores are evaluated and double-checked by the supervisors. The results are posted at the same day, generally early afternoon.

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

<table>
<thead>
<tr>
<th>Points</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-60</td>
<td>1</td>
</tr>
<tr>
<td>61-70</td>
<td>2</td>
</tr>
<tr>
<td>71-80</td>
<td>3</td>
</tr>
<tr>
<td>81-90</td>
<td>4</td>
</tr>
<tr>
<td>91+</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 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 secretariat. 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?
d/ Combination (simple choice with multiple choice pattern).
You have four or five possible answers and 5 combinations. Mark the only letter covering the correct answers.
For example:
The natural habitat of the following animals is the water.
1. lion A: 1, 2, 3
2. sea-lion B: 2, 3, 4
3. whale C: 2, 4, 5
4. shark D: 1, 2
5. baboon E: 2, 3
(Mark: B)

e/ Combination questions with a standard code:
A: 1, 2, 3
B: 1, 3
C: 2, 4
D: 4
E: 1, 2, 3, 4

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

g/ Relations: You should match the corresponding numbers and letters
For example:
1. wind A: snow
2. light B: fluid
3. white C: air
4. water D: food
5. taste E: sun
(Mark: 1C, 2E, 3A, 4B, 5D)
h/ Medical term.
For example:
What is the name of the medical person who is engaged in pathology?
(Write: pathologist)

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

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

FINAL

Form of the FINAL examination

The final exam consists of two practical and two theoretical parts. The practical parts are histopathology in the histology practice room and organ demonstration in the autopsy hall. The theoretical parts are: a written test (60-question test) and oral exam about theoretical topics – concerning not only the organ or organ complex to be demonstrated, but the complete material discussed in the official pathology books as well as the material presented in the oral lectures.

The material for the examinations is based on the book, the lectures and practices as well!!

The examination for EM 1-6 will take place at the 2nd Department of Pathology starting with the written test in the Lecture Hall of the II. Department.

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

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

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

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

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

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

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

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

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

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

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

Finally, theoretical topics are to be discussed.

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

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

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

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

However, it should be kept in mind that the final mark is not merely the mathematical average of the given grades! Additional factors, for example your midterm grades, your general performance during the academic year (evaluated by your tutor), the point scores of your
written test, the competition results, etc. are also taken into consideration. Serious mistakes or „clear spots” in your knowledge may significantly affect the final mark or even result in a failing.

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

### Schedule

#### Lectures

<table>
<thead>
<tr>
<th></th>
<th>I. semester</th>
<th>II. semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>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>6</td>
<td>Tuesday 13:00-14:30</td>
<td>11:10-12:50**</td>
</tr>
<tr>
<td>1-4, 5</td>
<td>Wednesday 9:30-12:50</td>
<td>9:30-12:50**</td>
</tr>
<tr>
<td>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. Kató SZÉNÁS
- **Group 2**: Dr. András KISS / Dr. Dóra HARGITAI
- **Group 3**: Dr. Hajnalka GYÖRFÖY / Dr. Eszter SZÉKÁCS
- **Group 4**: Dr. Janina KULKA / Dr. Gábor LOTZ
- **Group 5 (EM6)**: Dr. Eszter SZÉKELY / Dr. Magdolna KARDOS / Dr. Tamás SZÉKELY

**Responsible tutor:** Dr. András KISS

### Schedule for the academic year of 2010/2011

**1st semester:** September 06. - December 10, 2010

- **Official holidays:**
  - October 23. (Saturday) – National Holiday
  - November 01. (Monday) – All Saints Day

- **Examination period:** December 13, 2010 - January 21, 2011
- **Retake examination period:** January 24. - January 28, 2011
2nd semester: January 31. - May 13., 2011

Official holidays:
- February 16-17. (Semmelweis Student Research Competition),
- March 11. (Friday) 2011
- March 15. Tuesday National Holiday 2011
- April 13. (Wednesday) Dean’s Day 2011
- April 18.– April 25. - (Spring Vacation) 2011
- April 25. (Monday) - Easter Monday 2011
- May 01. (Sunday) - Labor Day 2011
- June 13. (Monday) - Whit Monday 2011

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

Examination period: May 16. - June 30., 2011
- August 15. – August 26., 2011

Retake examination period: August 29. – September 02. 2011

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 pulse. Examination of the vascular system. The pericardium.
The diagnosis of vascular heart disease (1). The diagnosis of vascular heart disease (2). Heart failure.
The blood pressure. Hypertensive vascular disease.
General signs and symptoms of the diseases of abdominal organs (gaseous abdominal distention, ascites, painful acute abdominal diseases).
Examination of the gastrointestinal tract. General diagnostics of liver diseases.
General diagnostics of biliary tract diseases.
General diagnostics of pancreatic diseases. Metabolic diseases (diabetes mellitus).
The erythrocyte sedimentation rate (ESR). The complete blood count (CBC). General diagnostics of hematological diseases.
Immunology.
Investigation of the musculoskeletal and the nervous systems.

Practice: Ward rounds (4 hours per week)
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)

Disorders of the anterior pituitary. Disorders of the posterior pituitary.
Thyroid physiology. Tests of thyroid function and thyroid regulation. Hyperthyroidism.
Hypothyroidism. Thyroiditis. Sporadic and endemic goiter. Benign and malignant tumors of the thyroid.
Disorders of the adrenal cortex. Laboratory evaluation of adrenocortical function. Adrenocortical hypofunction.
Cushing’s syndrome. Mineralocorticoid excess states.
The adrenogenital syndromes. The adrenal medulla and the sympathetic nervous system.
The parathyroid glands. Hypercalcemia and hypocalcemia.
The carcinoid syndrome.
Diabetes mellitus (1). Etiology, pathogenesis, clinical forms.
Diabetes mellitus (2). Complications. Treatment.
Hypoglycemic disorders. Pancreatic islet cell tumor The hyperlipoproteinemias.
Anorexia nervosa. Obesity.

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 I.
General Medicine, 3rd year Medical Students
Institute of Behavioral Sciences
Lecturer: Prof. Dr. Ferenc Túry

Code: AOMAGPSZ-1A
Credit: 2
2010/2011

1st Semester

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

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

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

Department:
Institute of Behavioral Sciences
Department of Psychology
NET Building, 20th floor
1089, Budapest, Nagyvárad tér 4.
Tel: 210-2953
Secretary: NET Building, 20th floor, Room-2005. tel: 2102930/ 56114.
Course Leader: Dr. Piroska Balog  
NET 20th floor, room 2011  
Tel: 210-2930/ 56403, e-mail: balopir@net.sote.hu  
Further information: www.behsci.sote.hu

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

Participation and making up for absences:  
Participation list will be recorded at the end of every lecture and every seminar. To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature. (The maximum number of absences permitted: one absence from the lectures and two absences from the seminars.) Content of the lectures may appear in the exams.

Certifying absence from lesson:  
Medical certificate

Semester requirements:  
To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature. (The maximum number of absences permitted: one absence from the lectures and two absences from the seminars.) One absence can be overlooked by the teacher if the student writes an essay. The topic of the essay must be discussed with the seminar leader in advance.

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

Type of exam:  
Practice

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

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

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

Course Textbook:  
Recommended text books:

MEDICAL PSYCHOLOGY II.
General Medicine, 3rd year Medical Students
Institute of Behavioral Sciences
Lecturer: Prof. Dr. Ferenc Túry
2010/2011

2nd Semester

Code: AOMAGPSZ_2A
Credit: 2

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

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

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
<th>Topic</th>
<th>Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>LECTURE</td>
<td>Psychotherapeutic methods</td>
<td>Dr. György Purebl</td>
</tr>
<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>

Department:
Institute of Behavioral Sciences
Department of Psychology
NET Building, 20th floor
Tel: 210-2953

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

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

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

Participation and making up for absences:
Participation list will be recorded at the end of every lecture and every seminar. To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature. (The maximum number of absences permitted: one absence from the lectures and two absences from the seminars.) Content of the lectures may appear in the exams.

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

Semester requirements:
To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature. (The maximum number of absences permitted: one absence from the lectures and two absences from the seminars.) One absence can be overlooked by the teacher if the student writes an essay. The topic of the essay must be discussed with the seminar leader in advance.

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

Type of exam:
FINAL EXAM

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

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

Certifying absence from exam:
Medical certificate presented to the course leader
SEMELWEIS UNIVERSITY / FACULTY OF MEDICINE

**Course Textbook:**


**Recommended text books:**


**MEDICAL ETHICS (BIOETHICS)**

Institute of Behavioral Sciences

Tutor: **Prof. Dr. József Kovács**

**Code:** AOMAGOET_1A

**Course Syllabus.**

(28 hours)

**Course objectives:**

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

1. **week (Lecture)**

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

2. **week (Practices)**

Normative theories of ethics.
- Deontological theories of ethics. (The Golden Rule, Kant and the categorical imperative, the principle of double effect, W.D. Ross and the prima facie duties.)
- Teleological theories of ethics. (Act and rule utilitarianism.)
- Theories of natural law.
- Contractarian theories of ethics. (The theory of justice of John Rawls)

3. **week (Lecture)**

The basic principles of medical ethics.
- The principle of respect for autonomy.
- The principle of non-maleficence.
The principle of beneficence.
The principle of justice.
Arguments against „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 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. 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
Important:
To participate on at least 75% of the total number of lessons is a prerequisite of getting the signature. (One absence from the lectures and two absences from the practices is the maximum number permitted.) The student can make up for the absences in practices held at other times elsewhere. Doctor’s certificate is required to justify absence from the lessons and the exam.

Exam type: semi-final

Sign up for the exam: through the Neptun system.

PHARMACOLOGY AND PHARMACOTHERAPY
Tutor: Dr. Júlia Timár

Second semester

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

Curriculum:

Pharmacology and Pharmacotherapy (three semesters)

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

Drug discovery, basic and clinical evaluation of new drugs.
Cancer chemotherapy– Basic pharmacology of cancer chemotherapeutic drugs. Drugs affecting the immune system.
Endocrine drugs. – Hypothalamic and pituitary hormones. Thyroid and antithyroid drugs. Calcium and agents that affect bone mineral homeostasis. Treatment of osteoporosis. Pancreatic hormones and antidiabetic drugs. Adrenocortico steroids and andrenocortical antagonists.
Vitamins.

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

Course Director: Prof. Dr. Klára Gyires
Maximum number of absences is 25 percent of the practices in the semester

**Absence:** Medical certificate is accepted
There are no obligatory midterms

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

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

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

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

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

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

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

**PROBLEM BASED MEDICAL PHYSIOLOGY**
Course Director: Prof. Dr. László Hunyadi M.D., Ph.D., D.Sc., Head of the Department of Physiology
Lecturers: Professor László Hunyadi M.D., Ph.D., D.Sc.
Professor Péter Enyedi M.D., Ph.D., D.Sc.
Péter Vármai M.D., Ph.D., associate professor
Miklós Geiszt M.D., Ph.D., associate professor
Gábor Czisják 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 themes 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 acclimatization.
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 (A0KIKELTZA)
In case of an over-application selection will be made on the base of the exam achievement.
Condition of the sign: participation at min. 75% of the lessons. Replacement of an absence is not possible.
Absence: Certification of the absence from the lessons is not required. Absence from the exam should be certificated in three weekdays (medical certificate).
Semester requirement: Recitation: every week, oral or written. Details will be given on the first lesson.
End-semester evaluation: Condition of the sign: participation at min. 75% of the lessons. A practical mark will be given.
Mark: Weekly results plus the oral exam grade.
Exam sign up: On the last week, personal.
Written subject-matter of instruction: the discussable themes were selected by the lecturers of the Department of Physiology, and are given to the students every week. The necessary subject-matter of instruction will be published on the home page of the Department of Physiology. Use of data bases in the Central Library of the University (e.g. PubMed) is required.

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

First semester
Credit: 2
Topics:
1. Eukaryotic cell organization.
5. Structure and function of endoplasmic reticulum.
8. Protein and lipid transport mechanisms in eukaryotic cell.
9. Mitochondria and peroxisomes.
12. Cells in their social context.

**Important notes:** No possibility to make up of absences.
There are no mid-term exams.
Attendance of 75% of lectures is necessary for the end-term signature.
Requirement: practice grade based on the result of the written or oral exam.
(depending on the number of students).

**Core text:**

**Optional text:**
Alberts et al.: Molecular Biology of the Cell. (4th or 5th edition)
Lecture presentations and additional texts are available on the homepage: www.dgci.sote.hu

---

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

Lecturers: Prof. Dr. András Falus
Dr. Sára Tóth

**Second semester**

**Credit:** 2

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

**Important notes:** No possibility to make up of absences.
There are no mid-term exams.
Attendance of 75% of lectures is necessary for the end-term signature.
Requirement: practice grade based on the result of the written or oral exam.
(depending on the number of students).
Core text:
Lecture presentations and additional texts are available on the homepage: www.dgci.sote.hu

COMPULSORY SUMMER PRACTICE
Internal Medicine - 1 month, 186 hours

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

Introduction to the Department of Internal Medicine and to the hospital.
Examination of the patient with special emphasis on the physical examination with cardiovascular and pulmonary diseases.
Under the attending physician’s supervision, taking responsibility and caring for patients who are assigned to the student by the chief physician. This is done at the level of a 3rd year student, recognizing that the student has not had pharmacology yet.
Learning and practicing the most important medical interventions.
Medication administration and dosing (different techniques).
Taking the pulse, blood pressure and temperature as well as the measurement of body height and weight.
Learning and practicing venipuncture and the administration of injections (intramuscular, intravenous, subcutaneous injections, administration of insulin).
Familiarity with equipment (ECG, Doppler and/or oscillometry, monitors, oxygen supply according to availability at the different locations).
The assembly of intravenous catheters and practicing IV catheter insertion (under supervision).
Participation at transfusions, practicing blood group determination.
Introduction to patient documentation and subsequently the independent recording of patients’ data.
Establishing relationships with patients and their families with special emphasis on providing medical information to the patient and maintaining physician-patient confidentiality.
Practicing so-called small laboratory techniques, i.e. those basic laboratory techniques needed in bedside diagnosis (RBC/WBC count, urinalysis, use of dipsticks).
Participation in consultations, especially consultations of patients known to the student.
Participation in the hospital’s medical seminars and conferences.
On-call duties.
## 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>AOV/KOZO94_1A</td>
<td>History of Medicine</td>
<td>2</td>
<td></td>
<td>2</td>
<td>pract. mark</td>
<td></td>
</tr>
<tr>
<td>AOV/HUMO84_1A</td>
<td>Developmental Biology I.</td>
<td>2</td>
<td></td>
<td>2</td>
<td>pract. mark</td>
<td>exclusively from the 2nd year</td>
</tr>
<tr>
<td>AOV/PK088_1A</td>
<td>Information Retrieval Science in Library</td>
<td>2</td>
<td></td>
<td>3</td>
<td>pract. mark</td>
<td></td>
</tr>
<tr>
<td>AOV/DEM156E1A</td>
<td>Teaching assistance (Demonstrator)</td>
<td></td>
<td></td>
<td>1 or 2</td>
<td>pract. mark</td>
<td>Anatomy, Histology, Embryology II. + at least an average of 4 in the previous academic year</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>AOV/DZTOR_1A</td>
<td>History of Medicine</td>
<td>2</td>
<td></td>
<td>2</td>
<td>pract. mark</td>
<td></td>
</tr>
<tr>
<td>AOV/HUMLA_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>AOV/HUMO84_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>AOV/ANT095_1A</td>
<td>Anatomy of Diagnostic Imaging</td>
<td>2</td>
<td></td>
<td>2</td>
<td>pract. mark</td>
<td>Anatomy, Histology, Embryology III.</td>
</tr>
<tr>
<td>AOV/PK088_1A</td>
<td>Information Retrieval Science in Library</td>
<td>2</td>
<td></td>
<td>3</td>
<td>pract. mark</td>
<td></td>
</tr>
<tr>
<td>AOV/DEM156E1A</td>
<td>Teaching assistance (Demonstrator)</td>
<td></td>
<td></td>
<td>1 or 2</td>
<td>pract. mark</td>
<td>Anatomy, Histology, Embryology II. + at least an average of 4 in the previous academic year</td>
</tr>
<tr>
<td>Subject Code</td>
<td>Subject</td>
<td>Lectures</td>
<td>Practicals</td>
<td>Credit Points</td>
<td>Examination</td>
<td>Prerequisite</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------------------</td>
<td>----------</td>
<td>------------</td>
<td>---------------</td>
<td>-------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>AOVKIK099_1A</td>
<td>Clinical Physiology of Respiration and Respiratory Diseases</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
</tr>
<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. with a grade of 4 (good) or 5 (excellent)</td>
</tr>
<tr>
<td>AOSMMS174_1A</td>
<td>Traditional Chinese Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>For 3rd, 4th &amp; 5th year students</td>
</tr>
<tr>
<td>AOVGEN083_1A</td>
<td>Basic Cell Biology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVTDK158E1A</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>at least a grade of 4 (good) in the relevant, completed subject</td>
</tr>
<tr>
<td>AOVZ090_1A</td>
<td>Bases of Medical Physics</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>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>AOSNEK246_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>AOVVM093_1A</td>
<td>Basics of Medical Chemistry</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>pract. mark</td>
<td>–</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOSMMS174_1A</td>
<td>Traditional Chinese Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>For 3rd, 4th &amp; 5th year students</td>
</tr>
<tr>
<td>AOVGEN247_1A</td>
<td>Basic Genetics</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVKIK102_1A</td>
<td>Clinical Cardiovascular Physiology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
</tr>
<tr>
<td>AOSMAG139_2A</td>
<td>Jewish Medical Ethics II</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVTDK158F1A</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>at least a grade of 4 (good) in the relevant, completed subject</td>
</tr>
<tr>
<td>AOVTDK164F1A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

#### Fourth Year

<table>
<thead>
<tr>
<th>7th semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subject code</strong></td>
</tr>
<tr>
<td>AOFRMFRM_2A</td>
</tr>
<tr>
<td>AOKOZKOZ_1A</td>
</tr>
<tr>
<td>AOKARKAR_1A</td>
</tr>
<tr>
<td>AOBL1BEL13A</td>
</tr>
<tr>
<td>AOS81SEB_1A</td>
</tr>
<tr>
<td>AOFULFUL_1A</td>
</tr>
<tr>
<td>AOBORBIR_1A</td>
</tr>
<tr>
<td>AOPUPUL_1A</td>
</tr>
<tr>
<td>AOSZBFOR_1A</td>
</tr>
<tr>
<td>AORADRAD_1A</td>
</tr>
</tbody>
</table>

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

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

**Total Number of Credit Points from Obligatory elective / Elective Subjects**: 4
<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>AOFRFRM_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>AOKZKZ_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>AUBL1BEL14A</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>AUBL2BEL24A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUBL3BEL34A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOBZSEB_2A</td>
<td>Surgery II.</td>
<td>2</td>
<td>2.5</td>
<td>4</td>
<td>pract.mark</td>
<td>Surgery I.</td>
</tr>
<tr>
<td>AOFULFUL_1A</td>
<td>Otorhinolaryngology (either)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final#</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOBORBOR_1A</td>
<td>Dermatology (or)</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>semi-final#</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOPULPUL_1A</td>
<td>Pulmonology (either in the 1st or in the 2nd semester)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
<td>Internal Medicine III.</td>
</tr>
<tr>
<td>AOOORTORT_1A</td>
<td>Orthopaedics</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final#</td>
<td>Surgery I.</td>
</tr>
</tbody>
</table>

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

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

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

---

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


   Note: The list of the textbooks in Public Health, please find after its syllabus!

14. Davis-Christopher : Textbook of Surgery rövidített változata!

Recommended textbooks:

2. Lynn S. Bickley: Bates’ Guide to Physical examination and history taking
3. Tulassay Z. (Ed): A belgyógyászat alapjai (I.-II.)
4. Internet links for Internal Medicine
14. Fitzpatrick’s Dermatology in General Medicine
   Editor: Freedberg, Irwin M.; Eisen, Arthur Z.; Wolff, Klaus; Austen, K. Frank; Goldsmith, Lowell A.; Katz, Stephen I.
15. full-text online access:
16. Shimizu’s Textbook of Dermatology – accessable online also
<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Author(s)</th>
<th>Publisher</th>
<th>Edition</th>
<th>Date</th>
</tr>
</thead>
</table>
PHARMACOLOGY AND PHARMACOTHERAPY
Tutor: Dr. Júlia Timár

First Semester
Lectures (1,5 hours)  Practices (2,5 hours)

Code: AOFMFRTM_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, 2010/2011, 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: AOFRMFMRM_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 III (Year 4, 2010/2011, second semester):

Clinical pharmacology of cardiovascular diseases – Hypertension, heart failure, ischemic heart diseases, atherosclerosis, arrhythmias.
Pharmacology of drugs used to treat diseases of the blood – Drugs used in anemias. Drugs used in disorders of coagulation.
Pharmacology of drugs used to treat diseases of the blood – Drugs used in bronchial asthma. Cough suppressants. Expectorants. Mucolytic agents. Treatment strategy of bronchial asthma and COPD.
Pharmacology of the gastrointestinal system – Agents improving digestion. Laxatives and antiarrheal agents. Emetics, antiemetics and prokinetic agents. Drugs affecting liver function. Drugs affecting biliary function. Drugs used to treat inflammatory bowel disease. Treatment strategy of peptic ulcer, gastroesophageal reflux disease and IBD
Immunopharmacology
Treatment strategy of rheumatoid arthritis
Clinical pharmacology of diabetes mellitus. Metabolic syndrome.
Toxicology

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

Absence justification: Medical certificate is accepted

There are no obligatory midterms

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Academic administration (index matters, submission of assignments... etc.)
Mrs. Hlatky Sándoróé (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.
CARDBIOLOGY
Tutor: Dr. György Bárczi

First Semester

Lectures (1 hour per week)
1. Introduction. Differential diagnosis in acute cardiac care
   History, epidemiology
   Acute coronary syndrome, pulmonary embolism, aortic dissection
2. High blood pressure and the heart
3. Ischaemic heart disease I.
   Atherosclerosis
   Invasive/non invasive tests
   Stable coronary artery disease
4. Ischaemic heart disease II.
   Acute coronary syndrome
5. “Cardiology Day”
   Live demonstrations, interactive lectures, resuscitation practice, etc.
6. Heart failure
   Cardiomyopathies
7. Arrhythmias I.
   Supraventricular arrhythmias
8. Arrhythmias II.
   Ventricular arrhythmias
   Syncope, sudden cardiac death
9. Acquired valve diseases
10. Congenital heart diseases in children and in adults
11. Cardiac Surgery
    Indications and recommendations
12. Infective heart diseases, cardiac tumours
13. Primary and secondary prevention
14. Interactive case presentations

Practices
(ward rounds, 2 hours per week)
1. Bedside practice – ECG
2. Bedside practice – heart failure, echocardiography
3. Bedside practice – valvular heart diseases
4. Coronary care unit – intraaortic balloon pump
5. Coronary care unit – invasive haemodynamics
6. Coronary care unit – cardiogenic shock
7. Out patient care – ischemic heart diseases
8. Out patient care – arrhythmias
9. Common practice – invasive cardiology
10. Common practice – non-invasive cardiology
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 Keital

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

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

Lectures: Monday 8.00-9.40
Lecture Hall of 1st Department of Medicine, 1083 Budapest, Körényi S. u. 2A
Title of the lecture

Introduction. Epidemiology, etiology and pathomechanism of cardiac diseases

Diagnosis of cardiac diseases.

Acute coronary syndrome. Angina. Myocardial infarction


Sudden cardiac death.

Disorders of the heart valves

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

Arrhythmias

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

Cardiac pharmaceutical agents

Procedures done for coronary diseases. Devices used in cardiology; 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)


The resuscitation. (CPR). The Shock.

Fluid, electrolyte and metabolic disturbances. Artificial nutrition.

Surgical infections I. -Pyogenic infections, wound infections. Anaerobic infections.

Tetanus and gas gangrene. - Artificial nutrition of the 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 techniques, sutures etc.

Bleeding and blood clotting. Techniques of haemostasis.

Plastic surgery.

Surgical oncology.

Tissue and organ transplantation.

Consultation. Questions/Answers.
Introduction of the Department. The OP, the instruments of OP, The organization. The wards, etc. The central sterilization station. The admission system of the patients. The preoperative wash-up. Asepsis, antisepsis, Get dressed for OP. The practical preparation of the skin.

The surgical instruments. What and when.

The treatment of wounds. The wound healing. The type of wounds. Bandaging procedures.

Injections. - Hypodermic, intracutan, intra muscular etc.,-

The suture techniques. Sutures, knots, clips, etc.-

Laparoscopic techniques.

Transfusion. The blood groups. Possible reactions and complications.

Anaesthesiology. - General anaesthesia. Narcosis systems. The intensive care unit.

The post operative treatments.

The resuscitation. - The CPR. - The latest pharmaceutical aspects of the CPR.

- Demonstration on AMBU unit.

Ward practices. (5x) - Investigate the surgical patients. The method of physical examinations. The evaluation of the findings.

SURGERY

Second Semester

Lectures (2 hours per week)

Appendicitis

Acute abdomen

The oesophagus and diaphragm

The stomach, duodenum and small intestine

The large intestine and the ano-rectal region

The ileus

The liver

The cholelithiasis and biliary surgery

Pancreas I. - Acut pancreatitis

Pancreas II. (Chr. Pancreatitis, Tumours)

The artificial nutrition - Enteral, parenteral

The acute gastrointestinal bleeding

Catastrophic surgery. - Surgery of tropical diseases

Pediatric Surgery

Consultation - Questions-answers

Site of lectures: (előadások helye): lecture hall

PRACTICALS: all in wards (2,5 hours per week)
OTORHINOLARYNGOLOGY, HEAD AND NECK SURGERY
Tutor: Dr. László Noszek

First Semester - half class
Second Semester - half class

Lecture (1 hour per week)

The role of otorhinolaryngology in medicine.
Clinical anatomy of the ear. Diseases of the external ear.
Acute and chronic otitis media I. (etiology, diagnosis, pathologie).
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 orolarynx.
Diseases of the tonsils and their complications.
Indications and complications of the tonsillecctomy.
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.
Advanced examination of the pharynx.
Directoscoo, fiberscoo. Peritonsillar abscess. Dangers of the tonsillecctomy.
Tonsillecctomy. Operating theatre.
Direct and Indirect of the voice.
Laryngoscopy. Videostroboscopy.
Emergency management of suffocation.
Oesophagocopy, 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 Dentroalveolar surgery
Dental reconstructions. Prosthodontics
Biomaterials in the maxillofacial surgery
Developmental anomalies of the maxillofacial region
Dent to-maxillofacial radiology
Computer tomography (CT) in the maxillofacial surgery
Pediatric dentistry and orthodontics
Cariology and endodontics
Consultation

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

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

Credits: 4

First Semester - half class
Second Semester - half class

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

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

a. Knowledge of diagnostics, ethiopathogenesis and treatment of skin diseases concerning the competency of general practitioners.

b. Problem-oriented assessment of skin symptoms and the knowledge of their connections to general medicine.

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

2.5 hours every week. Half of the fourth year students takes the subject in the first semester, the other half in the second semester. Students examine patients, master the description of skin symptoms, evaluation of symptoms and dermatological treatment options. Fungal infections are discussed during a special practice.

Important notes:
All preclinical modules are required. Registration in the Neptun system is imperative at the beginning of the semester.
Attendance of the lectures and practices is compulsory. Three absences are accepted. 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, C.T-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.

ORTHOPEDICS
Tutor: Dr. Gergely Holnapy

Second Semester

Lectures
Subject of Orthopedic Education. Organization.
Orthopedic care in Hungary. Possibilities of prophylaxis.
Inflammatory diseases in orthopaedics.
Anatomy and biomechanics of the spine. Mai posture.
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).


Osteoarthritis of the hip. Etiology, pathology, clinical and radiological symptoms. Methods of conservative and operative Treatment.


Consultation.

ORTHOPEDICS

Practices
Fixation, relief of weight bearing, plaster splints, plaster bandages. Examination of patients. Examination of the diseases and deformities of the spine, malposture (Calves deformity, spondylarthrosis).
Preparation of plaster splints, bandages. Examination of patients with lumbago, ischias syndrome, 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)

188
Practices
(Must-see-images: image collection on our website)

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

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

COMPULSORY SUMMER PRACTICE
General Surgery - 1 month, 186 hours
Students are required to take part in the daily morning conference.

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

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

Students should participate as second assistants in simple and moderately complicated operations. They are expected to stay on night duty upon request, except on weekends. During night duty, students are under the supervision of either the consultant or an authorized surgeon and take part in the evaluation of all problems caused by either acute or chronic diseases. Students are required to participate in the daily outpatient care. They are required to take part in all consultations organized for 4th year medical students.
## 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>A0BL1BE15A1</td>
<td>Internal Medicine V.</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>semi-final</td>
<td>Internal Medicine IV.</td>
</tr>
<tr>
<td>A0BL2BE25A2</td>
<td>Surgery III.</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>Surgery II.</td>
</tr>
<tr>
<td>A0NO1SE3A</td>
<td>Obstetrics and Gynecology I.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract.mark</td>
<td>Surgery II.</td>
</tr>
<tr>
<td>A0GOYE11A1</td>
<td>Pediatrics I.</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>semi-final</td>
<td>Internal Medicine IV.</td>
</tr>
<tr>
<td>A0PS1EM_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>A0NE1EU_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>A0GSGS1A</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>A0GSGS1A</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>A0TR1TRA_1A</td>
<td>Traumatology</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>semi-final</td>
<td>Surgery I.</td>
</tr>
<tr>
<td>A0SISZE1A</td>
<td>Ophthalmology</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>semi-final#</td>
<td>Surgery I.</td>
</tr>
</tbody>
</table>

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

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

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

1. 1st Department of Internal Medicine
2. 2nd Department of Internal Medicine
3. 3rd Department of Internal Medicine
4. 1st Department of Pediatrics
5. 2nd Department of Pediatrics

# The grade influences the qualification of the Diploma
### 10th semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjests</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOBL1BEL16A²</td>
<td>Internal Medicine VI.</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>semi-final</td>
<td>Internal Medicine V.</td>
</tr>
<tr>
<td>AOBL2BEL26A²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOBL3BEL36A²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AON01SZU_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 Gynecology I.</td>
</tr>
<tr>
<td>AOGY1GYE12A³</td>
<td>Paediatrics II.</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>pract. mark</td>
<td>Paediatrics I.</td>
</tr>
<tr>
<td>AOGY2GYE22A³</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<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>AOGSIGS_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>AOANES00_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 V.</td>
</tr>
<tr>
<td>AOUROURO_1A</td>
<td>Urology</td>
<td>1</td>
<td>2.5</td>
<td>3</td>
<td>semi-final#</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOCSCSA_1A</td>
<td>Family Medicine in Daily Practice</td>
<td>10x2/sem.</td>
<td>3x3.5/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

---

Faculty of Medicine
LIST OF TEXTBOOKS

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

Recommended textbooks:

4. Silver, Kempe Byn and Fulginiti’s Handbook of Pediatrics. Appleton and Lange. ISSN 0440-192
10. Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers
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

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.

196
OBSTETRICS AND GYNECOLOGY

Tutors:
1st Dept. of Obstetrics and Gynecology: Dr. Gyula Richard Nagy
Dr. József Gábor Joó
2nd Dept. of Obstetrics and Gynecology: Dr. Nándor Ács

First Semester

Lectures (2 hours/week)

Normal labor and delivery. Obstetrical examinations.
Changes in maternal anatomy and physiology during pregnancy.
Prenatal care. Symptoms and signs of pregnancy.
Spontaneous abortion. Ectopic pregnancy. Basic knowledge of ultrasonography.
Abnormalities of pregnancy.
Abnormalities of labor and delivery.
Monitoring of the fetus.
Hypertensive disorders in pregnancy.
Premature delivery. Intrauterine growth retardation (IUGR).
Neonatology.
Twin pregnancy. Operative delivery.
Normal and abnormal puerperium.
Major issues in current obstetrics.

Second Semester

Lectures (2 hours/week)

Gynecological endocrinology. Menstrual disorders.
Inflammatory diseases in obstetrics and gynecology.
Sterility, infertility. Assisted reproduction.
Cervical cancer.
Cervical Cancer.
Tumors of the ovary.
Tumors of the vulva, vagina and corpus uteri.
Principles of cancer therapy.
Endometriosis. Polycystic ovary syndrome (PCOS).
Genetic Counseling.
Prenatal genetic diagnosis.
Fetal anomalies. Dysmorphology.
Perimenopausa.
Genital prolapse. Urogynecology.
Vital statistics. Medical legal problems in obstetrics and gynecology. Occasionally the topics are interchangeable. Practical education will be in groups of ten students. They spend a week in the Department rotating between major divisions and special outpatient clinics. They will take part in the night duties twice during the week.

**PEDIATRICS**
1st Dept. Tutor: Dr. Erzsébet Horváth
2nd Dept. Tutor: Dr. Péter Hauser

**LECTURES IN PAEDIATRICS FOR 5th GRADE MEDICAL STUDENTS**

**First Semester**

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

**Subject**
The care of newborns and preterm babies.
Fever of infants and children. Congenital malformations
Introduction to paediatrics. Newborn physiology
Nutrition of infants. The care of the healthy baby
Presenting symptoms. Methods of paediatric diagnosis Inborn errors of metabolism
Diseases of the respiratory tract
Renal diseases in childhood
Psychomotor development of the child.
Mental retardation
Fluid and electrolyte disturbances.
Care of the child with diarrhea
Malnutrition. Chronic malabsorption disorders
SIDS
Seizures during infancy and childhood.
Status epilepticus
Congenital heart diseases
Disturbances of the lipid metabolism

**PEDIATRICS**

**First Semester**

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

**PEDIATRICS**

**Second Semester**

Location: 1. Department of Pediatrics, Budapest, Bokay J. u. 54. I. floor

**TOPIC**

Collagen-vascular (autoimmune) diseases
Leukemia, Haemophilia, Malignant tumors
Diseases of the neuromuscular and skeletal systems
Surgical diseases of childhood, Acute and recurrent abdominal pain
Infectious diseases immunization
Meningitis, encephalitis. Differential diagnosis of the headache
Urinary malformations/infections. Urolithiasis.
Hypertension
Obstructive (wheezy) bronchitis. Bronchial asthma
Immunology
Endocrinology I.
Genetic counselling, Screening programs
Methods for clinical investigation of infants with perinatal brain damage
Laboratory investigations in paediatrics
Endocrinology II.

**PEDIATRICS**

**Second Semester**

**Practice**

ECHO
Fever
Vomiting
Abdominal Pain diff. dg.
Diarrhea
Follow up of Patients With Chronic Diseases
Pediatric Emergency (surgery)
Prevention (screening, vaccination, vitamins)
Neurological Examination of Newborn Infant
The Patient With Glycosuria, Proteinuria etc.
Anaemia
Outpatients’ Clinic Practice
Pediatric Otorhinolaryngology (examination)
Endocrinology (puberty)
Pediatric Oral Health

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

PSYCHIATRY
Tutor: Dr. 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
Anxyolitic therapies
Sleep disorders and their treatment
Family therapy, autogen training, hypnosis
Behaviour and cognitive therapies
Other psychotherapies
Crisis intervention and community psychiatry
Aftercare and rehabilitation of psychiatric patients
Consultation and liaison psychiatry

Second Semester

<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).

UROLOGY
Tutor: Dr. Péter Nyirády

Second Semester

The aim of the education:
Our aim is to teach our students for the basic knowledge the most important differential diagnostic steps, physical examination of urology and to educate them to perform the most important, minor urological procedures, like urethral and suprapubic catheterization.

Syllabus:
Embryology of the urological tract
History of urology, Symptoms, Diagnostic Measures
Urolithiasis, Diagnosis and Treatment
Incontinency, Neurogenic Bladder
Benign Prostatic Hyperplasia
Prostate Cancer
Renal Tumours
Tumours of the Urinary Bladder
Injuries to the GU Tract
Testicular and Penile Tumours
Male Infertility
Endoscopic Urology (Endourology)
Emergency in Urology
Paediatric Urology
Nonspecific Infections of the GU Tract

Attendance

Practice:
Taken at the Clinical Department of Urology after the lectures and requires two hours. During the practices all parts of urology are covered and as many physical examinations and procedures are showed, later done as possible.

Absence from the course: Only an official medical certificate is accepted.
Absence from the exam: Only an official medical certificate is accepted or it is evaluated individually.
End-semester signature: By the end of the semester exam has to be taken which is accepted if the student absolved all the practices except maximum 3 practices.

Exam: There is an oral exam. The result is depending on the practice score given by the tutor of the student and also on the examiner’s opinion. Exam sign up: Through the Neptun system. Modifying must be done minimum 24 hours before the date of the planned exam through the Neptun system.

ANAESTHESIOLOGY AND INTENSIVE THERAPY
Tutor: Dr. András Lorx

First Semester

Lectures and Practice

Short history of Anesthesiology
The pharmacology of Anesthesiology
a) Intravenous anesthetics
b) Injectable 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

204
...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
l) 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 Szebeny

First Semester

Lectures (2 hours per week)

General traumatology. Injuries to soft tissues.
Management of wounds.
Bone healing
Methods of managing fractures.
Septic and nonseptic complications of trauma.
Legal aspects of trauma.
Immediate care and major incidents.
(multiple injuries, shock, major disasters).
Thermal injuries.

Pediatric trauma.
Hand injuries.
Injuries to the face and head.
Injuries to the trunk. Thoracic, and abdominal traumas.
Injuries to the spine.
Injuries to the upper limb
Pelvis injuries, fracture of the femur.
(proximal end, shaft and distal end).
Injuries to the knee
Management of open fractures.
Fractures of tibia and fibula.
Injuries of ankle. Fractures of the talus and hind foot. Fractures of the forefoot.

Practice (2 hours per week)

History and clinical examination

Injuries
(radiology, CT, MRI, laboratory, isotope)
Methods of managing trauma (splints, slings, casts, traction)
Bandaging

Monitoring of cardiovascular functions, mechanical ventilation
Lecture relevant
Lecture relevant
Lecture relevant
Lecture relevant
Lecture relevant
Lecture relevant
Lecture relevant

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

OPHTHALMOLOGY

First Semester

Practice:

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

NEUROLOGY
General information
Tutor: Prof. Dr. Anita Kamondi
Tel.: 210-0330, Fax: 210-1368

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

Responsible Secretary: Andrea Kovács (Andi)

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

Official textbooks for 5th year:
3. Lindsay, Bone, Callender: Neurology and Neurosurgery Illustrated. Churchill Livingstone

Other suggested books:
2. Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers
**1st Semester**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Basic principles of neurological diagnosis. The anamnestic. The connection between symptoms, localization and causes of neurological diseases.</td>
</tr>
<tr>
<td>2</td>
<td>Patient examination I. Cranial Nerves (part 1).</td>
</tr>
<tr>
<td>3</td>
<td>Patient examination III. Motor system (part 1)</td>
</tr>
<tr>
<td>4</td>
<td>Patient examination IV. Motor system (part 2)</td>
</tr>
<tr>
<td>5</td>
<td>Patient examination II. Cranial Nerves (part 2)</td>
</tr>
<tr>
<td>6</td>
<td>Patient examination V. The sensory system</td>
</tr>
<tr>
<td>7</td>
<td>The cortex</td>
</tr>
<tr>
<td>8</td>
<td>The spinal cord. The peripheral nervous system.</td>
</tr>
<tr>
<td>9</td>
<td>The brainstem. The thalamus.</td>
</tr>
<tr>
<td>10</td>
<td>The cerebellum</td>
</tr>
<tr>
<td>11</td>
<td>Disturbed consciousness. Neurological emergency.</td>
</tr>
<tr>
<td>12</td>
<td>Inflammatory disorders, AIDS.</td>
</tr>
<tr>
<td>13</td>
<td>Tumors of the nervous system</td>
</tr>
<tr>
<td>14</td>
<td>Neuroradiology (CT, MRI, angiography)</td>
</tr>
</tbody>
</table>

**2nd Semester**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Headache</td>
</tr>
<tr>
<td>2</td>
<td>Aphasial</td>
</tr>
<tr>
<td>3</td>
<td>Cerebrovascular diseases (part 1)</td>
</tr>
<tr>
<td>4</td>
<td>Cerebrovascular diseases (part 2)</td>
</tr>
<tr>
<td>5</td>
<td>Epilepsy</td>
</tr>
<tr>
<td>6</td>
<td>Multiple sclerosis</td>
</tr>
<tr>
<td>----</td>
<td>-------------------------------</td>
</tr>
</tbody>
</table>

**Neurology Examination Question List for Vth year Students**

I. Neuroanatomical, physiological and biochemical basis of neurology
1. The visual system
2. Innervation of extraocular muscles. The oculomotor nuclei.
3. Gaze control. Gaze disturbances
5. Trigeminal nerve
6. Facial nerve
7. The vestibular system
8. Hearing
9. Glossopharyngeal, vagus, accessory and hypoglossal nerves
10. Organization of motor control
11. Sensory systems
12. Gross anatomy of the hemispheres
13. Basal ganglia and the thalamus
14. The limbic system
15. The cerebellum
16. Blood supply of the hemispheres. Cerebral metabolism
17. Blood supply of the brainstem, cerebellum and the spinal cord
18. The cerebrospinal fluid
II. Basic Neurology
1. Classification of reflexes (stretch, superficial, abnormal and primitive reflexes)
2. Characteristics of upper and lower motoneuron lesion
3. Paresis syndromes according to the site of lesion
4. Symptoms of spinal cord damage
5. Medulla oblongata (bulbar) syndromes caused by circulatory disorders
6. Pontine syndromes caused by circulatory disorders
7. Mesencephalic syndromes caused by circulatory disorders
8. Muscle tone control
9. Nystagmus
10. Vertigo and dizziness; peripheral and central vestibular syndromes
11. Symptoms of cerebellar lesions
12. Symptoms of frontal lobe damage
13. Symptoms of temporal and occipital lobe damage
14. Symptoms of parietal lobe damage
15. Symptoms of occipital lobe damage
16. Thalamic syndromes
17. Clinical examination and types of aphasia
18. Structural basis and types of unconsciousness
19. Physical examination of the unconscious patient
20. Increased intracranial pressure, brain herniations, hydrocephalus
21. Hyperkinesia
22. Gait disturbances
23. Bladder and bowel dysfunction
24. Symptoms of intervertebral disc herniation
25. Lesions of the peripheral nerves of the upper extremity. Tunnel syndromes on the upper limb.
26. Lesions of the peripheral nerves of the lower extremity.

III. Neurological Disorders
1. Classification of ischaemic cerebrovascular disorders
2. Intracranial bleedings, subarachnoid hemorrhage
3. Symptomatology of Parkinson’s disease
4. Classification of headaches. Trigeminal neuralgia
5. Focal epilepsies
6. Generalized epilepsies
7. Meningitis. Examination of the CSF in inflammatory neurological diseases
8. Encephalitis
9. Diagnosis of polyneuropathies
10. Emergency in neurology
11. Traumatic CNS diseases
12. Diagnosis of dementia
13. Multiple sclerosis: signs and diagnosis
14. Intracranial tumors
15. Spinal tumors
16. Disorders of the nervous system due to alcoholism
17. Myasthenia gravis
18. Guillain-Barre syndrome
19. Encephalopathies
20. The motor neuron diseases
21. Muscular dystrophies
## Content

<table>
<thead>
<tr>
<th>Responsible speciality</th>
<th>Time distribution (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E/I = emergency/intensive</td>
<td>Together P:45 + E/I:45</td>
</tr>
<tr>
<td>P = prehospital care</td>
<td>Together</td>
</tr>
<tr>
<td>M-C-M = military and catastrophe medicine</td>
<td>Together</td>
</tr>
</tbody>
</table>

### Introduction: Definition and goals of emergency medicine.

- **Emergency patient evaluation – ABCDE approach and it’s patophysiological and clinical background.**
  - **E/I: 90**

- **CPR I.** The chain of survival. Pathophysiology of resuscitation. BLS:AED. Out-of-hospital CPR.
  - **Together**
  - **P:60 + E/I:30**

- **CPR II. ALS. In-hospital CPR. Postresuscitation life support (PLS).**
  - **E/I: 90**

- **A. Airway and Breathing problems.**
  - **Acute respiratory failure.**
  - **Acute exacerbation of chronic respiratory failure (COPD).**
  - **Acute life-threatening bronchial asthma.**
  - **Pneumonia.**
  - **E/I: 90**

- **B.**
  - **Differential diagnosis of chest pain in the field and in the ED.**
  - **Process of ACS management from first responder to definitive treatment.**
  - **Pulmonary embolism.**
  - **Aortic dissection.**
  - **Together**
  - **P:30 + E/I:60**

### Content

<table>
<thead>
<tr>
<th>Responsible speciality</th>
</tr>
</thead>
<tbody>
<tr>
<td>E/I: 90</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.
  - **Together**
  - **P:30 + E/I:60**

- **D. Differential diagnosis and management of altered mental state.**
  - **Organic and metabolic causes.**
  - **Management of convulsion.**
  - **Management of meningitis.**
  - **Process of stroke management from first responder to definitive treatment.**
  - **Psychiatric emergencies.**
  - **Together**

- **Differential diagnosis and treatment of acute and chronic pain in the field and in the ED.**
  - **Pain syndromes.**
  - **Pain management, analgo-sedation, narcosis.**
  - **Causes and management of fever on-the-scene and in the ED.**
  - **Together**
  - **E/I: 90**
<table>
<thead>
<tr>
<th>Content</th>
<th>Responsible speciality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prehospital and ED care of trauma and polytrauma.</td>
<td>Together</td>
</tr>
<tr>
<td>Military and disaster medicine I.</td>
<td>M-C-M</td>
</tr>
<tr>
<td>Military and disaster medicine II.</td>
<td>M-C-M</td>
</tr>
<tr>
<td>Children in the field and in the ED. Emergency pediatrics.</td>
<td>Közbős</td>
</tr>
</tbody>
</table>

**Practices (15×45 min + 2×12 hours shift „on call duty”)**

1×90 min basic emergency medicine hands on skill practice – (OMSZ / AITK / ED)
- airway management (OPA, LMA/LT, ET intubation, etc.)
- breathing (BMV)
- IV access (practice on training manikins)

1×90 min CPR basic skills - AITK;
2×90 perc CPR simulations - AITK;

3×90 min case based learning (90 min OMSZ; 90min AITK; 90 min ED)

2×12 hours shift „on call duty” in the ED according to the rotation schedule;

OMSZ: National Ambulance Service
AITK: Dept. of Anesthesia and Intensive Therapy (Kútvölgyi Hospital)
ED: Emergency Department of Szt. Imre Hospital
PREHOSPITAL AND EMERGENCY MEDICINE (PEM) – Compulsory elective subject
Dept. of Anesthesiology and Intensive Therapy
Tutor: Dr. András Lorx

Program and topics

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</td>
<td></td>
</tr>
<tr>
<td>diagnosis, time factor. Algorithms. Cooperation with other health care</td>
<td>P</td>
</tr>
<tr>
<td>and emergency care providers.</td>
<td></td>
</tr>
<tr>
<td>Military and disaster medicine III.</td>
<td>M-C-M</td>
</tr>
<tr>
<td>Military and disaster medicine IV.</td>
<td>M-C-M</td>
</tr>
<tr>
<td>Toxycology II. Recognition and management of concerning intoxications.</td>
<td></td>
</tr>
<tr>
<td>Prehospital emergency care. Orientation and important measures in the</td>
<td></td>
</tr>
<tr>
<td>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,</td>
<td></td>
</tr>
<tr>
<td>electrolyte disturbances, acute severe asthma, anaphylaxis, electric</td>
<td></td>
</tr>
<tr>
<td>injuries, immersion, submersion, hypothermia, severe trauma,</td>
<td></td>
</tr>
<tr>
<td>intoxication).</td>
<td>E/I</td>
</tr>
<tr>
<td>Recognition and management of acute metabolic crises.</td>
<td>E/I</td>
</tr>
<tr>
<td>Recognition and management of hemato-oncological emergencies.</td>
<td>E/I</td>
</tr>
<tr>
<td>Acute dermatological signs. Acute disorders of the musculo-skeletal</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td>Together</td>
</tr>
<tr>
<td>Law and ethics during prehospital care and in the ED.</td>
<td>(P+E/I)</td>
</tr>
<tr>
<td>Case discussion: Chest pain.</td>
<td>Together</td>
</tr>
<tr>
<td>Case discussion: Dyspnea.</td>
<td>Together</td>
</tr>
<tr>
<td>Case discussion: Abdominal pain.</td>
<td>Together</td>
</tr>
<tr>
<td>Case discussion: Altered mental state.</td>
<td>Together</td>
</tr>
</tbody>
</table>

Together (P+E/I)
FAMILY MEDICINE IN DAILY PRACTICE

**Director:** Prof. László Kalabay MD PhD
**Tutor:** Péter Torzsa MD Tel: 355-8530, e-mail: ptorzsa@gmail.com
**Duration:** 9 lectures and 3 seminars
**Exam:** Test exam
**Credit value:** 2 credit points
**Minimum/maximum group size:** 55/210

Key elements of these seminars include:
- The structure and functioning of the Hungarian Primary Health Care System. Activity of the general practitioners.
- The ranges of normality as they will assist in recognizing and anticipating deviations from normal and the earliest manifestations of disease.
- Quick diagnoses. Applying the best available evidence in investigations and and management of common family medicine conditions.
- The different roles of the physician and awareness of their own personal strengths and weaknesses and how it affects the Patient-Doctor relationship.
- The appropriate selection and use of screening methods for the early detection of disease. The principles of preventative care and methods to implement appropriate screening and patient education programs.
- Assessing patients’ illness experience within their family and social context.
- Learn to manage in-hospital urgent and emergency situations in primary care.
- Management/treatment approaches of commonly presenting conditions.
- Rural medicine.
- Video communication to improve communication skills.
- Arrangement for the 2 weeks practice (rotation).

ANTIBIOTIC THERAPY - infectology obligatory elective subject

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

2010-2011. 1st semester - Lectures

Basic principles of antimicrobial therapy. Microbiological diagnosis, as the basis of antimicrobial therapy. The concept of “drug of choice”
Diagnosis of infectious diseases: clinical relevance of the various diagnostic tests
Optimisation of antimicrobial therapy. The pi/pd approach, correlation of dosage and clinical efficacy.
Infectious diseases with exanthemas
Upper respiratory tract infections (common cold, acute and chronic rhinosinusitis, acute otitis, tonsillitis/tonsillar pharyngitis). Epidemiology, the influence of age. Theoretical considerations and practice.
Community acquired pneumonia. Epidemiology, the difficulties of etiological diagnosis. The impact of emerging bacterial resistance on the clinical efficacy of antibiotics. The modern approach and practice based on it
The nosocomial infections. Nosocomial pneumonia, difficulties of etiological diagnosis.
Antimicrobial treatment. Iv catheter-associated infections.
Intraabdominal infections (primary and secondary peritonitis, cholecystitis). Urinary tract infections.
Central nervous system infections. Meningitis, etiological diagnosis, antimicrobial treatment.
Tropical diseases. HIV and AIDS.

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

Recommended textbooks:
2. Szalka A., Tinár L., Ludwig E., Mészner Zs. (Szerk.): Infektológia.
   Medicina, Budapest, 2005.
4. Figures of the lectures are available electronically

ELECTIVE SUBJECTS
(basic/pre-clinical/clinical modules) – curricula
It is compulsory to choose one subject each semester 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)
Lecture 10: Basics of organic chemistry, hybrid states of carbon, organic reaction types. Isomerism, structural isomerism. IUPAC nomenclature. (Hrabák)
Lecture 11: Stereochemistry. Geometric and chiral isomerism, nomenclature. Prochirality. (Hrabák)
Lecture 12: The most important groups of organic compounds. Aliphatic and aromatic skeletons, their reactions. Repetitions of their structures. Consultation before the 2nd midterm – focused on organic chemistry. (Sipeki)
Lecture 13: The most important groups of organic compounds according to their functional groups, their reactions. Repetitions of their structures. (Sipeki)
Lecture 14: Closing test. 30 multiple choice questions and 10 structures. (Csala, Tóth E, Dóczi, Bak)

VALUE OF ULTRASONOGRAPHY IN THE CLINICAL DIAGNOSTICS
(Lecturer: Dr. Ágnes Szebeni M.D., D. Sc.)

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

First Semester

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

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

Handouts will be distributed.

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

INTRODUCTORY LECTURES OF TRADITIONAL CHINESE MEDICINE

The topics:
1. Chinese way of thinking about medicine – Introductory lecture
2. Basic principles in Chinese anatomy and physiology (Yin-yang, Chi, meridian, points, cun, etc.) – 1 lecture
3. The twelve meridians and their points (locations and indications) – 6 lectures
4. The rules of the point selections – 2 lectures
5. The five- element theory, future trends in research and in the clinical use – 1 lecture
LIBRARY INFORMATICS - MEDICAL LITERATURE RESEARCH
Lecturer: Dr. Livia Vasas PhD. General Director – Central Library

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

SUGGESTED SEMESTER 1-10.

Exam-form: Practical mark
Credit-value: 3 credit-points
Minimum/maximum group-size: 8/30
The aim of the subject: Teaching students how to search in medical literature sources
Thematic: Medical e-catalogues, e-books, e-libraries, databases (Ovid/PubMed/Web of Science), MD Encyclopaedia, Web (WHO), Scientometry (IF, Citation)
Application: Judit Batiz; Tel.: 459-1500/55263;
Application deadline: 30th August – 3rd September, 2010
Precondition: There isn’t.

1. Introduction, technical details introduction of Central Library’s Homepage: www.lib.sote.hu and its facilities
   Useful Links, List of current periodicals, WebPac
   Searching databases main concepts: bibliographic database, record, result list, thesauri, full text, abstract
   Organizing e-mail study groups
   Searching in the WePac and current periodicals list
   6 samples- Homework

2. Web Searching and database searching professional discussion lists and their role in scientific work
   Web Searching with different types of search engines, advanced searching with Boolean operators, relevancy and decision making
   MESH and PubMed Searching
   Model searching – on general exercises
   6 samples- Homework

3. Link collections and professional portal sites
   Concept of a portal, what a medical portal should contain: conference news, research news and abstracts from current articles, professional mailing lists and chat rooms, links introduction of medical portals:
   http://www.medbioworld.com/
   Medical Matrix: http://www.medmatrix.org/reg/login.asp
   http://www.lib.uiowa.edu/hardin/md/index.html; BioSites
   http://galen.library.ucsf.edu/biosites/
   to make a link collection from a declared subject- Homework
Searching International Library catalogues
Searching in Ulrich’s Plus periodical catalogue and form books in Books in Print database at the Ovid platform
Library of Congress: http://lcweb.loc.gov/
The British Library http://www.bl.uk/
Heidelberg University Catalogue
http://www.ub.uni-heidelberg.de/Englisch/
National Széchenyi Library http://www.oszk.hu/

How do we get from the abstract to the full article? - practicing the proper search strategy
6 samples- Homework

5. Information retrieval practical lesson
sample searching (bibliographic, statistical and web searching)
Consultation on search methods and results.
6 samples- Homework

6. OVID databases
Evidence Based Medicine databases: the role of the EBM in research and practice
Full text journals in Ovid databases: 115 Lippincott Williams and Wilkins journals and 1500 journals of Science Direct, Cross Ref how they can appear by results -OPENLINK technology
MEDLINE, EMBASE, CINAHL databases which kind of information they contain
unique and general search fields. 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 Pharmc. 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 crystalline records
(from Science Direct, Web of Science, OVID Medline, PubMed and e-journals hosted by Highwire)
creating own records
search facilities within our records and from PubMed;
data handling: spell checking, filtering duplicates
Homework: create your own database by collecting records

9. E-journals
E-journals – main concepts: fulltext and its formats, e-journal types:
Online only or with existing Print edition. Free medical journals:
http://www.freemedicaljournals.com/; Online First publishing, DOI code

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

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

**Information retrieval practical lesson**

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

**Impact factor (JCR)**

- Homework discussion
- **calculating Impact factor** and its role by measuring scientific publications
- List of Journals with IF: Journal Citation Report and its editions.
- **Searching an exact data in JCR**, handling data: sorting and filtering journals
- **Web of Science and its sections**
  - general searching in the database model searching –guided
- **Homework**: bibliographic searching on an exact author
- **Citation analysis**
  - Homework discussion
  - **meaning of Citation analysis and its role by measuring scientific works**
  - preparing the citation analysis:
    - Web of Science database cited reference search
  - **Saving references in the official format, special rules of the method:** self-citation, Identification of records
    - **Homework**: analysis of a professor. (in print)
  - **scientometric practical lesson**
  - **calculating Impakt rystal and making citation analysis of given publication’s list**
    - Correction and discussion on main rules
    - **Information retrieval- practical lesson**
    - **Homework discussion**
    - **model searching on 6 samples** – Bibliographic search, statistic search and Internet search for multimedia materials are included.
    - **consultation** on the search methods and results, which was the proper search strategy.
    - Summary of the course, consultation
    - **exam: 2 electronic tests during the semester, renewal opportunity for each tests.**
    - **Proposed grade or exam test during the exam period.**
INTRODUCTION TO CLINICAL ANATOMY

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

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

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

CLINICAL GENETICS

1st Dept. of Obstetrics and Gynecology

First Semester

- The fundamentals of classical genetics
- Polygenic inheritance, multifactorial determination
- General cytogenetics
- Basic principles of embryology and teratology
- Clinical molecular genetics
- Amniotic fluid cell culture for cytogenetic analysis
- Alphafetoprotein (AFP)
- Genetic amniocentesis
- Pathology of multiple pregnancy
- Genetic counseling
- General aspects of decision making regarding the fate of pregnancy
- Elements of phenotype analysis
- Embryopathology and fetal pathology
- Sphingolipidoses
- Mucopolysacharidoses and mucolipidoses
- Disorders of carbohydrate metabolism
Diseases of amino acid metabolism
Haemophilia and other bleeding disorders. Congenital immunodeficiencies. Congenital hypothyroidism. Cystic fibrosis
Hereditary muscular and neurological diseases
Congenital disturbances of ossification
Neural tube defects (NTDs). Hydrocephalus. Other craniospinal malformations
Thoracic and abdominal malformations
Cystic kidney disease. Obstructive uropathies
Down syndrome. Further autosomal trisomies
Duplication and deficiency (deletion) syndromes
Fragile X mental retardation syndrome (Martin-Bell syndrome)
Disturbances of sex differentiation.
Intrauterine bacterial infections. Congenital rubella syndrome. Further viral and chlamydial infections. Congenital toxoplasmosis
Prenatal screening for fetal malformations and trisomies

ANAESTHESIA AND INTENSIVE THERAPY
Dept. of Anaesthesiology 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.
Paraphysiology 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.
- Pancreatitis chronic.
- Appendicitis, diverticulitis, sigmoiditis, typhilitis.
- Surgical infections.

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

CLINICAL HEMATOLOGY
2nd Dept. of Internal Medicine
Course director: Prof. Dr. Lidia Sréter

Second Semester

Topics of interest in the field of hematology, state of the art of various hematological and hemato-oncologic diseases

2 hours per week
**Main topics:**

1. Place and significance of hematology. Normal blood production, basics of hematologic diagnosis.
2. Classification of anemias, diagnosis.
3. Myelodysplastic syndromes.
4. Diagnosis and treatment of acute leukemias.
5. Acute leukemias of the childhood.
6. Classification and treatment of lymphomas I.
7. Classification and treatment of lymphomas II.
10. Dermatologic manifestations of hematological diseases and hematological symptoms of dermatologic diseases.
11. Immunocytopenias.
14. Infectious complications of hematological diseases

**ACTUAL PROBLEMS IN TROPICAL MEDICINE**

(An optional course for English speaking students 10 x 2 = 20 hours/year at Semmelweis University, Budapest)

**Course co-ordinator:** Agnes Axmann MD, PhD, DTM&H

**1-2 lectures**
1. Definition & role of tropical medicine, it’s relationship with travel medicine. What is the travel medicine? Influence of the tropical climate on human health. Pre-travel examination. (Agnes Axmann MD, PhD)
2. Prevention of the diseases: chemoprophylaxis of malaria. The impact of vectors on the transmission of tropical diseases. (Agnes Axmann MD, PhD)

**3-4 lectures**
1. Recent challenge of travel medicine: the Tsunami in South-Asia. Lecture of the Hungarian doctor, who gave a help at first in the Tsunami hit area, Thailand. (Agnes Axmann MD, PhD)
2. Cholera and differential diagnosis of diarrhoeal diseases. (Agnes Axmann MD, PhD)

**5-6 lectures**
1. Malaria: one of the most important diseases originated from the Tropics. History of the disease. Aetiology, epidemiology and geographical distribution of drug resistant strains: A, B and C region by WHO. (Agnes Axmann MD, PhD)
2. Clinical course and treatment of uncomplicated and complicated malaria. Pathogenesis of cerebral malaria: the Glasgow coma scale. Disease prevention by vaccine (Agnes Axmann MD, PhD)
7-8 lectures 1. Tick-borne diseases in tropics: Lyme-disease, relapsing fever caused by Borrelia species, etc. (Andras Lakos MD, PhD)
2. Treatment of tick-borne diseases (Andras Lakos MD, PhD)

9-10 lectures 1. Tuberculosis, as an emerging disease and global health problem. Etiology, epidemiology and the clinical course of the disease. (Somoskővi Ákos, MD, PhD)
2. Treatment of Tuberculosis. The World Health Organization DOT (directly observed treatment) protocol. (Somoskővi Ákos, MD, PhD)

11-12 lectures 1. Protozoan diseases of great importance: leishmaniasis, african trypanosomiasis (sleeping sickness) (Agnes Axmann MD, PhD)
2. Intestinal protozoan infections: Giardia lamblia & Entamoeba histolytica infections. (Szenasi Zsuzsa Dr Biol., PhD)

2. Fluke infections: Oriental liver flukes, lung flukes & intestinal flukes. Clinical course & treatment of mentioned diseases. (Agnes Axmann MD, PhD)

15-16 lectures Vaccines linked to international travels:
1. Vaccines against viral diseases: Yellow fever, Japonase-B encephalitis, rabies, hepatitis A&B (Jelenik Zsuzsa MD.)
2. Vaccines against bacterial diseases: typhoid, cholera, meningococcus meningitis, plague etc. (Jelenik Zsuzsa MD)

17-18 lectures 1. Re-emerging bacterial diseases: plague, leprosy etc.
2. History, etiology & epidemiology of diseases (Agnes Axmann MD, PhD)

19-20 lectures 1. Viral haemorrhagic fever: Denque, yellow fever, Lassa, Ebola etc. (Sandor Dobi MD, PhD)
2. Travel to the tropics: a film made in Ethiopian Leprosy Center (ALERT) (Agnes Axmann MD, PhD)

Tropical medicine course: optional
Address: 1094 Budapest, Páva u 27. Tropical & Travel Medicine Institute

HISTORY OF MEDICINE
Institute of Public Health
Lecturer: Dr. Judit Forrai

The history of medical science, considered as a part of the general history of civilization The study of the history of medicine helps us to describe and understand how people in different times and cultures experienced and dealt with these fundamentals of human existence. This knowledge can inform debate about the present and the future, and help to bring medicine and science to a wide audience. All human societies have medical beliefs that provide explanations for birth, death, and
disease. Many cultures in ancient times treated illnesses with magic and herbal remedies. Ancient Egyptians thought that their gods healed them. The ancient Greeks pursued medicine as a science. Hippocrates, the most famous physician of the time (c. 400 B.C.), believed that diseases had natural causes, not supernatural ones. By the Middle Ages, Europe was hit with a terrible epidemic that killed millions of people called the plague, or Black Death. The Renaissance marked a new period of interest in art and science throughout Europe. Despite new medical discoveries, many doctors still practiced old ways. Most sick people could not afford to see a trained physician. Instead, they consulted midwives who assisted with childbirths and made herbal remedies to treat illnesses. Minor surgeries were not done in the hospital but at the local barbershop. Medical research and training improved in the 18th century but there were still no cures for diseases like smallpox, a disease that killed millions of people over thousands of years. Middle Eastern doctors gave people mild doses of the smallpox to combat the disease. The portrayal of the history of medicine becomes more difficult in the 19th century. Discoveries multiply, and the number of eminent doctors is so great that the history is apt to become a series of biographies. Nevertheless, it is possible to discern the leading trends in modern medical thought. In the beginning of 20th century the research and technology have expanded medical knowledge and improved medical practices like surgery. Today, doctors are able to perform less invasive surgical procedures. The science of medicine has progressed dramatically in just the last 50 years. Career opportunities in health care have also expanded. There is a need for more skilled medical professionals, not only in hospitals, but in dentist and doctors’ offices, research labs, rehabilitation centres, mental health clinics, nursing homes and even schools.

Topics/week


13. Consultation

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

Exam requirement: written test


CLINICAL CARDIOVASCULAR PHYSIOLOGY

AOKKIKCAR_1A

Elective course for medical students in the 3rd, 4th and 5th years.

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

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

Students who meet the following criteria will receive 2 credit points: regular attendance of classes and successful written exam. Material for the exam includes lecture topics and textbooks suggested by the lecturers.

Further information is available on this web page: www.elet2.sote.hu

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.


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
2010/2011
Department of Family Medicine
Director: Prof. Dr. László Kalabay
Location: Kútvölgyi Hospital, first floor, library

Family medicine as a speciality
Past and present of family medicine in Hungary
Daily routine of family doctor
Dr. Kalabay László

Doctor-patient relationship in family practices. Communication skills
Dr. Torzsa Péter
History of the medical professionalism

Lecturer: Dr. Péter Balázs

Class Sessions: Medical professionalism as an ethical norm is an ancient behavioural pattern and theoretical construction alike based on sacral calling. Consequently, roots of the modern professional mythology may be traced back to the late Neolithic age, but the whole framework was systematized as soon as in the old Egyptian and Mesopotamian culture. Since the Hippocratic age, the medicine of craftsmen was based on teachings of natural sciences and the Middle Age supported the medicine with mythology of sciences, but only the Enlightenment provided the social environment for a de-sacralized professionalism, nevertheless it followed exactly the ancient religious patterns. General part of the topic is concerning the onset of professionalism while discussing different manifestations and transitions related to ideologies, socio-economic circumstances and scientific teachings from the Neolithic age down to the latest market economies. Specific part demonstrates milestones and historic ages, which were decisive in this proceeding: Old Egypt, Mesopotamia, old
age Judaism, early and consolidated Christianity, impact of Islam on Europe, Reformation of the Roman Catholic church, Enlightenment, the Communist ideology and the social market economy.

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

**Justification for non-attendance at lectures**
Up to 2 sessions no need for justification, in case of more than 3 sessions missed no confirming of the course.

**Justification for non-attendance at the exam**
Only certificates of administrative authorities.

**Control of knowledge acquired within the time-frame of sessions**
No control during the session period.

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

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

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

**Entering for examination**
Student Administration System (NEPTUN)

**Modification of data entered for examination**
When registered in NEPTUN only after consulting the lecturer

**Justification for non-attendance at the exam**
Only certificates of administrative authorities.

**Note on readings**
Handout of Power Point presentations at the beginning of each relevant session.
HEALTH INFORMATICS
Institute of Development and Higher Education in the field of Medical Informatics
Director: Dr. Elek Dinya
Tutor: Dr. Mariann Szabó Dinya

2 hours/week

THEMES
Data, information, knowledge and decision in the medicine and health care
Classification and coding systems, ICD-10
Informatics in the prevention
Networking
WEB 2.0 and the health care system
Signal analysis and image processing
Standards in the medical informatics
Information systems in the health care
The electronic patient record
Knowledge management
Data security in the health systems. Digital signatures
Informatics of the primary health care and drug management
Health care financing and informatics
Health and health care statistics
Telemedicine

JEWISH MEDICAL ETHICS I-II
Institute of Behavioral Sciences
Director: Prof. Dr. Ferenc Túry
Course Director: Rabbi Baruch Oberlander

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

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

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

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

List of textbooks:

Obligatory: Handouts given during lectures

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

**Semester I.**

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

**Semester II.**

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

**SLEEP MEDICINE**

Institute of Behavioral Sciences
Lecturer: Prof. Dr. Ferenc Túry
Course Director: Dr. Márta Novák Ph.D.

Credit: 2

1. Introduction to sleep medicine
2. Physiology of sleep and alertness
3. Electrophysiology
4. Cardiovascular and respiratory functions in sleep
5. Significance and classification of sleep–wake disorders
6. Assessment and diagnosis of sleep-wake disorders
7. Insomnias
8. Circadian rhythm disorders
9. Parasomnias
10. Sleep-related breathing disorders: sleep apnea
11. Sleep-related movement disorders: restless legs syndrome and periodic limb movements in sleep
12. Pediatric sleep medicine
13. Sleep in special populations: aging and gender issues
14. Visit to the Sleep laboratory. Exam / evaluation

Subject material is distributed electronically. Websites and publications are available as well.

**Recommended textbooks:**

**Important:**
To participate on at least 75% of the total number of lessons is a prerequisite of getting the signature. One absence from the lectures (two lesson hours) is the maximum number permitted. The student can make up for the absence by preparing a study in a subject given by the teacher.

Semester requirement: test
Exam type: practice mark
Sign up for the exam: through the Neptun system.
Certifying absence from the exam: written certificate and request

**CLINICAL ONCOLOGY**
– elective for students in the 4th and 5th year

2 hours/week, 2 credits

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

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

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

ORGAN TRANSPLANTATION

First Semester

Lecturer: Dr. Róbert Langer
Department: Faculty of Medicine, Department of Transplantation and Surgery
Time: 14x90 minutes (on Tuesdays between 5 -6.30 p.m.)
For semesters: 7, 9
Type of exam: written
Credits: 2
Minimum/maximum number of students: 20/140

Course thematics:
1. Introduction - History, Terminology, Organ Donation
2. Pediatric Kidney Transplantation
3. Histocompatibility, Immunologic Aspects and Immunsuppression
4. Kidney Transplantation Indication, Operation, Results, Complications
5. Liver Transplantation
6. Pediatric Liver Transplantation, Hepatocyte Transplantation
7. Follow-up of the Transplant Patient
8. Small Bowel and Multiorgan Transplantation
9. Pancreas and Islet Cell Transplantation
10. Lung Transplantation
11. Heart Transplantation
12. Radiological Aspects of Transplantation
13. Ethics of Transplantation - Case reports
14. Terminal Examination

Sign up: through the Neptun system
Deadline of sign up: September 1
### OBLIGATORY ELECTIVE AND ELECTIVE SUBJECTS – SCHEDULE OF THE CLINICAL MODULE

<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>AOVSIF105_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>
</tr>
<tr>
<td>AOVANE104_1A</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>AOVELI101_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. with a grade of 4 (good) or 5 (excellent)</td>
</tr>
<tr>
<td>ADSMAG155_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>AOVKIK099_1A</td>
<td>Clinical Physiology of Respiration and Respiratory Diseases</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
</tr>
<tr>
<td>AOVSBT214_1A</td>
<td>Organ Transplantion</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOVBL2150_1A</td>
<td>Clinical Oncology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOVNO1245_1A</td>
<td>Clinical Genetics</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>ADSIMM146_1A</td>
<td>Clinical Immunology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOVNF108_1A</td>
<td>Health Informatics</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOSMMS174_1A</td>
<td>Traditional Chinese Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>For 3rd, 4th &amp; 5th year students</td>
</tr>
<tr>
<td>AOSMHI250_1A</td>
<td>Ultrasonography</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</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>Pre-clinical module</td>
</tr>
<tr>
<td>AOSNB246_1A</td>
<td>History of Medical Professionalism</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Subject Code</td>
<td>Subject</td>
<td>Lectures</td>
<td>Practicals</td>
<td>Credit Points</td>
<td>Examination</td>
<td>Prerequisite</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------------------------------</td>
<td>----------</td>
<td>------------</td>
<td>---------------</td>
<td>-------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>AOVFRM252_1A</td>
<td>Medicinal, Epidemiological, and Social Aspects of Drug Abuse</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOVKIK102_1A</td>
<td>Clinical Cardiovascular Physiology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
</tr>
<tr>
<td>AOVBL2112_1A</td>
<td>Clinical Endocrinology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOVBL2125_1A</td>
<td>Clinical Hematology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOVBT214_1A</td>
<td>Organ Transplantation</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOVS1132_1A</td>
<td>Family Surgery</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Surgery I.</td>
</tr>
<tr>
<td>AOVGY1120_1A</td>
<td>Neonatology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOVSR2129_1A</td>
<td>Emergency in Surgery</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Surgery I.</td>
</tr>
<tr>
<td>AOVSZL251_1A</td>
<td>Tropical Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOSMSMS174_1A</td>
<td>Traditional Chinese Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>For 3rd, 4th &amp; 5th year students</td>
</tr>
<tr>
<td>AOSOMK250_1A</td>
<td>Ultrasonography</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOSOMAG139_2A</td>
<td>Jewish Medical Ethics II.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</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. Küzvölgyi 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 Kupcsullik
Tutor: Dr. Péter Kokas

Traumatology

Department of Traumatology
Budapest VII., Péterfy S. u. 14. Phone: 461-4723
Head of the Department: Prof. Dr. András Sárváry
Tutor: Dr. Miklós Szebeny

Pediatrics

1st Department of Pediatrics
Budapest VIII., Bókay J. u. 53. Phone: 334-3186
Head of the Department: Prof. Dr. Tivadar Tulassay
Tutor: Dr. Erzsébet Horváth

2nd Department of Pediatrics
Budapest IX., Tűzoltó u. 7-9. Phone: 215-1380
Head of the Department: Prof. Dr. András Szabó
Tutor: Dr. Boglárka Bánsgáti

Obstetrics and Gynecology

1st Department of Obstetrics and Gynecology
Budapest VIII., Baross u. 27. Phone: 266-0473
Head of the Department: Prof. Dr. János Rágó
Tutors: Dr. Gyula Richárd Nagy
            Dr. József Gábor Joó
Neurology

Department of Neurology
Budapest VIII., Balassa u. 6. Phone: 210-0330 / ext. 51123
Head of the Department: Prof. Dr. Dániel Bereczki
Tutor: Prof. Dr. Anita Kamondi

Psychiatry

Department of Psychiatry and Psychotherapy
Budapest VIII., Balassa u. 6. Phone: 210-0330 / ext. 51100 or 155-1122
Head of the Department: Prof. Dr. István Bitter
Tutor: Dr. Patricia Polgár

Family Medicine in Daily Practice

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

Prehospital Emergency Medicine

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

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Internship</th>
<th>Required number of weeks</th>
<th>Credits</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>A0BEL1BEL6SA</td>
<td>Internal Medicine</td>
<td>9</td>
<td>9</td>
<td>final #</td>
</tr>
<tr>
<td>A0BEL1BEL6SA</td>
<td>1 week Infectology</td>
<td>–</td>
<td>–</td>
<td>signature</td>
</tr>
<tr>
<td>A0BEL1BEL6SA</td>
<td>Surgery</td>
<td>9</td>
<td>9</td>
<td>final #</td>
</tr>
<tr>
<td>A0G11G2E6SA</td>
<td>Pediatrics</td>
<td>8</td>
<td>8</td>
<td>final #</td>
</tr>
<tr>
<td>A0G11G2E6SA</td>
<td>1 week Infectology</td>
<td>–</td>
<td>–</td>
<td>signature</td>
</tr>
<tr>
<td>A0D11S6SA</td>
<td>Obstetrics and Gynecology</td>
<td>5</td>
<td>5</td>
<td>final #</td>
</tr>
<tr>
<td>A0D11S6SA</td>
<td>Neurology</td>
<td>4</td>
<td>4</td>
<td>final #</td>
</tr>
<tr>
<td>A0D11S6SA</td>
<td>Psychiatry</td>
<td>4</td>
<td>4</td>
<td>final #</td>
</tr>
<tr>
<td>A0C11G6SA</td>
<td>Family Medicine in Daily Practice</td>
<td>2</td>
<td>–</td>
<td>practical course grade</td>
</tr>
<tr>
<td>A0B11S6SA</td>
<td>Prehospital Emergency Medicine</td>
<td>2</td>
<td>–</td>
<td>signature</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td></td>
<td><strong>43</strong></td>
<td><strong>39</strong></td>
<td></td>
</tr>
</tbody>
</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.
INTERNAL MEDICINE

– To be present for at least 6 hours per day (30 hours per week, including 1 week Infectology).
– Activities should include the following subjects: general survey of hospital/department organization, examination of patients in the Medical Department, with special emphasis to case history taking and full physical examination.
– The students should gain practice in patient documentation, problem-oriented medical record keeping, taking of pulse, blood pressure, temperature, measuring weight and height of patients.
– Participate in the preparation of diagnostic and therapeutic plan for patients.
– Be present at invasive and semi-invasive interventions (taps of abdominal and chest fluid, preparation of bone marrow smear etc.).
– Learn how to take venous blood.
– To spend time at the outpatient department.
– To practice basic laboratory techniques needed in bedside diagnosis (urinalysis, stool examination, use of dip sticks etc.).
– To be on night duty at least twice per month.
– Consultations in gastroenterology, diabetes, hematology, endocrinology, cardiology, sonography, X-ray, ECG etc.
– Watch endoscopy performed.
– See the intensive coronary care unit.
– Be present at postmortems.
– Regular consultations with the doctor responsible for the student.
– All these activities should be carefully supervised by members of the medical staff.
– The students should also practice communication with patients and their relatives, while giving them relevant medical information on the disease but avoiding conflicts with medical confidentiality.
– Students should take an active part in medical consultations concerning their patients, as well as in the medical conferences in the department.
– The students should practice the prescription of commonly used drugs.

SURGERY

– Acting as a HO or SHO under strict supervision, including administration and practical skills.
– Admitting of patients with full physical examination, including breast and PR examinations.
– Theoretical planning for examinations and treatments for the examined patients.
– Continuous observation and registration of the patient’s condition with administration.
– Writing of discharge reports.
– Performing different injections (iv., im, sc), insertion of venflons, phlebotomies. To determine blood group, performing of transfusions under strict supervision. Completion of administration.
– Insertion of NG tubes.
– Catheterization (urethral and suprapubic).
– Removal of clips and stitches.
– Changing of dressings.
– Assistance at abdominal and thoracic wash-outs or punctures.
– Taking part in consultations with other specialists.
– Theoretical decisions about operations. Consenting.
– Taking part in operations, scrubbing in, stitching.
– Being on duty for 24 hours once a week.
– Examination and treating of emergency patients.
– Taking part in anesthesiological preparation of patients.
– Observation of premedications.
– Assistance at several anesthesiological procedures, including spinal, peridural and GA.
– Assistance at intubations. If possible, independent intubation.
– Measurement of CVP.
– Assistance at jugular and subclavian venal punctures.
– Suction of the throat and trachea.
– Observation of ITU work.

HO house officer
SHO senior house officer
PR per rectum
NG nasogastric
GA general anesthetic
CVP central venous pressure
ITU intensive therapy unit

– Observation of postoperative treatment.
– Observation of resuscitation and reanimation.
– Observation of autopsies of the ward.
– Being present at every medical discussion of the ward.
– Observation of outpatient work.
– Assistance in outpatient work including assistance at day surgical operations.
– Changing of dressings of outpatients.
– Treatment of infected wounds.
– Assistance at IV anesthesia.
– Performing and assisting at local anesthesia.
– Observation and assistance at ultrasound, endoscopies and X-ray examinations.
– As interns, students take part in the daily rounds and report on the patients examined by them or treated in their section. Interns examine the patients under the supervision of the ward chief or ward surgeon. Interns are required to be personally involved in the examinations and the evaluation of the findings.

Involvement in the preparation of the documentation of the patients.

Involvement in the preoperative preparations as well as in the postoperative care and treatments.

Take part in the operations as second assistants.
Take part in on-call duty without numerical limitations. During on-call (night) duty, interns should under the supervision of the ward chief or authorized surgeon – be involved in solving all problems caused by either acute or chronic diseases. Interns are required to take part in all consultations organized for them.

Interns will be eligible for the final examination if the above conditions have all been met and their academic achievements during their internship proved.
TRAUMATOLOGY

Requirements

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. Hosszú É.</td>
</tr>
<tr>
<td>9. Abdominal Pain (diff. dg.)</td>
<td>Dr. Hajmássy Zs.</td>
</tr>
<tr>
<td>10. Asthma Bronchiale</td>
<td>Dr. Németh Á.</td>
</tr>
<tr>
<td>11. Newborn Infant: Respiratory Disorders</td>
<td>Dr. Pataki M.</td>
</tr>
<tr>
<td>12. Diseases of the Urinary Tract</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: Prof. Dr. Anita Kamondi
Tel.: 210-0330, Fax: 210-1368

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

**Responsible Secretary:** Andrea Kovács (Andi)

**Rotation periods:** set by the English Secretariat, but for individual changes one might apply at the Department of Neurology. To ease the scheduling of other Vth year practices the Department shall organize “early rotations” right after taking the Vth year semifinal exam.

Neurology rotation is 4 weeks long (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).

I. Acquire the following skills:
   A. Anatomic and physiologic basis of the neurologic examination.
   B. Competent history, physical and neurologic examination.
   C. Localize the lesion using the clinical database.
   D. Develop a differential diagnosis of the clinical problem.
   E. Assess the acuteness of neurological diseases, recognize neurological emergencies.
   F. Formulate a plan of investigation and management.

II. Describe the indications, techniques, results, contraindications and risks of the followings:
   A. Lumbar puncture (investigation of CSF)
   B. EEG, EMG, ENG, Transcranial magnetic stimulation
   C. CT, MRI, SPECT, PET
   D. Carotid and transcranial ultrasound

III. Disorders of motor function
   A. Differentiate between upper and lower motor neuron lesion (UMN, LMN).
   B. UMN facial weakness and LMN facial weakness.
C. Disorders of coordination. Recognize symptoms of cerebellar disorders.
Define ataxia, dysmetria, wide-based gait, and discuss the localization.
D. Define and differentiate involuntary movement disorders: tremor, rigidity, spasticity, athetosis, chorea, dystonias, myoclonus, tics.
Discuss the findings and treatment of: Parkinson’s disease, essential tremor, tardive dyskinesia, Huntington’s chorea, Wilson’s disease.

IV. Disorders of sensation
A. Differentiate central sensory disorders from peripheral sensory disorders.

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

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

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

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

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

X. Dizziness and disorders of hearing
A. Define vertigo, and contrast it with other type of dizziness.
B. Describe nystagmus, hanging head test (Hallpike maneuver), calorics.
C. Identify the clinical features of: benign paroxysmal positional vertigo, vestibular neuronitis, Meniere’s disease, brainstem TIA with vertigo, acoustic neuroma.

XI. Disorders of higher cognitive functions
A. Define and assess: dementia, delirium, amnesia, confabulation, hallucination.
B. Define normal-pressure hydrocephalus.
C. Define the anatomical basis for aphasia and dysarthria.
D. Differentiate the aphasias on the basis of ability to produce speech, comprehension, naming, repetition.

XII. Disorders of altered consciousness
A. Define hypnoid and non-hypnoid unconsciousness.
B. The anatomic basis of consciousness.
C. Assess the comatose patient, evaluation and treatment.
D. Localize the following: decorticate and decerebrate rigidity, conjugately deviated eyes, pathologic respiration, pinpoint pupils, anisocoria, intact versus absent oculocephalic response, intact versus disconjugate ice water caloricss.
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 paresthethica, 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 rystalline of aphasia
7. Classification of unconscious conditions
8. Examination of the unconscious patient
9. Unconsciousness due to metabolic origin
10. Emergency in Neurology
12. Traumatic intracranial bleeding
13. Trauma of the spine and spinal cord  
14. Clinical syndromes of impaired circulation of the internal carotid artery  
15. Clinical syndromes of impaired circulation of the vertebro-basilar system  
16. Emergency in cerebrovascular disorders  
17. Diagnostic procedures in cerebrovascular disorders.  
19. Intracerebral bleedings.  
20. Diagnosis, treatment and prognosis of subarachnoid hemorrhage  
21. Status epilepticus  
22. Meningitis, encephalitis  
23. Multiple sclerosis  
24. Signs of brain tumors  
25. Signs of tumors of the spine and spinal space  
26. Brain edema  
27. Diagnostic criteria of dementia  
28. Diagnosis of Parkinson's disease  
29. Wernicke-Korsakow syndrome  
30. Guillain-Barre syndrome  
31. Disturbance of micturition and defecation  
32. Myasthenia gravis  

2nd series  
1. Neurological causes of impaired visual acquity. Visual field defects.  
2. Ocular movement and gaze disorders  
3. Disorders of the vestibular system.  
5. Syndromes of pons and mesencephalon lesions  
6. The muscle tone control  
7. Neuroanatomical basis of sensory disturbances  
9. Gait disorders  
10. Symptoms of frontal lobe damage  
11. Symptoms of temporal lobe damage  
12. The limbic system  
13. Symptoms of parietal lobe damage  
14. Symptoms of occipital lobe damage  
15. Cerebral dominance (functional brain asymmetry)  
16. Classification of aphasia  
17. Agnosia, apraxia, alexia, agraphia  
18. The basal ganglia  
19. Disorders of the thalamus  
20. Localisation of memory disturbances  
21. Imaging techniques (angiography, CT, MR, PET, SPECT)  
22. Ultrasound examination of the cerebral vessels  
23. EEG in the diagnostic workup  
24. EMG, nerve conduction studies, transcranial magnetic stimulation and evoked potentials (BAEP, VEP, SSEP)  
25. The lumbar puncture and the examination of cerebrospinal fluid  
26. The cerebral circulation, and its regulation
### 27. Classification of cerebrovascular disorders
### 28. TIA
### 29. Cerebrovascular disorders in young adults
### 30. Treatment of cerebral ischemia
### 31. Classification of epilepsy
### 32. Diagnostic workup of epilepsy
### 33. Differential diagnosis of syncope and other types of disturbed consciousness
### 34. Treatment of epilepsy

#### 3rd series
1. Neurological disorders caused by viral infections
2. Neurological disorders caused by Herpes virus
3. Prion-diseases, slow virus infections
4. Neurological consequences of AIDS
5. Clinical types and treatment of multiple sclerosis
6. Hystopathological classification of brain tumors
7. Brain tumors of childhood
8. Metastatic tumors of the brain
9. Paraneoplasias of the nervous system (PML, neuropathies, cerebellar deg., Lambert-Eaton sy.)
10. Disorders associated with parkinsonian syndrome
11. Treatment of Parkinson’s disease
12. Hyperkinetic movement disorders
13. Differential diagnosis of tremor
14. Classification of encephalopathies
15. Primary degenerative dementias
16. Dementia in cerebrovascular disorders
17. Multisystem atrophy
18. Disturbed cerebrospinal fluid circulation (hydrocephalus)
19. Syndrome of brachial plexus damage
20. Syndrome of radial, ulnar and median nerve damage
21. Syndrome of lumbosacral plexus damage
22. Etiology of polynuropathies
23. Neuropathies in diabetes mellitus
24. Inherited neuropathies (Charcot-Marie, Dejerine-Sottas, Refsum)
25. Low back pain, and cervical disk disease
26. Craniocebral developmental malformations
27. Malformation of the spine and spinal cord
28. Symptoms of the disorder of spinal cord
29. Motoneuron diseases (ALS, progr. Bulbar palsy)
30. Muscular dystrophies
31. Miositis and myopathies
32. Primary headache syndromes
33. The neuralgias
34. The physiological sleep and the sleep disorders
35. Genetic background of muscle disorders
36. Inborn metabolic disorders affecting the nervous system
37. Trinucleotid repeat diseases (Huntington chorea, fragile X, dystrophia myotonica)
38. Genetic background of dementias
PSYCHIATRY
Department of Psychiatry and Psychotherapy
Tutor: Dr. Patrícia Polgár

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

The goals of the psychiatric practices (4 weeks)

The goal of our Clinic is to teach medical students about the most important signs and symptoms of the most common diseases as psychiatric disorders have a relatively high prevalence in the population. Considering of the high prevalence and last but not least economical consequences, psychiatric disorders can be a burden for every society. Every medical student must be familiar with the high prevalence of depressive and anxiety disorders. Hungary was once one of the leading countries among those with high suicide rates; therefore, we require them to know important details about the main causes and therapeutic possibilities of suicide as well. As many psychiatric disorders can mask somatic diseases, medical students have to learn about the differentiation of these states, too.

In the 5th year students must base their knowledge on lectures and materials of practices, where they have an opportunity to talk to a psychiatric patient, so they can learn how to detect the most important signs and symptoms of the diseases. During 6th year, they need to explore patients and write a case report according the sample that is available on the website of our Clinic. Before the oral exam they have to show this case report to the responsible tutor who will give a mark for it. Without the marked case report students are not allowed to take their exam. We have a certificate form on our website, with all the details students must bring from the hospital where they fulfilled their rotation. The link is: http://www.sote.hu/english/content/education/?inst_id=51&page_id=2

Objectives:

• The ability how to obtain a complete and reliable history
• The method of asking about specific psychiatric symptoms or how to evaluate the information provided by the patients including:
  – orientation and attention
  – affect
  – thought disorder
  – memory
  – psycho-motor abilities
  – perception
  – motivation, intellect and personality
• The ability of noticing states of potential psychiatric emergency
• The ability to recognize specific symptoms that can refer to any hidden psychiatric problem which is not told by the patients
• The ability of summarizing all the gained information in a detailed case report
• The ability of establishing a tentative diagnosis and to know what kind of tests (either laboratory or psychological or neuro-radiological, etc) are needed for the correct diagnosis
• Being aware of the most important effects and side/adverse effects of drugs used in psychiatry
• To learn that the practitioner must always consider the possible existence of psychiatric disorders even when there are a lot of somatic symptoms, since they can also appear as a result of psychiatric diseases

We have 5 wards with different profiles in our Clinic. Students must join these wards according their schedule made by our training coordinator. Everybody has a tutor on the ward he or she belongs
to. The tutor presents the specific profile of that particular ward, but they also have the opportunity
to go and see other wards, too. They spend a day at the outpatient department of our Clinic, which
is very useful because there are many patient examinations referred from the other departments of
the Semmelweis University. Therefore, they can gain an impression about the most important
psychiatric features of internal medicine, neurology, surgery etc. Students must join for one
all-night-duty and they have to take part in the emergency treatment performed during this period.
Under the supervision of an appointed physician, students have to:
Participate in the work of one unit;
Evaluate patients independently;
Write a detailed case history of one patient, which has to be presented at the exam;
Participate in consultations.

Internship has to be completed at a Department of a University or in a Hospital/Teaching Hospital,
which has a contract with a University. Students completing the internship abroad have to present
a letter of evaluation indicating their performance during the internship and a grade from 5
(excellent) to 1 (failure).

Requirements
1. The 6th year includes a 4-weeks-long rotation in Psychiatry in a hospital or clinic which is
   accredited for teaching by Semmelweis University.
2. If you want to complete your rotation abroad, then before you start it, you must present at
   our department an officially stamped statement of acceptance issued by the teaching
   hospital abroad where you intend to spend your rotation.
   **BE AWARE:** The **Statement of Acceptance** for the 4-weeks Psychiatry internship
   requested from practice places abroad must state:
   a) The training place abroad is a teaching hospital
   b) The brief description of how Psychiatry is taught in that institution
   c) The name of the responsible tutor (name, e-mail)
3. The Psychiatry practice must consist of 8 hours on 15 (4x5) workdays at psychiatric wards.
   Students participate in the everyday work of the wards, in patients’ admission, in ward
   rounds and in therapeutic decisions. One all-night-duty is part of the rotation period.
4. Writing a case report during rotation period is a task for every student. A sample case report
   is available at the website of our department
   [http://www.sote.hu/intezetek/oktatas/7?inst_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, 2010 and the second by the end of December, 2010.

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, 2010. 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, 2011! For the August exam latest until July 15, 2011 and for the November exam
latest until October 15, 2011!
that you have to leave your lecture book at the English Secretariat after each Final
Examination (because the secretaries need it to do the administration, you will not lose or forget
it abroad, etc.)
FACULTY OF DENTISTRY

BASIC MODULE
# STUDY PROGRAMME

## 1st semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Credit code</th>
<th>examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory Anatomy, Histology, Embryology I.</td>
<td>C8L3P5</td>
<td>semifinal</td>
</tr>
<tr>
<td>compulsory Physical Bases of Dental Materials</td>
<td>C2L2P0</td>
<td>semifinal</td>
</tr>
<tr>
<td>compulsory Medical Chemistry</td>
<td>C6L3P3,5</td>
<td>semifinal</td>
</tr>
<tr>
<td>compulsory Medical Biology (Cell Biology)</td>
<td>C3L2P1</td>
<td>final</td>
</tr>
<tr>
<td>compulsory Hungarian Medical Terminology I.</td>
<td>C4L0P4</td>
<td>pract. mark</td>
</tr>
<tr>
<td>obligatory elective Medical Terminology I.</td>
<td>C2L0P2</td>
<td>pract. mark</td>
</tr>
<tr>
<td>compulsory Physical Education I.*</td>
<td>C0L0P1</td>
<td>signature</td>
</tr>
<tr>
<td><strong>Total Credit</strong></td>
<td><strong>25</strong></td>
<td></td>
</tr>
</tbody>
</table>

## 2nd semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Credit code</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory Anatomy, Histology, Embryology II.</td>
<td>C9L3P6</td>
<td>semifinal</td>
<td>Anatomy, Histology, Embryology I.</td>
</tr>
<tr>
<td>compulsory Biophysics</td>
<td>C5L2,5P3</td>
<td>final#</td>
<td>Physical Bases of Dental Materials</td>
</tr>
<tr>
<td>compulsory Medical Biochemistry, Molecular and Cell Biology I.</td>
<td>C7L3P4</td>
<td>semifinal</td>
<td>Medical Chemistry</td>
</tr>
<tr>
<td>compulsory Preventive Dentistry I.</td>
<td>C1L0P1</td>
<td>pract. mark</td>
<td>Anatomy, Histology, Embryology I.</td>
</tr>
<tr>
<td>compulsory Hungarian Medical Terminology II.</td>
<td>C2L0P4</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology I.</td>
</tr>
<tr>
<td>compulsory General Dental Materials</td>
<td>C1L1P0</td>
<td>semifinal</td>
<td>Physical Bases of Dental Materials</td>
</tr>
<tr>
<td>obligatory elective First aid</td>
<td>C0L0P1</td>
<td>pract. mark</td>
<td></td>
</tr>
<tr>
<td>obligatory elective Medical Informatics</td>
<td>C3L1P2</td>
<td>semifinal</td>
<td></td>
</tr>
<tr>
<td>compulsory Physical Education II.*</td>
<td>C0L0P1</td>
<td>signature</td>
<td>1-2 semesters compulsory subjects</td>
</tr>
<tr>
<td>compulsory Dental Laboratory Practice (summer, 2 weeks)</td>
<td>C0L0P30</td>
<td>signature</td>
<td>1-2 semesters compulsory subjects</td>
</tr>
<tr>
<td>compulsory Nursing Practice (summer, 2 weeks)</td>
<td>C0L0P30</td>
<td>signature</td>
<td>1-2 semesters compulsory subjects</td>
</tr>
<tr>
<td>obligatory elective Dental Psychology</td>
<td>C2L2P0</td>
<td>semifinal</td>
<td>Detailed curriculum in the 4th year</td>
</tr>
<tr>
<td>obligatory elective Medical Sociology</td>
<td>C2L1P1</td>
<td>semifinal</td>
<td>Detailed curriculum in the 4th year</td>
</tr>
<tr>
<td>obligatory elective Dental Ethics</td>
<td>C2L2P0</td>
<td>semifinal</td>
<td>Detailed curriculum in the 4th year</td>
</tr>
<tr>
<td><strong>Total Credit</strong></td>
<td><strong>34</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program.

**Explanation**
- C= Credit point
- L= Lecture (hours/week)
- P= Practice (hours/week)
- # The grade influences the qualification of the diploma
LIST OF TEXTBOOKS

8. Tóth: Concise Inorganic Chemistry for Medical Students. (SOTE) (Bp.)
9. Laboratory Manual I-II. (Bp.)
10. Hrabák: Selected Collection of Chemical Calculations (SOTE) (Bp.)
11. Sasvári: Bioorganic Compounds (Bp.) SOTE

Recommended textbooks:

3. Sasván-Müllner: Bioorganic Compounds 4 kötet. (Bp.)
ANATOMY, HISTOLOGY AND EMBRYOLOGY
Department of Anatomy, Histology & Embryology
Tutor: Dr. Andrea Székely

First Semester

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

<table>
<thead>
<tr>
<th>Lectures Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The place of anatomy, histology and embryology in the medical curriculum, their nomenclature</td>
<td>Behaviour in the dissecting room. Bones and joints of the shoulder girdle and the arm. Demonstration: shoulder joint</td>
</tr>
<tr>
<td>2. Structure of the limbs (bony skeleton, joints, muscles, groups of muscles, fasciae, histological specimens. fascial compartments, arteries, superficial and deep veins, nerves, innervation of the muscles and the skin</td>
<td>Behaviour in the histology lab. Use of the microscope.</td>
</tr>
<tr>
<td>3. Animal tissues, epithelial cells, simple epithelia</td>
<td>Preparation of the</td>
</tr>
<tr>
<td>5. Types and composition of joints (general arthrology)</td>
<td>SIMPLE EPITHELIUM: Simple squamous (mesothel, pleura); simple cuboidal (kidney); simple columnar (gallbladder); pseudostratified (trachea)</td>
</tr>
<tr>
<td>6. Features of the skeletal musculature (general myology)</td>
<td>STRATIFIED EPITHELIUM: squamous, non-keratinizing (esophagus); squamous keratinizing (skin); columnar (male urethra); transitional epithel (urinary bladder)</td>
</tr>
<tr>
<td>7. Shoulder joint and the muscles acting upon it</td>
<td>GLANDULAR EPITHELIUM: Goblet cells (colon); merocrine gland (salivary gland); apocrine gland (prostate); holocrine gland (sebaceous gland).</td>
</tr>
<tr>
<td>8. Bones and joints of the hand</td>
<td>PIGMENT EPITHELIUM (retina)</td>
</tr>
<tr>
<td>9. Glandular epithelium</td>
<td>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)</td>
</tr>
<tr>
<td>10. Muscles of the hand</td>
<td>TEST. Upper extremity</td>
</tr>
<tr>
<td>11. Connective tissue, cells</td>
<td>CONNECTIVE TISSUE, CELLS. Various types of cells</td>
</tr>
<tr>
<td>12. Connective tissue: fibers; types of the connective tissue</td>
<td></td>
</tr>
<tr>
<td>13. Blood, hematopoiesis</td>
<td></td>
</tr>
<tr>
<td>14. Supporting tissue</td>
<td></td>
</tr>
<tr>
<td>15. Bone formation</td>
<td></td>
</tr>
<tr>
<td>16. Vertebræ, sacrum, vertebral column</td>
<td></td>
</tr>
<tr>
<td>17. Superficial and deep muscles of the back</td>
<td></td>
</tr>
<tr>
<td>Lectures</td>
<td>Dissecting room</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------</td>
</tr>
<tr>
<td>18.</td>
<td>Thorax, pectoral and intercostal muscles</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>Abdominal muscles, rectus sheath</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Gametogenesis, fertilization</td>
</tr>
<tr>
<td>23.</td>
<td>Implantation, germ layers, embryonic disc</td>
</tr>
<tr>
<td>24.</td>
<td>Development and differentiation of</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>Hip joint and the muscles acting upon it</td>
</tr>
<tr>
<td>27.</td>
<td>Foot and calf, muscles of the sole.</td>
</tr>
<tr>
<td>29.</td>
<td>Early embryonic and placental circulation.</td>
</tr>
<tr>
<td></td>
<td>Structure of the placenta</td>
</tr>
<tr>
<td></td>
<td>the motor system</td>
</tr>
<tr>
<td>30.</td>
<td>Muscle tissue I.</td>
</tr>
<tr>
<td>31.</td>
<td>Muscle tissue II.</td>
</tr>
<tr>
<td>32.</td>
<td>Herniae</td>
</tr>
<tr>
<td>33.</td>
<td>Neuronal tissue: neurons and supporting cells derived from the neural tube</td>
</tr>
<tr>
<td>34.</td>
<td>Neuronal tissue: neurons and supporting cells derived from the neural crest</td>
</tr>
<tr>
<td>35.</td>
<td>Neuronal tissue: synthesis, effectors, receptors</td>
</tr>
<tr>
<td>36.</td>
<td>Sphenoid and ethmoid bones</td>
</tr>
<tr>
<td>37.</td>
<td>Temporal bone</td>
</tr>
<tr>
<td>38.</td>
<td>Calvaria, base and interior of the skull</td>
</tr>
<tr>
<td>39.</td>
<td>Facial skeleton, orbit</td>
</tr>
<tr>
<td>40.</td>
<td>Nasal cavity, paranasal sinuses</td>
</tr>
<tr>
<td>41.</td>
<td>Oral cavity, pterygopalatine and infratemporal fossae</td>
</tr>
<tr>
<td>42.</td>
<td>Mandible, temporomandibular joint</td>
</tr>
<tr>
<td>43.</td>
<td>Atlantooccipital and atlantoaxial joints, Suboccipital muscles</td>
</tr>
<tr>
<td>44.</td>
<td>Development of the skull. Fontanelles</td>
</tr>
</tbody>
</table>
## ANATOMY, HISTOLOGY AND EMBRYOLOGY

### Second Semester

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Introduction. Significance of the vascular and lymphatic organs in the medical curriculum and in the medical practice.</td>
</tr>
<tr>
<td>2.</td>
<td>Histology of the vessel wall.</td>
</tr>
<tr>
<td>3.</td>
<td>Lymphatic organs: lymph node, spleen</td>
</tr>
<tr>
<td>4.</td>
<td>Lymphatic organs: thymus, tonsils</td>
</tr>
<tr>
<td>5.</td>
<td>Surface structures of the heart, anulus fibrous, myocard</td>
</tr>
<tr>
<td>6.</td>
<td>Chambers of the heart, valves</td>
</tr>
<tr>
<td>7.</td>
<td>Vessels of the heart, conducting system, topography, Pericard</td>
</tr>
<tr>
<td>8.</td>
<td>Development of the heart and the pericard I.</td>
</tr>
<tr>
<td>9.</td>
<td>Development of the heart and the pericard II.</td>
</tr>
<tr>
<td>10.</td>
<td>Viscera, introduction. Histological structure of the solid and hollow viscera</td>
</tr>
<tr>
<td>11.</td>
<td>Suprathyroid muscles, Muscles of facial expression, Oral cavity,</td>
</tr>
<tr>
<td>12.</td>
<td>Muscles of mastication. Tongue</td>
</tr>
<tr>
<td>14.</td>
<td>Development and histology of the teeth</td>
</tr>
<tr>
<td>15.</td>
<td>Development of the face, malformations</td>
</tr>
<tr>
<td>16.</td>
<td>Pharynx, structure of the wall, soft palate</td>
</tr>
<tr>
<td>17.</td>
<td>Infrathyroid muscles, cervical fascia, para- and retropharyngeal space</td>
</tr>
<tr>
<td>18.</td>
<td>Esophagus, stomach: anatomy and histology</td>
</tr>
<tr>
<td>19.</td>
<td>Development of the foregut</td>
</tr>
<tr>
<td>20.</td>
<td>Small intestine: anatomy and histology</td>
</tr>
<tr>
<td>21.</td>
<td>Colon, rectum: anatomy and histology</td>
</tr>
<tr>
<td>22.</td>
<td>Liver and biliary apparatus: anatomy</td>
</tr>
<tr>
<td>23.</td>
<td>Liver and biliary apparatus: histology</td>
</tr>
<tr>
<td>24.</td>
<td>Pancreas: anatomy and histology, Portal vein and tributaries</td>
</tr>
<tr>
<td>25.</td>
<td>Development of the middle and hindgut</td>
</tr>
<tr>
<td>26.</td>
<td>Peritoneum</td>
</tr>
<tr>
<td>27.</td>
<td>Cartilages, joints and muscles of the larynx</td>
</tr>
<tr>
<td>28.</td>
<td>Skeleton of the larynx, laryngeal inlet, rima glottidis</td>
</tr>
<tr>
<td>29.</td>
<td>Trachea, lung: anatomy, Pleura</td>
</tr>
<tr>
<td>30.</td>
<td>Histology of the lung, Development of the respiratory system</td>
</tr>
<tr>
<td>31.</td>
<td>Kidney, ureter: anatomy</td>
</tr>
<tr>
<td>32.</td>
<td>Histology and vascular structure of the kidney</td>
</tr>
<tr>
<td>33.</td>
<td>Urinary bladder: anatomy and histology, Female urethra</td>
</tr>
</tbody>
</table>

| Histology lab. | VESSELS. Elastic artery (carotid artery); middle size artery and vein, arterioles, venules, capillaries (tongue) |
|               | Chambers of the heart, valves |
|               | LYMPHATIC ORGANS. Lymph node, spleen |
|               | Pericard. In situ heart dissection. Demonstration of unfixed heart. |
|               | LYMPHATIC ORGANS. Thymus, palatine tonsil, lingual tonsil. |

- **HEART.** Wall structure, Malformations. |
- **TEST.** Heart, anatomy and embryology |
- **Muscles of the face** (demonstration) |
- **Tongue, cervical organs on the visceral complex** (demonstration) |
- **Esophagus, aorta** |
- **Abdominal organs, peritoneum.** Hepatoduodenal ligament, mesentery |
- **Hepatic veins, tributaries of the portal vein** |
- **Mediastinum.** |
- **Pleura.** Mediastinum. |
- **Determination of the abdominal visceral topography in the cadaver.** Liver, gallbladder, pancreas of the second year and in unfixed cadaver. Larynx, trachea |
- **Pleura.** Mediastinum. |
- **TEST.** Lymphatic organs, vessels, heart, digestive system |
- **RESPIRATORY SYSTEM.** Larynx, trachea, lung, |
- **Demonstration: embryonal lung**
### Lectures Dissecting room
- 34. Development of the uropoetic system, malformations
- 35. Testis, spermiogenesis, epididymis
- 36. Ductus deferens, spermatocord, seminal vesicle, prostate, male urethra: anatomy and histology
- 37. Penis: anatomy and histology, Male perineum
- 38. Ovary and uterine tube: anatomy and histology, Oogenesis.
- 39. Anatomy of the uterus, broad ligament
- 40. Histology of the uterus, menstrual cycle
- 41. Vagina, outer female genital organs. Female perineum
- 42. Malformation of the gender, bisexuality
- 43. Separation of the body cavities.
- 44. Development of the major arteries and veins. Fetal circulation

### Histology lab.
- Aorta, inferior vena cava, ureter; pelvic organs. Retroperitoneum
- Pelvic organs, Peritoneum in the pelvis. MALE GENITAL SYSTEM.
- Pelvic organs, topography. MALE GENITAL SYSTEM.
- Perineum
- Review
- TEST. Urogenital system

#### Semester examination (semi-final)

### PREVENTIVE DENTISTRY I.
Department of Conservative Dentistry
Lecturer: **Prof. Dr. Ida Nyárasdy**

#### Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (1 hour/week)</th>
</tr>
</thead>
</table>

#### The first eight weeks – lectures

1st week: About the dentistry and prevention – introducing lecture
2nd week: The two widespread dental diseases
3rd week: Oralhygiene
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- Oxid ceramics
Dental resins
Luting cements
Restorative materials
Technologies: CAD/CAM,CNC, sintering
Auxiliary materials
Consultation

PHYSICAL BASES OF DENTAL MATERIALS
Tutor: Dr. István Voszka

First Semester

Lecture (2 hours/week)

1. Basic forms of material, atoms, interactions, bonds
4. Methods for structure examination (diffraction, microscopic, spectroscopic methods)
6. Ceramics, polymers, composites.
10. Other physical (optical, electrical, thermal) properties of materials
11. Comparison of the properties of dental materials
13. Physical bases of implantology.
MEDICAL BIOLOGY (Cell Biology) – Department of Genetics, Cell- and Immunobiology
Lecturer: Prof. Dr. András Falus

First semester
Credit: 3
Topics:
1. Eukaryotic cell organization.
5. Structure and function of endoplasmic reticulum.
7. Endocytosis. Intracellular digestion
8. Protein and lipid transport mechanisms in eukaryotic cell.
9. Mitochondria and peroxisomes
12. Cells in their social context.
13. Cell cycle and its regulation
15. Light microscope and light microscopic microtechnique, ligh microscopic preparations
16. Stainings and cytochemical reactions
17. Immunocytochemistry
18. Electronmicroscope and electronmicroscopic microtechnique, ultrastucture of cell organelles
19. Tissue culturing

Important notes: No possibility to make up of absences.
Two written midterm exams.
No more than three absences from practice.
Requirement: Final exam (written)

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

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

Second Semester
Topics
Dangerous scene. Safety measurements on the scene. Call for an ambulance.
Emotional viewpoints of managing emergencies.
Heart attack. Sudden death. Chain of survival.
BLS (Basic Life Support)
BLS + AED
AED (Automated External Defibrillator). PAD (Public Access Defibrillation)
BLS + AED
Fainting, Shock, Allergy
Poisoning. Drugs. Drunkenness.

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

Mode of certifying absences: oral – referring to practices

Requirements: The student should be able to recognize emergencies, and call for help start with BLS + AED provide airway management in unconscious patients provide first aid for patients complaining for chest-pain, shortness of breath, signs for hypoglycaemia and having suffered from fainting, shock condition, convulsion, injuries.
The performance of the above mentioned requirements at the last practice will be evaluated with “accepted” or “not accepted”.

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

GENERAL INFORMATION:
The program in Medical Informatics trains students in the application of computer and information sciences to the quantitative aspects and decision needs of the health and life sciences. Medical Informatics encompasses not only mathematics, statistics and computing, but also includes other engineering, management, and information sciences applied to problems arising in biology, medicine and the delivery of health care. In addition to basic biostatistician and computing techniques, it is necessary that students be familiar with other methodologies such as mathematical modeling, systems analysis, image and signal processing, management information systems and decision sciences. Possible areas of emphasis include health information systems, biomathematical modeling, evaluation of health programs, system development, clinical decision studies and WEB 2.0 solutions in health care system.

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

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

<table>
<thead>
<tr>
<th>THEMES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Health care and organizations. Data and information in health care. Types of clinical data (text, sound, image)</td>
<td>Lecture</td>
</tr>
<tr>
<td>2. Data transmission and telecommunication. The internet</td>
<td>Lecture</td>
</tr>
<tr>
<td>3. DBMS Database Management Systems. Electronic Patient Record</td>
<td>Lecture</td>
</tr>
<tr>
<td>4. WEB 2.0 and the health care system. Mobile Communication</td>
<td>Lecture</td>
</tr>
<tr>
<td>5. Security, Encryption and Digital Signature</td>
<td>Lecture</td>
</tr>
<tr>
<td>1. Data manipulation in the computer. Working with text, image, sound and video</td>
<td>practice</td>
</tr>
<tr>
<td>2. Getting Started With The Internet</td>
<td>practice</td>
</tr>
<tr>
<td>3. Database management programs, constructing a relational data base of students’ lecture books using Microsoft access.</td>
<td>practice</td>
</tr>
<tr>
<td>4. Extracting data from a food database using MS Access.</td>
<td>practice</td>
</tr>
<tr>
<td>5. Data manipulation and visualizations with Microsoft Excel.</td>
<td>practice</td>
</tr>
<tr>
<td>6. Compiling food recipes using Microsoft Word.</td>
<td>practice</td>
</tr>
<tr>
<td>7. Compiling publication a food cookbook using Netscape.</td>
<td>practice</td>
</tr>
<tr>
<td>8. Browsing In Dental Information Resources On The Internet</td>
<td>practice</td>
</tr>
<tr>
<td>9. Diet planning using MS Excel.</td>
<td>practice</td>
</tr>
<tr>
<td>10. Mobile Communication</td>
<td>practice</td>
</tr>
<tr>
<td>11. JAVA, AJAX and RSS in WEB 2.0 applications</td>
<td>practice</td>
</tr>
<tr>
<td>12. Presentation using Microsoft PowerPoint.</td>
<td>practice</td>
</tr>
</tbody>
</table>

Related reading:
J.H. van Bemmel: Handbook of Medical Informatics
Printed version: Bohn Stafleu Van Loghum, Houten/Diegem 1996
E-text: http://www.mihandbook.stanford.edu
See all the other detailed curricula at General Medicine, 1st year

COMPULSORY SUMMER PRACTICE

I.

Nursing Course – 2 weeks (60' hours)

Week 1
An introduction to the structure of a hospital as an institution for attending patients.
1. In-patient department
2. Out-patient department
3. Auxiliary departments (X-ray, labs, physiotherapy, etc.)
4. Departments of Administration (warden’s office, cashier’s office, etc.)
5. Service departments (kitchen, storeroom, laundry, etc.)
Getting acquainted with the ward and its connected parts
Making beds with help and alone (for walking cases)
Making beds with turnable bedcase (for walking cases)
Use of comfort equipments (under supervision)
Disinfectants in the ward
Cleaning and sterilization of bedpans, urinals and spitoons
Helping with taking temperatures, sterilization of thermometers
Helping with serving food
Helping with feeding bed patients

Week 2 (practicing the things learnt the previous week)
Helping with the patients’ placing in chairs, stretchers and wheelchairs
Helping with the washing of not seriously ill patients, mouth hygiene and nail care
Helping with the dressing and undressing of the patients
Taking temperatures
Practicing how to feel the pulse
Helping with changing clothes
Practicing to keep temperature and pulse charts
Working with syringe, practicing pumping
Helping to sterilize the syringe (the importance of sterilization)
Helping with preparing and sending samples to the labs, filling up guide slips
Staying in the lab for one day favourable in the department’s lab helping with and practicing urine analysis with reagents

Students are not allowed to do the course in a children’s ward.

II.

Dental Laboratory Technical Practice (60 hours)

Two weeks should be spent in a dental laboratory where students should practice dental laboratory procedures, casting, investing, setting up teeth and carving wax models. It is recommended to mix stones, plasters, pour impressions and make sculpture wax teeth.
BASIC MODULE

Faculty of Dentistry
2nd year
# STUDY PROGRAMME

## 3rd semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Credit code</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory Anatomy, Histology, Embryology III.</td>
<td>C8L3P5</td>
<td>semifinal</td>
<td>Anatomy, Histology, Embryology II.</td>
</tr>
<tr>
<td>compulsory Medical Biochemistry I.</td>
<td>C6L4P3</td>
<td>semifinal</td>
<td>Medical Chemistry II.</td>
</tr>
<tr>
<td>compulsory Medical Physiology I.</td>
<td>C11L6P5</td>
<td>semifinal</td>
<td>Anatomy, Histology, Embryology II.</td>
</tr>
<tr>
<td>compulsory Odontotechnology I.</td>
<td>C3L1P2</td>
<td>pract.mark</td>
<td>General Dental Materials</td>
</tr>
<tr>
<td>compulsory Hungarian Medical Terminology III.</td>
<td>C2L0P4</td>
<td>signature</td>
<td>Hungarian Medical Terminology II.</td>
</tr>
<tr>
<td>compulsory Physical Education III.*</td>
<td>C0L0P2</td>
<td>signature</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credit</strong></td>
<td></td>
<td></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

## 4th semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Credit code</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory Anatomy, Histology, Embryology IV.</td>
<td>C8L1P4</td>
<td>final#</td>
<td>Anatomy, Histology, Embryology III.</td>
</tr>
<tr>
<td>compulsory Medical Biochemistry II.</td>
<td>C6L4P3</td>
<td>final#</td>
<td>Medical Biochemistry I.</td>
</tr>
<tr>
<td>compulsory Medical Physiology II.</td>
<td>C10L6P5</td>
<td>final#</td>
<td>Medical Physiology I.</td>
</tr>
<tr>
<td>compulsory Odontotechnology II.</td>
<td>C5L0P5</td>
<td>pract.mark</td>
<td>Odontotechnology I.</td>
</tr>
<tr>
<td>compulsory Conservative Dentistry and Endodontics, Pre-clinical I.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Odontotechnology I.</td>
</tr>
<tr>
<td>compulsory Hungarian Medical Terminology IV.</td>
<td>C2L0P4</td>
<td>signature</td>
<td>Hungarian Language III.</td>
</tr>
<tr>
<td>compulsory Physical Education IV.*</td>
<td>C0L0P2</td>
<td>signature</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credit</strong></td>
<td></td>
<td></td>
<td><strong>32</strong></td>
</tr>
</tbody>
</table>

**15 credits** should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program.

**Explanation**
- # The grade influences the qualification of the diploma
- * Physical Education I-IV. has to be completed until the end of third year.
- 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: Dr. Andrea Székely

First Semester

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

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

28. Inner coat of the eyeball, retina R. submandibularis, trigonum caroticum, fossa scalenotrachealis. Demonstration: middle and inner ear

29. Outer eye muscles, movement of the eye R. submandibularis, trigonum caroticum, fossa scalenotrachealis.

30. Protective and lacrimal apparatus of the eye Demonstration: middle and inner ear

31. Optic nerve, visual pathway, visual cortex Development of the eye cranial nerves

32. Outer ear, tympanic cavity, auditory ossicles Demonstration: middle and inner ear

33. Bony and membranous labyrinth

34. Vestibular system Finishing the dissection of the regions

35. Organ of Corti Development of the auditory and vestibular systems

36. Auditory pathway, auditory cortex Test. Organs of special senses, regions of the head and the neck, cranial nerves

37. Limbic system In situ dissection of the brain Endocrine organs. Pituitary, pineal gland, thyroid gland, parathyroid gland

38. Endocrine organs: pituitary, pineal gland In situ dissection of the brain.

39. Hypothalamo-hypophyseal systems Endocrine organs. Adrenal gland

40. Endocrine organs: thyroid gland, parathyroid, Endocrine organs. Adrenal gland

41. Parasympathetic nervous system Tympanic cavity, inner ear gland, pancreas, tests, ovary, placenta

42. Sympathetic nervous system

43. Enteral nervous system

44. Skin and appendages I. In situ dissection of the brain Skin. Palmar (non-hairy) skin, hairy skin. Demonstration: axillary skin

45. Skin and appendages II., mammary gland

ANATOMY, HISTOLOGY AND EMBRYOLOGY

Second Semester

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

Week Lectures Dissecting room Histology lab.

1 Topography of the upper extremity, clinical correlations Regio (r.) nuchae, r. dorsalis scapulæ, r. glutea, r. cubiti post., r. carpi dors., r. poplitea, r. plantaris. Dissection of the back

2 Topography of the lower extremity (clinical correlates), mechanism of walking R. nuchae, r. dorsalis scapulæ, r. glutea, r. cubiti post., r. carpi dors., r. poplitea, r. plantaris. Dissection of the back

3 Surface- and sectional anatomy I. Head R. brachii post., r. antebrachii post., r. dorsalis manus, r. femoris post., r. cruris post., retromalleolar regions

4 Surface- and sectional anatomy II. Head R. brachii post., r. antebrachii post., r. dorsalis manus, r. femoris post., r. cruris post., retromalleolar regions

Review I.
### Lectures

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Dissecting room</th>
<th>Histology lab</th>
</tr>
</thead>
<tbody>
<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>
</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>
</tr>
<tr>
<td>7</td>
<td>Surface- and sectional anatomy V. Abdominal cavity I.</td>
<td>R. brachii ant., r. antebrachii ant., r. Subinguinalis, Review II. r. femoris ant., r. crus ant. Projection of the thoracic organs into the anterior thoracic wall</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. crus ant. Dissection of the organs in the thoracic cavity</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>
</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>
</tr>
<tr>
<td>12</td>
<td>Intracranial compartments</td>
<td>Pelvic organs, internal iliac artery, pelvic venous plexus. Retroperitoneum Orbit, tympanic cavity. Perineum</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. Retroperitoneum Orbit, tympanic cavity, nasal cavity, pharynx Perineum. Test. Pelvic organs, perineum</td>
</tr>
<tr>
<td>14</td>
<td>Review of the embryology: circulatory and digestive organs</td>
<td>Review IV.</td>
</tr>
<tr>
<td>15</td>
<td>Review of the embryology: respiratory and urogenital organs</td>
<td></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.
ELECTIVE SUBJECT FOR Dentistry 2nd year

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

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

See all the other detailed curricula at General Medicine, 2nd year
PRE-CLINICAL MODULE
### 5th semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Credit code</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory Conservative Dentistry and Endodontics, Pre-clinical II.</td>
<td>C4L1P3</td>
<td>semifinal</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>compulsory General and Oral Microbiology</td>
<td>C4L2P2</td>
<td>final#</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>compulsory General and Oral Pathophysiology</td>
<td>C4L2P2</td>
<td>final#</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>compulsory Hungarian Dental Terminology I.</td>
<td>C2L0P4</td>
<td>pract. mark</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>compulsory Oral and Maxillofacial Surgery, Pre-clinical course</td>
<td>C2L0P2</td>
<td>pract. mark</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>compulsory Oral Pathology I.</td>
<td>C2L2P0</td>
<td>semifinal</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>compulsory Pathology I.</td>
<td>C5L3P2</td>
<td>semifinal</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>compulsory Preventive Dentistry II.</td>
<td>C3L1G2</td>
<td>pract. mark</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>compulsory Prosthodontics, Pre-clinical Course</td>
<td>C4L1P3</td>
<td>final#</td>
<td>BASIC MODULE</td>
</tr>
</tbody>
</table>

**Total Credit**: 30

### 6th semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Credit code</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory Conservative Dentistry and Endodontics I.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
<td>Conservative Dentistry and Endodontics, Pre-clinical Course II</td>
</tr>
<tr>
<td>compulsory Internal Medicine I.</td>
<td>C4L2P2</td>
<td>pract. mark</td>
<td>General and Oral Pathophysiology</td>
</tr>
<tr>
<td>compulsory Oral and Maxillofacial Surgery I.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
<td>Oral and Maxillofacial Surgery, Pre-clinical course</td>
</tr>
<tr>
<td>compulsory Oral Biology</td>
<td>C5L3P2</td>
<td>final#</td>
<td>General and Oral Pathophysiology</td>
</tr>
<tr>
<td>compulsory Oral Pathology II.</td>
<td>C3L2P1</td>
<td>final#</td>
<td>Oral Pathology I.</td>
</tr>
<tr>
<td>compulsory Pathology II.</td>
<td>C3L1P2</td>
<td>final#</td>
<td>Pathology I.</td>
</tr>
<tr>
<td>compulsory Preventive Dentistry III.</td>
<td>C1L1P0</td>
<td>final#</td>
<td>Preventive Dentistry II.</td>
</tr>
<tr>
<td>compulsory Prosthodontics III.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
<td>Prosthodontics, Pre-clinical Course</td>
</tr>
<tr>
<td>compulsory Radiation protection</td>
<td>C2L1.5P1</td>
<td>semifinal</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>compulsory Hungarian Dental Terminology II.</td>
<td>C2L0P4</td>
<td>final</td>
<td>Hungarian Dental Terminology II.</td>
</tr>
<tr>
<td>compulsory Dento-Alveolar practice (summer, minimum 1 week)</td>
<td>COL0P30</td>
<td>signature</td>
<td>1-6 semesters compulsory subjects</td>
</tr>
</tbody>
</table>

**Total Credit**: 32

**Explanation**

- **15 credits** should be gained from the elective subjects during the 5-year studies.
- The grade influences the qualification of the diploma.

C= Credit point

L= Lecture (hours/week)

P= Practice (hours/week)
ELECTIVE

<table>
<thead>
<tr>
<th>Semester</th>
<th>Subjects</th>
<th>Credit code</th>
<th>Examination</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Hungarian Medical Terminology III.</td>
<td>C2L0P4</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology II.</td>
</tr>
<tr>
<td>4</td>
<td>Hungarian Medical Terminology IV.</td>
<td>C2L0P4</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology III.</td>
</tr>
<tr>
<td>3</td>
<td>Developmental Biology I.</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Developmental Biology II.</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>Developmental Biology I.</td>
</tr>
<tr>
<td>5</td>
<td>Traditional Chinese Medicine</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>for 3rd, 4th and 5th year students</td>
</tr>
<tr>
<td>1</td>
<td>TDK Work within the Union of Research Students</td>
<td>C1L1P0</td>
<td>pract. mark</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Anesthesiology and Intensive Therapy</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>4th and 5th year students</td>
</tr>
<tr>
<td>7</td>
<td>Antibiotic Therapy and Infectology</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>4th and 5th year students</td>
</tr>
<tr>
<td>8</td>
<td>Clinical Endocrinology</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>for 3rd, 4th and 5th year students</td>
</tr>
<tr>
<td>8</td>
<td>Tropical Medicine</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>4th and 5th year students</td>
</tr>
<tr>
<td>8</td>
<td>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>4</td>
<td>Anatomy of Diagnostic Imaging</td>
<td>C2L2P0</td>
<td>pract. mark</td>
<td>Anatomy, Histology, Embryology III.</td>
</tr>
</tbody>
</table>

LIST OF TEXTBOOKS

Recommended textbooks:

### General and Oral Pathophysiology

**Department of Oral Biology**

Lecturer: **Prof. Dr. Gábor Varga**  
Tutor: **Dr. Kristóf Kádár M.D.**

#### First Semester

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practices (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathophysiology of gastric disorders. GERD.</td>
<td>Gastric function</td>
</tr>
<tr>
<td>Peptic - and duodenal ulcer. Intestinal digestion and absorption.</td>
<td>Liver</td>
</tr>
<tr>
<td>Diseases and regulation of exocrine pancreas.</td>
<td>ECG-1 (Rhythm, frequency, axis, development of various waves on the normal ECG)</td>
</tr>
<tr>
<td>Acute and chronic pancreatitis</td>
<td>ECG-2 (Defects of excitation. ES)</td>
</tr>
<tr>
<td>Pathophysiology of liver. Processes leading to the lysis of liver cells. Viral hepatitis Development of jaundice. Fatty liver. Pathophysiology of cirrhosis</td>
<td>ECG-3 (Defects in conductance, blocks.)</td>
</tr>
<tr>
<td>Cardiac insufficiency. Forward and backward heart failure.</td>
<td>ECG-4 (Defects of repolarisation. Myocardial infarction)</td>
</tr>
<tr>
<td>Regulation of blood pressure in hypertension. Risk factors and definitions in hypertension. Processes leading to elevation in blood volume and total peripheral resistancy.</td>
<td>Urine analysis, renal function tests</td>
</tr>
<tr>
<td>Consequences of hypertension</td>
<td></td>
</tr>
<tr>
<td>Pathophysiology of kidney functions. Acute renal failure.</td>
<td></td>
</tr>
<tr>
<td>Protein metabolism. Development of hypoproteinemia. Low protein and amino acid intake and absorption.</td>
<td></td>
</tr>
<tr>
<td>Complete and incomplete proteins Kwashiorkor and marasmus.</td>
<td></td>
</tr>
<tr>
<td>Lipid metabolism. Absorption and metabolism of lipids. Regulatory and endocrine effect of WAT.</td>
<td></td>
</tr>
</tbody>
</table>
### Lectures (2 hours per week)
- Atherosclerosis. Risk factors and epidemiological aspects. Various theories for the development of atherosclerosis (lipid theory, connective tissue theory, immune theory, thrombogenic theory, response to injury etc)
- Proteins, malnutrition astric function
- Panhypopituitarism.
- Changes in the release and activity of thyroid hormones and glucocorticoids. Short and long feed backs
- Acute and chronic complications and oral side of diabetes.
- Pain sensation: central and oral mechanisms.
- Pathophysiology of malignancies.
- Acid-base regulation. Respiratory acidosis and alkalosis.

### Practices (2 hours per week)
- Proteins, malnutrition astric function
- Salt and water metabolism
- Lipid metabolism. Atherosclerosis
- Diabetes
- Clinico-chemical assays for endocrine disorders
- Molecular laboratory diagnostic
- Acid base analysis

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

### 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.
- Microbiological and immunobiology of caries. Attrition, Abrasion, Erosion.
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.
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>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction. Historical backgrounds.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Acute inflammation. Vascular and cellular events. Schemical meditors.</td>
<td></td>
</tr>
<tr>
<td>Acute inflammation Morphological patterns.</td>
<td></td>
</tr>
<tr>
<td>Chronic inflammation.</td>
<td>HISTOLOGY</td>
</tr>
<tr>
<td>Extracellular matrix. Repair. Wound healing.</td>
<td></td>
</tr>
<tr>
<td>Transplantation. Immunodeficiency. Autoimmune diseases.</td>
<td></td>
</tr>
<tr>
<td>Carcinogenesis.</td>
<td></td>
</tr>
<tr>
<td>Epidemiology of malignancies. Preblastomatosis. Screening.</td>
<td></td>
</tr>
<tr>
<td>Tumor therapy. Tumor immunology.</td>
<td></td>
</tr>
<tr>
<td>Benign and malignant tumors of epithelial and mesenchymal origin.</td>
<td>HISTOLOGY</td>
</tr>
<tr>
<td>Developmental and genetic diseases.</td>
<td></td>
</tr>
<tr>
<td>Environmental and nutritional pathology</td>
<td></td>
</tr>
<tr>
<td>Embolism. Infarct.</td>
<td></td>
</tr>
<tr>
<td>Infectious and parasitic diseases. Viral and bacterial diseases.</td>
<td></td>
</tr>
<tr>
<td>Tuberculosis. Syphilis. Leprosy. Diseases caused by fungi, nematodes, cestodes.</td>
<td>HISTOLOGY</td>
</tr>
<tr>
<td>Heart diseases. Congenital, ischemic, hypertensive heart diseases.</td>
<td></td>
</tr>
<tr>
<td>Consultation.</td>
<td></td>
</tr>
</tbody>
</table>
### PATHOLOGY

#### Second Semester

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1 hour per week)</td>
<td>(2 hours per week)</td>
</tr>
<tr>
<td>Urinary tract and male reproductive system</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Fallopian tube, Ovary, Placenta and neonatal pathology.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Gestational trophoblastic disease.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Pathology of the breast.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Disorders of the mononuclear phagocyte system. Acute and chronic myeloproliferative syndromes.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Endocrine system.</td>
<td>HISTOLOGY</td>
</tr>
<tr>
<td>Gallbladder and extrahepatic bile ducts. Pancreas. Diabetes.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Head and neck pathology.</td>
<td>HISTOLOGY</td>
</tr>
<tr>
<td>Bones and joints, skeletal muscles.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Pediatric oncology.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Nervous system. Trauma. Circulatory and inflammatory diseases.</td>
<td>HISTOLOGY</td>
</tr>
<tr>
<td>Demyelinating and metabolic diseases.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Tumors of the nervous system. Peripheral nervous system.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Pathology of the skin.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Clinicopathological conference</td>
<td>HISTOLOGY</td>
</tr>
</tbody>
</table>

### 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.
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).

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 coccoid bacilli
- Gram-positive aerobic and anaerobic rods.
- Gram-negative facultative anaerobic rods.

- Mycobacteria.
- Rickettsia, Chlamydia.
- Mycoplasma.
- Spirochetes. Importance of bacterial infections involving the oral, perioral tissues and salivary glands.
- Medical importance of fungi (general mycology, chemotherapy of fungal infections). Importance of fungal infections involving the oral and perioral tissues.
- Protozoa (general characterization and the most important human pathogenic protozoa).
- Helminths (general characterization and the most important human worms).
- Important respiratory pathogen viruses. Important enterally transmitted viruses.
- Hepatitis viruses.
- Retroviruses (AIDS).
- Viruses and cancer.

- 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)
**Lectures** (2 hours per week)
Arbo- and robovirus infection. Rabies. Slow viruses. Viral infections involving the oral, perioral tissues and salivary glands.

**Practices** (2 hours per week)
Pathogenesis and symptomatology of viral diseases.
Summary of microbiological laboratory techniques and diagnostic procedures. Consultation.

More than 3 semester absences invalidate the semester.

**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 (acryl resin, acid etch technique, matrices for composite resins, reading bonding, agent along with either self-curing or light-activated composite resin, insertion of composite resins, finishing composite resin, glazing the restoration). The rubber dam.

**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.
CONSERVATIVE DENTISTRY AND ENDODONTICS

Second Semester

Lectures (1 hour/week)

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

Practices (3 hours/week)

Clinical practice.
Clinical practice.
Clinical practice.
Clinical practice.
Clinical practice.
Clinical practice.
Clinical practice.
Clinical practice.
Clinical practice.
Clinical practice.
Clinical practice.
Clinical practice.
Clinical practice.
Clinical practice.

During the second semester students have to make:

- 3 amalgams fillings
- 3 esthetic fillings
- 15 hours assistance

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

Practical course grade.
# Preventive Dentistry II

**Department of Conservative Dentistry**  
**Lecturer:** Prof. Dr. Ida Nyárasdy

## First Semester

<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 mandible and maxilla and on the formation of parafunction</td>
</tr>
<tr>
<td>8.</td>
<td>Fluorides</td>
<td>Demonstration of oral hygiene /HPK Orthodontic and Dental Department/</td>
</tr>
<tr>
<td>9.</td>
<td>Collective and individual fluoride-prevention</td>
<td>Clinical infection control</td>
</tr>
<tr>
<td>10.</td>
<td>Other possibilities in caries prevention /sugar-substitutes, rysta-possibilities/</td>
<td>The role of trace elements and vitamins in maintaining oral health</td>
</tr>
<tr>
<td>11.</td>
<td>Fissure-sealant</td>
<td>The role of certain nutrient – groups in maintaining oral health</td>
</tr>
<tr>
<td>12.</td>
<td>Caries incipient and remineralisation</td>
<td>Caries diagnostic 2.</td>
</tr>
<tr>
<td>13.</td>
<td>Prevention of iatrogen traumas; infection control</td>
<td>Possibilities of caries-risk, CRT-test, definition of saliva – secretion, pH measurement</td>
</tr>
</tbody>
</table>
PREVENTIVE DENTISTRY III
Department of Conservative Dentistry
Lecturer: Prof. Dr. Ida Nyárasdy

Second Semester

Week  Lectures

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

PROSTHODONTICS

First Semester

Lectures (1 hour per week)

Types of dental restaurations. Prosthetic
Establishment and instrumentation of
Impression taking procedures for
Shade determination
Determination of centric occlusion and centric relation
Anatomy of the remaining teeth.
Cephalometric landmarks
Impression taking for fixed restorations
Preparation for fixed restorations
Preparation and impression taking procedures for post and cores

Practices (3 hours per week)

Description of hand-tools and laboratory appliances equipment
Upper first-anatomical impression on the dental clinic phantom head
Lower first-anatomical impression on complete dentures phantom head
Cast construction
Special tray construction
Second – functional – impression
Fabrication of lower and upper bite-block I.
Fabrication of lower and upper bite-block II.
Midterm test
PROSTHODONTICS

Second Semester

Lectures (1 hour per week)

The reasons and the consequences of the tooth loss
Complain, 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 4 and 5, wax patterns
Construction of wax pattern of a lower bridge (5–7). Investment of the wax pattern.
Midterm test: Technology and materials of fixed appliances
Preparation of lower 4 for a 4/5 crown, preparation of lower 3 for a post-core crown
Finishing the casts, application, framework try-in on phantom-head
Acrylic facing and a wax pattern for an acrylic crown on lower 3
Investment of wax patterns, for 4/5 and a post and core crown

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

Practical course grade.

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

Second Semester

Lectures (2 hours per week)
Introduction to internal medicine.
History taking.
Physical examination

Bronchiectasis. Lung abscess. Pulmonary embolism.
Chronic aspecific respiratory disorders.
Tumors of the lung.
Disorders of the cardiovascular system.
Physical examination.
Examination of the peripheral blood vessels.
Coronary heart disease.
Acute myocardial infarction.
Acute heart failure. Shock.
Chronic heart failure.

Rheumatic fever. Valvar heart disorders.
Infective endocarditis. Disorders of the pericardium.
Cor pulmonale.

Cardiac arrhythmias. Conduction disturbances.
Hypertension.
Atherosclerosis. Thromboangiitis obliterans.
Raynaud’s phenomenon.
Headache. Dental relation of the heart diseases

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

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

Preclinical training

First Semester

**Practices** (2 hours per week)

Oral surgery as a part of general surgery
The surgical anatomy of the teeth
The splanchnocranium. The Maxillary Nerve
The mandible, the Mandibular Nerve
The injection (instrumentation, rules, techniques)
Midterm (written)
Surgical hygiene. The principle of antisepsis and asepsis
The operation theater
Oral surgical instrumentation
The removal of teeth/ practice on phantom
The removal of teeth/ practice on phantom
The removal of teeth/ practice on phantom
Semester closing midterm (oral + practical)
Practicing, repetition

Second Semester

**Week**  | **Lectures** (1 hour per week) | **Practices** (3 hours per week)
---|---|---
1 | The history of oral surgery  | Surgical anatomy of the jaws and teeth
   | Clinical examination and diagnostics | Local anesthesia
   | Pain control. The physiologic and psychologic aspects of pain | Oral and maxillofacial surgical instruments
   | The mode of action of local anaesthetics. | Clinical diagnosis, medical examination of the patients
   | The pharmacological properties of local anaesthetic drugs | Midterm demonstration
   | The technique of local anaesthesia Part I. (anaesthesia of teeth) | Practicing simple tooth extraction
   | The technique of local anaesthesia Part II. (Matas, block of n. alv. sup. ant., anaesthesia of the tongue, the lip, the bucca) | Practicing simple tooth extraction
   | The technique of local anaesthesia Part III. (Inflammed tissues, trismus) | Practicing tooth extraction
   | Summarising clinical implications /video/ | Minor oral surgery
   | Complications of local anaesthesia. | |
   | Conscious sedation in dentistry | |
   | Indication and contraindication of tooth removal | |
   | Operation technique of dentoalveolar surgery Part I. (surg. tools, flaps, suturing) | |
Operation technique of dentoalveolar
surgery Part II. (complications of tooth removal,
surgical root removal) (video)
Problems with the eruption of teeth.
The removal of the impacted teeth
Guest speaker
Midterm exam
Consultation

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

Practical course grade (five-scale).

ORAL BIOLOGY
Lecturer: Prof. Dr. Gábor Varga
Tutor: Dr. Beáta Kerémi D.M.D.
Second Semester

Lectures (3 hours per week)
The oral mineralized tissues –
Amelogenesis-dentinogenesis – cementogenesis
dentin and cementum. Microanatomy and
and structures of enamel, physiology and innervation
of the pulp – Chemistry of formation and solubilization
of the various calcium phosphate salts. Crystallography
bio-apatite and other calcium phosphate
Mechanism of biological calcification
– Principles of demineralization-remineralization-
phenomena – The inorganic and organic composition
of teeth – Role of fluoride and carbonate in calcium
and dental tissue phosphate solubility demineralization
-remineralization-phenomena
Abnormal development and mineralization of renamel,
dentin and cementum – Pulpal mineralization and
dentin-pulp phenomena; dentin permeability –
Nutrition and hormonal influences on the oral
mineralized tissues
The salivary glands and saliva – Ultrastructure and innervation
– The physiology of salivary gland secretion

Practices (2 hours per week)
Hematology I.
Cellular components of
the whole blood
The function of the individual cells.
Normal blood cell values
Cellular elements of the bone marrow
Methods for examining the peripheral
blood smear and the bone marrow.
Hematology II.
Immature cellular forms
The red and white blood cell series
Hematology III.
White blood cell disorders
Disorders related to segmented cells.
Disorders related to mononuclear cells
Hematology IV. Malignant white cell
disorders
Part I. Classification of leukemias. Acute
leukemias Cytochemical differentiation of
acute leukemias Plasma cell dyscrasias
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 sideroblastic, hemolytic anemia.

Oral motor and sensory system – Ultrastructure of temperature, touch, pressure and taste receptors of the oral cavity. – Physiology of pain in the oro-facial region and its control. – Physiology of temperature and touch perception in the oro-facial region – Dentin sensitivity and its control. Biochemistry and physiology of taste perception

Biomechanics and structure of the temporomandibular joint – Neuromuscular physiology of mastication – Kinesiology and electromyography of oral musculature – Phenomenon of deglutition – Microcirculation and innervation of the tongue – Role of the tongue in speech and other oral phenomena. Physiology of olfaction – Food consistency and its effects on oral phenomena


Aging – Nutrition Aging Nutrition Part Two Hemostasis and fibrinolysis – Physiology and biochemistry

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.
Classification of anemias.
Aplastic, iron deficiency, Abnormalities of red blood cell production. Platelet disorders
Folate- and Vit. B12-deficiency anemia
Polycythemia, erythrocytosis.

Midterm exam of hematology

Determination of salivary flow rate and collection of samples for analysis

Measurement of fluoride concentration

Immunologic techniques
Oral clearance measurements
Oral cytology
SEMMELWEIS UNIVERSITY / FACULTY OF DENTISTRY

- 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
- Analyses of oral hard tissues


Measurement of plaque and salivary pH

**Note:** A final exam will be organized at the end of the semester. During the semester one midterm examination (hematology) should be passed. The mark of that will also be considered when establishing the mark of the final. During the final examination there are the following requirements:
a.) to reach the minimum level of a written theoretical evaluation, b.) to present orally two of the main theoretical questions, and also, c.) to present one question of the subject-specific practices.
In the case of an invalid midterm the examination will start with assessing the knowledge of hematology. Under the minimum level of passing hematology (mark 2) there is no possibility of continuing of the final. A failed exam can be retaken at least one week after the first one.
The maximum number of absences from practice in a semester is 3! More than 3 absences invalidate the semester.

**RADIATION PROTECTION**
department: Independent Division of Radiology
Lecturer: *Dr. Csaba Dobó-Nagy*
prerequisites: basic module

**third year second semester**

**Lectures** (1.5 hours per week)
Atomic structure, radioactivity
Ionization, Dosimetry
Health physics
Protection against external exposure
Measurement of exposure at work
General rules of application of ionization
Types and levels of exposure
Radiation protection legislation
Regulation of accident prevention at work
Controlling system of the radiation supervisory authority
Protection of patients
Dose limits
X-ray equipments  
Consultation  
Written exam  

**Practices** (1 hour per week)  
Measurement and calculation effective dose of the patient receiving intraoral x-ray  
Importance of collimation, receptors  
Operating the equipment  

**Notes:** maximum number of absences in a semester is 3.  
more than 3 absences invalidate the semester.  
closing semi-final

**COMPULSORY SUMMER PRACTICE**

**MINIMUM 1-WEEK – MAXIMUM 4-WEEK PROGRAM IN DENTO-ALVEOLAR SURGERY**

Practicing tooth extractions  
Practicing local anesthesia  
Assisting at minor oral surgical procedures  
Practicing post-surgical patients’ management  
Carrying out surgical tooth extraction under supervision  
Carrying out minor dento-alveolar surgical procedures under supervision  
Students should work at the assigned hospital or dental clinic 6 hours a day, five days a week.
### 7th semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Credit code</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>compulsory Internal Medicine II.</td>
<td>C3L2P1</td>
<td>semi-final</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>compulsory Oral and Maxillofacial Surgery II.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
<td>Oral and Maxillofacial Surgery I.</td>
</tr>
<tr>
<td>compulsory Periodontology I.</td>
<td>C2L2P0</td>
<td>semi-final</td>
<td>Oral biology</td>
</tr>
<tr>
<td>compulsory Pharmacology, Toxicology I.</td>
<td>C2L1P1</td>
<td>semi-final</td>
<td>Pathology I.</td>
</tr>
<tr>
<td>compulsory Prosthodontics II.</td>
<td>C7L1P6</td>
<td>semi-final</td>
<td>Prosthodontics I.</td>
</tr>
<tr>
<td>compulsory Oral Diagnostics I.</td>
<td>C2L1P1</td>
<td>pract. mark</td>
<td>Pathology II.</td>
</tr>
<tr>
<td>compulsory Orthodontics Pre-Clinical</td>
<td>C1L0P1</td>
<td>pract. mark</td>
<td>Oral Biology</td>
</tr>
<tr>
<td>obligatory elective Neurology</td>
<td>C1L1P0</td>
<td>semi-final</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>obligatory elective Psychiatry</td>
<td>C1L1P0</td>
<td>semi-final</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>obligatory elective Dental Ethics</td>
<td>C2L2P0</td>
<td>semi-final</td>
<td>Pathology II.</td>
</tr>
<tr>
<td>obligatory elective Public Health</td>
<td>C3L1,5P2</td>
<td>final#</td>
<td>General and Oral Microbiology</td>
</tr>
<tr>
<td>Total Credit</td>
<td></td>
<td></td>
<td>36</td>
</tr>
</tbody>
</table>

### 8th semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Credit code</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory Conservative Dentistry and Endodontics III.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
<td>Conservative Dentistry and Endodontics II.</td>
</tr>
<tr>
<td>compulsory Internal Medicine III.</td>
<td>C1L1P0</td>
<td>final#</td>
<td>Internal Medicine II.</td>
</tr>
<tr>
<td>compulsory Oral and Maxillofacial Surgery III.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
<td>Oral and Maxillofacial Surgery II.</td>
</tr>
<tr>
<td>compulsory Oral Diagnostics II.</td>
<td>C1L0P1</td>
<td>semi-final</td>
<td>Oral Diagnostics II.</td>
</tr>
<tr>
<td>compulsory Periodontology III.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
<td>Periodontology III.</td>
</tr>
<tr>
<td>compulsory Pharmacology, Toxicology II.</td>
<td>C3L1P2</td>
<td>final#</td>
<td>Pharmacology, Toxicology I.</td>
</tr>
<tr>
<td>compulsory Prosthodontics III.</td>
<td>C4L1P3</td>
<td>pract. mark</td>
<td>Prosthodontics III.</td>
</tr>
<tr>
<td>obligatory elective Surgery</td>
<td>C3L2P1</td>
<td>final#</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>obligatory elective Medical Sociology</td>
<td>C2L1P1</td>
<td>semi-final</td>
<td>Pathology II.</td>
</tr>
<tr>
<td>compulsory Implantology I.</td>
<td>C1L1G0</td>
<td>semi-final</td>
<td>Oral and Maxillofacial Surgery II.</td>
</tr>
<tr>
<td>obligatory elective Dental Psychology</td>
<td>C2L2P0</td>
<td>semi-final</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>compulsory Gnathology</td>
<td>C3L1P2</td>
<td>final#</td>
<td>Prosthodontics I.I.</td>
</tr>
<tr>
<td>compulsory General Dentistry practice (summer, 4 weeks)</td>
<td>COLOP30</td>
<td>signature</td>
<td>1-8 semesters compulsory subjects</td>
</tr>
<tr>
<td>Total Credit</td>
<td></td>
<td></td>
<td>32</td>
</tr>
</tbody>
</table>
Explanations

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

# The grade influences the qualification of the diploma

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

LIST OF TEXTBOOKS

7 Rajna Péter: Ideg- és elmegyógyászati szakkifejezések

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

Recommended textbooks:

7 Fadem B: Behavioral Science_Lippincott Williams & Wilkins, 5th ed., 2008.
### First Semester

<table>
<thead>
<tr>
<th>Lectures (1 hour per week)</th>
<th>Practices (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drugs, receptors and pharmacodynamics</td>
<td>Drug interactions (agonists, antagonists)</td>
</tr>
<tr>
<td>Pharmacokinetics: Absorption, distribution</td>
<td>Factors influencing pharmacokinetic.</td>
</tr>
<tr>
<td>Drug biotransformation</td>
<td>Drug abuse, dependency, Allergy.</td>
</tr>
<tr>
<td>Introduction to Autonomic Pharmacology</td>
<td>Basic and clinical evaluation of new drugs</td>
</tr>
<tr>
<td>Cholinoreceptor-activating drugs</td>
<td>Prescription writing</td>
</tr>
<tr>
<td>Cholinoreceptor-blocking drugs</td>
<td>Ganglionic blocking drugs</td>
</tr>
<tr>
<td>Adrenoceptor-activating drugs</td>
<td>Skeletal muscle relaxants</td>
</tr>
<tr>
<td>Adrenoceptor-blocking drugs</td>
<td>Clinical pharmacology of alpha-, beta-receptor blocking drugs</td>
</tr>
<tr>
<td>Local anesthetics I.</td>
<td>Smooth muscle relaxants</td>
</tr>
<tr>
<td>Local anesthetics II.</td>
<td>Prescription writing</td>
</tr>
<tr>
<td>General anesthetics</td>
<td>The alcohol</td>
</tr>
<tr>
<td>Opioid analgesics and antagonist</td>
<td>Antiepileptic drugs</td>
</tr>
<tr>
<td>Principles of antimicrobial drug action</td>
<td>Antiseptics, disinfectants</td>
</tr>
<tr>
<td>Penicillins, cephalosporins</td>
<td>Disinfectants</td>
</tr>
<tr>
<td>Tetracyclines, chloramphenicol</td>
<td>Aminoglycosides</td>
</tr>
<tr>
<td>Sulfonamides – Drugs with specialized indications – Antifungal agents</td>
<td>Aminoglycosides</td>
</tr>
<tr>
<td></td>
<td>Antimycobacterial drugs</td>
</tr>
<tr>
<td></td>
<td>Antiviral chemotherapy</td>
</tr>
<tr>
<td></td>
<td>Urinary</td>
</tr>
<tr>
<td></td>
<td>Antifungal agents</td>
</tr>
</tbody>
</table>

### Second Semester

<table>
<thead>
<tr>
<th>Lectures (1 hour per week)</th>
<th>Practices (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drugs used in congestive heart failure, Cardiac glycosides</td>
<td>Diuretic agents</td>
</tr>
<tr>
<td>Vasodilators</td>
<td>Antiarrhythmic drugs</td>
</tr>
<tr>
<td>Antihypertensive drugs</td>
<td>Agents used in hyperlipid</td>
</tr>
<tr>
<td>Drugs used in disorders of coagulation</td>
<td>Agents used in anemia</td>
</tr>
<tr>
<td>Histamine, Histaminoreceptor antagonists</td>
<td>Bronchodilators</td>
</tr>
<tr>
<td>Pharmacology of gastrointestinal tract</td>
<td>Prescription writing</td>
</tr>
<tr>
<td>Sedative-Hypnotics</td>
<td>Drugs of abuse</td>
</tr>
<tr>
<td>Antipsychotic agents</td>
<td>Psychotomimetic drugs</td>
</tr>
</tbody>
</table>

---

**PHARMACOLOGY, TOXICOLOGY**

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

**Faculty of Dentistry**

<table>
<thead>
<tr>
<th>Department: Faculty of Dentistry</th>
<th>Building: 309</th>
</tr>
</thead>
</table>

---

**SEMMELWEIS UNIVERSITY / FACULTY OF DENTISTRY**
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.


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

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

CONSERVATIVE DENTISTRY AND ENDODONTICS
Tutor: Dr. Júlia Nemes

### First Semester

<table>
<thead>
<tr>
<th>Lectures (1 hour per week)</th>
<th>Practices (3 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection control</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Root canal treatment: preparation of access cavity: determination of working length, importance of X-ray in Endodontics</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Root canal treatment: cleaning and shaping</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Root canal treatment: making preparation of the root-canal for filling, Obturation of the root canal</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Reconstruction of root-canal treated teeth: post &amp; core</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Indications and methods of endodontics surgery</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Emergency treatment in Endodontics</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Complications and failures in the course of root canal treatment</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Endodontic microbiology</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Endodontic Periodontic Interrelationship</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>New instruments in endodontics (The Endox-Endodontic System)</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Caries therapy: Cast metal restoration</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Caries therapy: ceramic and composite inlays</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Preparation for Crown</td>
<td>Clinical practice</td>
</tr>
</tbody>
</table>

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

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

Second Semester

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

Preventive Endodontics: protecting the pulp  Clinical practice
Evaluation of success and failure in Endodontics  Clinical practice
Esthetic dentistry: Bleaching discolored teeth.  Clinical practice
Internal and External  Clinical practice
Direct fillings of molars: amalgam or composite  Clinical practice
Local anesthesia in Conservative Dentistry and its  Clinical practice
complications
Treatment of cervical lesion  Clinical practice
New equipment and methods in Conservative Dentistry  Clinical practice
Indications and techniques of veneer  Clinical practice
Discussion of thesis of diploma work  Clinical practice
Discussion of thesis of diploma work  Clinical practice
Special dental treatment of some general diseases  Clinical practice
(AIDS, hepatitis, diabetes, epilepsy, etc.).
"Anatomie" of dental praxises.  Clinical practice
Management of Traumatized Teeth  Clinical practice
Special cavity preparation. (Tunnel, slot, mini cavities)  Clinical practice

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

During the second semester have to make:
3 amalgam fillings
3 esthetic restorations
1 root canal filling
1 inlay
15 hours assistance

PROSTHODONTICS

First Semester

Lectures (1 hour per week)  Practices (6 hours per week)

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

Second Semester

<table>
<thead>
<tr>
<th>Topics</th>
<th>Lectures</th>
<th>Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis and treatment planning</td>
<td>Partially dentate patients</td>
<td></td>
</tr>
<tr>
<td>Oral health for the partially edentulous patient</td>
<td>Partially dentate patients</td>
<td></td>
</tr>
<tr>
<td>Principles of partial denture design</td>
<td>Partially dentate patients</td>
<td></td>
</tr>
<tr>
<td>Construction of removable partial dentures</td>
<td>Partially dentate patients</td>
<td></td>
</tr>
<tr>
<td>Classification of the partially edentulous dental arches</td>
<td>Partially dentate patients</td>
<td></td>
</tr>
<tr>
<td>Treatment planning for the class 0., 1A. and 1B. dental arches</td>
<td>Partially dentate patients</td>
<td></td>
</tr>
<tr>
<td>Treatment planning for the class 2A. dental arches</td>
<td>Partially dentate patients</td>
<td></td>
</tr>
<tr>
<td>Treatment planning for the class 2B. dental arches</td>
<td>Partially dentate patients</td>
<td></td>
</tr>
<tr>
<td>Treatment planning for the class 2A/1. and 3. dental arches</td>
<td>Partially dentate patients</td>
<td></td>
</tr>
<tr>
<td>Maxillo-facial prosthetics</td>
<td>Partially dentate patients</td>
<td></td>
</tr>
<tr>
<td>Partially dentate patients</td>
<td>Partially dentate patients</td>
<td></td>
</tr>
<tr>
<td>Implants in prosthodontics</td>
<td>Partially dentate patients</td>
<td></td>
</tr>
<tr>
<td>Partially dentate patients</td>
<td>Partially dentate patients</td>
<td></td>
</tr>
<tr>
<td>Orthodontic aspects of prosthodontics</td>
<td>Partially dentate patients</td>
<td></td>
</tr>
<tr>
<td>Consultation</td>
<td>Partially dentate patients</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 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 operating theater</td>
</tr>
<tr>
<td>Shock, Cardiopulmonary resuscitation. intensive therapy</td>
<td>Visiting patients' ward</td>
</tr>
<tr>
<td>General principles of traumatology.</td>
<td>Visiting operating theater</td>
</tr>
<tr>
<td>First aid.</td>
<td>Visiting operating theater</td>
</tr>
<tr>
<td>Traumatological management of catastrophes.</td>
<td>Visiting patients' ward</td>
</tr>
<tr>
<td>Burned patients.</td>
<td>Visiting operating theater</td>
</tr>
<tr>
<td>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

<table>
<thead>
<tr>
<th>Lectures (1 hour per week)</th>
<th>Practices (3 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pyogenic dental inflammations I. (General aspects)</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Pyogenic dental inflammations II. (periodontitis, periostitis) Dental focus</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Pyogenic dental inflammations I. Cellulitis</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Osteomyelitis, specific inflammations of the maxillofacial region.</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Cystic lesions of the maxillofacial soft tissues.</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Dental and surgical aspects of the maxillary sinus</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Diseases of the salivary glands.</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Odontogenic cysts I.</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Odontogenic cysts II.</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Odontogenic cysts III</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Surgical endodontics. I.</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Surgical endodontics. II.</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Dental implantology</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Preprothetic surgery</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Consultation</td>
<td>Consultation</td>
</tr>
</tbody>
</table>

**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

### Second Semester

<table>
<thead>
<tr>
<th>Lectures (1 hour per week)</th>
<th>Practices (3 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developmental anomalies of the face Part I. (Cleft lip and palate)</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Developmental anomalies of the face Part II. (Craniofacial malformations, cleft face)</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Developmental anomalies of the face Part III. (Dysgnathias)</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>The diseases of the salivary glands Part. I. (Pathology)</td>
<td>Practicing minor oral surgery</td>
</tr>
<tr>
<td>Vascular anomalies in the head and neck region</td>
<td>Practicing minor oral surgery</td>
</tr>
</tbody>
</table>

(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
- 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: FOGRKFSP_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

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture (1 hour/week)</th>
<th>Practice (1 hour/week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The Diagnostic method. Medical and dental history. The importance of “Oral diagnosis”.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Molecular oral Diagnostics</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Up-to-date diagnosis of the periodontal tissues.</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Diagnosis of the salivary glands.</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Diagnosis of the TMJ disorders and Differential diagnosis of orofacial pain</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Clinical evaluation of dental conditions, and malocclusion</td>
<td></td>
</tr>
</tbody>
</table>
Rules of practices
Activity of the students:

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

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

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

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

Non-performance of the minimal expectations invalidate the semester!

Textbook:
2. BC Decker Inc Hamilton London 2002

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

Lecture-0 Practice (1 hour/week)

Rules of practices

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

Exam:

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

Non-performance of the minimal expectations invalidate the semester!

Textbook:
2. BC Decker Inc Hamilton London 2002

Recommended books
3. “hand-outs” will be prepared and presented for the students by the lecturers
# GENERAL AND DENTAL RADIOLOGY

Department of Prosthodontics  
Lecturer: Dr. Csaba Dobó Nagy

## First Semester

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

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

---

**PERIODONTOLOGY I, II**
Department of Periodontology

**First Semester**

**Lectures** (1,5 hours per week)

**Second Semester**

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

- Introduction to Periodontology  Clinical practice
- The morphology of the periodontium, histology and embryology of the periodontium  Clinical practice
- The dental plaque. Its origin and role in the periodontal diseases. Periodontal microbiology  Clinical practice
- Oral immunobiology  Oral immunopathology
- Drugs and chemicals used in the periodontology  Midterm Demonstration
- Pathomechanism of the periodontal disease  Clinical practice
- Clinical forms of periodontal diseases  Clinical practice
- Acute necrotizing ulcerative gingivitis  Clinical practice
- Pregnant gingitis, Periodontal diseases with endocrine background.
**Lectures (1 hour per week)**
- Non-plaque related periodontal conditions
- Oral mucous membrane diseases located on the gingiva
- Periodontal diseases of the child and adolescents
- Epidemiology of the periodontal diseases
- Periodontal diseases and the patients’ behavior
- Periodontitis as a behavioral disease
- Oral prophylaxis and prevention of periodontal diseases
- Measures of individual and group education and motivation
- Periodontal charting, periodontal indices
- Medical and dental history of the periodontal patients
- General appraisal of the etiology of periodontal disease
- Rational for therapy.
- Consultation

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

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

---

**PUBLIC HEALTH**

**Tutor:** Dr. András Terebessy

**English Dental**

**Lectures (1.5 hours per week)**
- Definition of Public Health; Past, present and future of Public Health
- Demography: International and Hungarian situation
- General epidemiology Analytical and intervention methods on field of chronic non-communicable diseases
- Lifestyle: smoking, alcohol consumption, drug-abuse
- Epidemiology and prevention of non-communicable diseases I
- Epidemiology and prevention of non-communicable diseases II
- Epidemiology and prevention of Cancer
- Environmental health: water, soil, air
- Occupational health
- Basics of healthy diet; Nutrition disorders

**Practicals (2 hours per week)**
- Introduction Basic demographical data
- Public Health Program of EU
- Visit into the Central Kitchen of the University
- Practical aspects of epidemiological investigations: study-planning and analysis
- Dentist’s task on prevention of non-communicable diseases I: smoking, alcohol consumption and drug-prevention
- Dentist’s task on prevention of non-communicable diseases II: HBP-prevention
- Dentist’s task on prevention of non-communicable diseases III: cancer-prevention Screening-screening programs
- Dentist’s task on environmental health problems
- Dentist’s task on occupation diseases prevention
- Assessment of nutritional status; nutritional disorders;
Lectures (1.5 hours per week)
- Mother-, child and youth health care
- General Epidemiology of communicable diseases – International and Hungarian aspects
- Nosocomial Infections Reemerging, emerging and deliberately emerging infections
- Ethic of Public Health
- Structure and financing of Health Care Systems

Practicals (2 hours per week)
- Basics of healthy diet; Computer planning and controlling diet in public catering
- Family planning, Youth health
- General epidemiology of communicable diseases
- Immunization, Vaccination programs
- Sterilization, disinfection Laboratory investigations in case of communicable diseases
- Nosocomial infections
- Food-hygiene; food-borne diseases

DENTAL PSYCHOLOGY
Institute of Behavioral Sciences

Code: FOKMAG019_1A
Credit: 2
Lecturers: Prof. Dr. Ferenc Túry/Dr. Piroska Balog
2010-2011. 2nd semester

Course objectives:
- to introduce the concepts of stress, emotions, states of consciousness, and their role in pain perception
- to emphasize suggestive communication and therapeutic methods that may be used to improve doctor-patient relationship in dental practice
- to enable students to recognize and understand psychological and psychopathological issues when encountered in everyday dental practice

Topics:
1+2 Psychotherapeutic methods, Dr. György Purebl
3+4 Principles of perception, pain, consciousness, emotions and communication -and their relations to dentistry. Gábor Suhai
5+6 Stress and stress management programs. Dr. Adrienne Stauder
7+8 Conscious states, sleep, dreaming, general anesthesia. Dr. Róbert Bódizs
9+10 Dental anxiety and music therapy. Dr. László Harmat
11+12 Health psychology and behavior. Dr. Róbert Bádizs
13+14 Techniques of establishing rapport with patients in fear and basics of formulating positive suggestions in dental practice. Gábor Suhai
15+16 Altered states of consciousness, dental anxiety and suggestive communication (I.) Gábor Suhai
17+18 Altered states of consciousness, dental anxiety and suggestive communication (II.) Gábor Suhai
19+20 Affects, emotion and motivation. Dr. György Purebl
21+22 Dental consequences of eating disorders. Bernadett Babusa
23+24 Problems with personality disordered patients in dental practice. Dr. László Harmat
25+26 Fables and imagination in dental practice. Éva Poliák
27+28 Review.
Department: Institute of Behavioral Sciences
Department of Psychology
NET Building, 20th floor
1089, Budapest, Nagyvárad tér 4.
Tel: 210-2953
Secretary: NET Building, 20th floor, Room-2005. tel: 2102930/ 56114.
Course Leader: Dr. Piroska Balog
NET 20th floor, room 2011
Tel: 210-2930/ 56403, e-mail: balopir@net.sote.hu
Further information: www.behsci.sote.hu

Lecturers:
Dr. György Purebl purgyor@net.sote.hu
Dr. Róbert Bodizs bodrob@net.sote.hu
Dr. Adrienne Stauder staadr@net.sote.hu
Dr. László Harmat laszloharmat@yahoo.com
Bernadett Babusa bernadett.babus@gmail.com
Éva Pollák evipoli@yahoo.com
Gabor Suhai shgabor@gmail.com

Participation and making up for absences:
Participation list will be recorded at the end of every lecture. To participate on at least 75% of the
total number of lessons is a prerequisite for getting the signature. Maximum number of absences
in a semester is 3.

Certifying absence from lesson and exam:
Medical certificate presented to the course leader.

Semester requirements:
Course will conclude with a written semi-final examination in the examination period.

Requirement of semester signature:
A signature will be given with the prerequisite of participation. One absence can be overlooked by
the teacher if the student writes an essay. The topic of the essay must be discussed with the
course leader in advance.

Method of granting grade: The result of the semi-final.

Type of exam: written semi-final examination
Exam requirements: Content of the lectures
Sign up for exam: through the Neptun system
Modifying sign up for exam: through the Neptun system

Certifying absence from exam:
A telephone message to the secretary of the Institute or an email message to the course leader.

Recommended text books:
1 Behavioral dentistry. Mostofsky DI, Forgione AG, Giddon DB (eds.), Blackwell Munksgaard,
2006.
DENTAL ETHICS

First Semester

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

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

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

2. week (Practices)
Normative theories of ethics.
Deontological theories of ethics. (The Golden Rule, Kant and the categorical imperative, the principle of double effect, W.D. Ross and the prima facie duties,)
Teleological theories of ethics. (Act and rule utilitarianism,)
Theories of natural law.
Contractarian theories of ethics. (The theory of justice of John Rawls)

3. week (Lecture)
The basic principles of dental ethics.
The principle of respect for autonomy.
The principle of non-maleficence.
The principle of 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>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lecture</td>
<td>Introduction. Changing patterns of disease</td>
</tr>
<tr>
<td>2</td>
<td>Lecture</td>
<td>Health and illness behaviour.</td>
</tr>
<tr>
<td>3</td>
<td>Lecture</td>
<td>Social inequalities in health and mortality.</td>
</tr>
<tr>
<td>4</td>
<td>Seminar</td>
<td>Health and illness behaviour.</td>
</tr>
<tr>
<td>5</td>
<td>Seminar</td>
<td>Social inequalities in health and mortality.</td>
</tr>
<tr>
<td>6</td>
<td>Lecture</td>
<td>Health professions</td>
</tr>
<tr>
<td>7</td>
<td>Seminar</td>
<td>Health professions</td>
</tr>
<tr>
<td>8</td>
<td>Lecture</td>
<td>National variations of health care</td>
</tr>
<tr>
<td>9</td>
<td>Lecture</td>
<td>Health care and health policy</td>
</tr>
<tr>
<td>10</td>
<td>Lecture</td>
<td>Midterm examination</td>
</tr>
<tr>
<td>11</td>
<td>Seminar</td>
<td>Chronic illness and disability</td>
</tr>
<tr>
<td>12</td>
<td>Seminar</td>
<td>Ageing and care of the elderly</td>
</tr>
<tr>
<td>13</td>
<td>Seminar</td>
<td>Gender aspects of health</td>
</tr>
<tr>
<td>14</td>
<td>Seminar</td>
<td>Doctor-patient relationship</td>
</tr>
</tbody>
</table>

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

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

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

Textbook:

1. Gerry Humphris, Margaret S. Ling: Behavioural Sciences for Dentistry.
   Churchill Livingstone, London, 2005
2. Handouts for the lectures will be accessible on the homepage of the Institute of Behavioural Sciences: www.magtud.sote.hu.
GNATHOLOGY – lectures and practices
Department of Prosthodontics
Lecturer: Dr. Peter Hermann

Week     Lecture
1.       Introduction into the physiology of the stomatognathic system.
         Morphology of the masticatory system. Occlusion.
4.       Types of articulators.
5.       Mounting of the articulators.
6.       Mounting of the adjustable articulator: Arcus Digma
         Complete denture fabrication in the articulator.
7.       Traumatic occlusion – Occlusal trauma
         Periodontological aspect of gnathology
8.       Examination of patients. Occlusal diagnostics.
10.      Occlusal analysis in the articulator.
11.      Occlusal adjustment.
12-13-14 Waxing up occlusal surface of different teeth: maxillary incisor and canine and occlusal surface of premolar and molar.
         Practical examination

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

Course Syllabus:

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.
CLINICAL MODULE
### STUDY PROGRAMME

#### CLINICAL MODULE

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

*in the Dept. of Prosthodontics or in the Dept. of Conservative Dentistry*
# 10th semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>Credit code</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory</td>
<td>Clinical Dentistry II. *</td>
<td>C4L0P6</td>
<td>practice mark</td>
</tr>
<tr>
<td>compulsory</td>
<td>Clinical Dentistry II. *</td>
<td>C4L0P6</td>
<td>practice mark</td>
</tr>
<tr>
<td>wrapdefault</td>
<td>Conservative Dentistry and Endodontics V</td>
<td>C3L0P3</td>
<td>final#</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Dermatology</td>
<td>C1L1P0.5</td>
<td>final#</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Obstetrics and Family Planning</td>
<td>C1L1P0</td>
<td>semifinal</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Diploma Work</td>
<td>C20</td>
<td></td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral and Maxillofacial Surgery V.</td>
<td>C4L1P3</td>
<td>final#</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral Medicine</td>
<td>C1L1P0</td>
<td>final#</td>
</tr>
<tr>
<td>compulsory</td>
<td>Orthodontics II</td>
<td>C5L1P4</td>
<td>final#</td>
</tr>
<tr>
<td>compulsory</td>
<td>Pedodontics II</td>
<td>C5L1P4</td>
<td>final#</td>
</tr>
<tr>
<td>compulsory</td>
<td>Periodontology IV.</td>
<td>C3L1.5P2</td>
<td>final#</td>
</tr>
<tr>
<td>compulsory</td>
<td>Prosthodontics V.</td>
<td>C3L0P3</td>
<td>final#</td>
</tr>
</tbody>
</table>

50

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program.

Explanation:

# The grade influences the qualification of the diploma
C = Credit point
L = Lecture (hours/week)
P = Practice (hours/week)
LIST OF TEXTBOOKS


Recommended textbooks:

7 Online: www.lib.sote.hu – Adatbázisok, adattárak – OVID – Books@OVID – Dermatology – Fitzpatrick’s Dermatology in General Medicine
OTORHINOLARYNGOLOGY AND HEAD AND NECK SURGERY

Lecturer: Prof. Dr. Gábor Répássy
Tutor: Dr. László Noszek

First Semester

Lectures (1 hour per every 2nd week)

The role of otorhinolaryngology in dentistry and medicine. Clinical anatomy of the ear. Diseases of the external ear.

Acute and chronic otitis media. Etiology, diagnosis, complications and therapy.

Types of hearing losses. Fundamental audiological diagnostic methods. Surgical management of hearing losses. Otosclerosis and cochlear implant.


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

Clinical aspects of diseases of the mouth and pharynx. Diseases of the labial, oral and laryngeal mucosa.

Anatomy and physiology of the larynx. Disorders of the voice. Infections and tumors of the larynx and their management.


Practices (0.5 hour per every 2nd week)

Routine clinical examinations in practice.


Routine audiology. Operating theater. Video demonstration.


Direct and indirect laryngoscopy. Videostroboscopy and fiberscopy.
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 edentullossness, 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)
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.
(Diagnostic, 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)
Ambulatory narcosis in head and neck surgery,
coagulopathies, anticoagulant treatment.

Practices (5 hours / week)
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
SEMMELWEIS UNIVERSITY / FACULTY OF DENTISTRY

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

**Practice** (5 hours/week)

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

PEDODONTICS

Second Semester

**Week** | **Lectures** (1 hour/week)
---|---
1 | Radiology in pedodontics.
2 | Minor oral surgery in pedodontics, local anaesthesia.
3 | General anaesthesia.
4 | Prosthesis 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.
ORTHODONTICS

First Semester

Lectures (1 hour/week)

The subject, the significance of orthodontics, and its relation to caries and parodontology.
Etiology, acquired and hereditary anomalies.
Orthodontic elements, terminology.
Relationship between function and anomalies. Angle diagnostic system.
X-ray diagnosis, evaluation of teleradiogram.
The date of the beginning of treatment and the length of treatment time.
Basic principle of orthodontic treatment. Biological and mechanical fundamentals.
Classification of orthodontic appliances. The appliances' historical survey.
Removable appliances. Active and passive plates.
Removable appliances. Functional jaw orthopedic appliances.
Elements of fixed appliances.
Types and characters of orthodontic arches.
Multiband systems I. (edgewise, light-wire, twin-wire)
Multiband systems II. (bioprogressive, straightwire)
Appliances used rarely in Hungary (head-gear, face-bow, quad helix, hyrax)

Practice (5 hours/week)

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

**Second Semester**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (1 hour/week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Direct bonding.</td>
</tr>
<tr>
<td>2</td>
<td>Treatment of Angle class I. anomalies. Local anomalies.</td>
</tr>
<tr>
<td>3</td>
<td>Treatment of Angle class I. general anomalies.</td>
</tr>
<tr>
<td>4</td>
<td>Treatment of Angle class II. anomalies.</td>
</tr>
<tr>
<td>5</td>
<td>Treatment of Angle class III. anomalies.</td>
</tr>
<tr>
<td>6</td>
<td>Orthodontic treatment by missing teeth.</td>
</tr>
<tr>
<td>7</td>
<td>Complex therapy of cleft lip and palate.</td>
</tr>
<tr>
<td>8</td>
<td>Extraction in orthodontics.</td>
</tr>
<tr>
<td>9</td>
<td>Ambulant surgical interventions in orthodontics.</td>
</tr>
<tr>
<td>10</td>
<td>Surgical and orthodontic treatment of mandibular and maxillar prognathism.</td>
</tr>
<tr>
<td>11</td>
<td>Adult treatment in orthodontics.</td>
</tr>
<tr>
<td>12</td>
<td>Early treatment in orthodontics.</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).

**PERIODONTOLOGY**

Department of Periodontology

**First Semester**

<table>
<thead>
<tr>
<th>Lectures (1 hour/week)</th>
<th>Practices (2 hours/week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction: What is the clinical periodontology is?</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>The rational of periodontal cause related therapy</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Clinical and radiological periodontal diagnostics</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Oral hygienic, Gingival and Periodontal indices</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>The treatment of periodontal emergency cases</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>The stages of the comprehensive periodontal treatment I.</td>
<td><strong>Midterm Demonstration</strong> Clinical practice</td>
</tr>
<tr>
<td>The stages of the comprehensive periodontal treatment II.</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Professional oral hygiene I. Supragingival scaling</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Professional oral hygiene II. Supragingival scaling</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Professional oral hygiene III. Correcting plaque retention factors</td>
<td>Clinical practice</td>
</tr>
<tr>
<td>Oral hygienic education, tooth brushing</td>
<td>Clinical practice</td>
</tr>
</tbody>
</table>
### PERIODONTOLOGY

#### Second Semester

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

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

First semester

Lectures (1 hour / week)

Introduction: The role of Oral Medicine in the whole discipline of stomatology  
The significance of laboratory investigation in dentistry  
Primary and secondary basic lesions The signs and symptoms of drug side effects  
Mucous membrane immunity (in details : alimentary track)  
The biochemistry and immunology of inflammation  
Inflammation of bacterial origin in the oral cavity  
Oral signs of neuro endocrine diseases  
Viral diseases  
Fungal diseases  
The signs and symptoms of temporomandibular joint disorders  
Oral manifestations of immuno deficiencies  
Allergic diseases in the oral cavity  
Autoimmune diseases in the oral cavity  
Aphthous ulcers in the oral cavity

Practice within the period

Midterm Demonstration

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

ORAL MEDICINE  
Second Semester

Lectures (1 hour/week)

Week Lectures

1. Vesiculo-bullous oral diseases  
2. Oral signs and symptoms of benign tumors  
3. Precancerous conditions in the oral cavity  
4. Leukoplakia  
5. Malignant tumors of the oral mucous membrane  
6. Oral signs and symptoms of hematological diseases  
7. Clinical differential diagnosis of gingival enlargements  
8. Lichen oris
**Week Lectures**

9. The diseases of the lip  
10. The diseases of the tongue  
11. The diseases of the salivary glands  
12. The oral considerations of HIV infection and viral hepatitis  
13. The role of the vitamins in the etiology of oral mucosal disorders  
14. Written final exam  

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

---

**PREHOSPITAL EMERGENCY MEDICINE**  
National Ambulance Service  
Program Director: Dr. Gábor Göbl  
Tutor: Dr. László Gorove  

**First Semester**

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

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

Department of Dermatology, Venerology and Dermatooncology
Mondays 13.00 – 14.45

Second Semester

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Dermatology. Diagnostic procedures, anatomy, functions of skin comparing to oral mucosa. Elementary lesions.</td>
<td>Dr. Márta Marschalkó (Deputy: Dr. Norbert Wikonkál)</td>
</tr>
<tr>
<td>Sexually transmitted diseases (syphilis, gonorrhoea, NGU, HPV and herpes virus infections)</td>
<td>Dr. Péter Holló (Deputy: Dr. Márta Marschalkó)</td>
</tr>
<tr>
<td>Skin tumors. Malignant melanoma, basal cell carcinoma, squamous cell carcinoma. Benign tumors, paraneoplastic syndromes.</td>
<td>Dr. Norbert Wikonkál (Deputy: Dr. Péter Holló)</td>
</tr>
<tr>
<td>Allergic skin diseases. Dermatitis, eczema, implication for dentists.</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. Márta Marschalkó)</td>
</tr>
<tr>
<td>Autoimmune diseases, bullous diseases, drug allergy, vasculitis.</td>
<td>Dr. Márta Marschalkó (Deputy: Dr. Norbert Wikonkál)</td>
</tr>
<tr>
<td>Bacterial skin diseases.</td>
<td>Dr. Márta Marschalkó (Deputy: Dr. Norbert Wikonkál)</td>
</tr>
<tr>
<td>Cutaneous and mucosal diseases caused by fungi. Treatment modalities.</td>
<td>Dr. Nóra Eros (Deputy: Dr. Norbert Wikonkál)</td>
</tr>
<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>
</tr>
</tbody>
</table>
OBSTETRICS AND FAMILY PLANNING
2nd Dept. of Obstetrics and Gynaecology
Head of Department: Prof. Dr. Attila Pajor
Tutor: Dr. Nándor Ács

Second Semester

Lectures (1 hour/week)

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

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

First Semester

Lectures (1 hour/week)

Introduction. History of ophthalmology.
Conjunctivitis (“red eye”).
Keratitis (“red eye”).
Uveitis (“red eye”). Differential diagnostic approach of the “red eye”.
Basics of optics.
Glaucoma (pathomechanisms).
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
ELECTIVE SUBJECTS FOR Dentistry 3rd, 4th and 5th year

First Semester

PSYCHOSOMATIC DENTISTRY - lectures
Department of Prosthodontics
Dental Centre, first floor, room no. 135
from 7.00 to 7.45 a.m. on Wednesdays
Tutor: Dr. Tibor Károly Fábián
Exam: written test
Credit: 1

1. Concept of psychosomatic dentistry, its major domains and perspectives
2. Psychophysiological peculiarities of the orofacial region, mechanisms of somatization
3. Psychosomatic diagnostics, patient-assistant-dentist interrelationships
4. Concept of initial psychosomatic therapy, practical guidelines for dentists
5. Several methods of psychotherapy and their use in psychosomatic dentistry
6. Several methods of physical therapy and their use in psychosomatic dentistry
7. Evaluation of complementary and alternative therapies; placebo and nocebo effects
8. Anxiety and dental fear. Patient management possibilities
9. Psychogenic orofacial pain and its treatment. View-points of dentists
10. Psychogenic neuromuscular symptoms and their treatment. View-points of dentists
11. Psychosomatics of oral inflammations and allergic reactions
12. Psychosomatics of denture intolerance and orthodontic treatments
13. Psychosomatics of salivation problems and pseudoneurological symptoms
14. Consultation, written exam (test)

Second Semester

HYPNOTHERAPY FOR DENTISTS - lectures
Department of Prosthodontics
Dental Centre, first floor, room no. 135
from 7.00 to 7.45 a.m. on Wednesdays
Tutor: Dr. Tibor Károly Fábián
Exam: written test
Credit: 1

1. Concept of hypnotherapy. Importance and perspectives in dentistry
2. Concept of altered states of consciousness, theories of hypnosis
3. Concept of dissociation. Hypnotic phenomena
4. Hypnotic susceptibility, hypnability, trance deepness, related measuring scales
5. Indications, contraindications and documentation of dental hypnotherapy
6. Rapport, hypnosis induction and deepening of hypnosis
7. Therapeutic suggestions, utilization of the altered state of consciousness
8. Dehypnosis, posthypnotic evaluation of experience, posthypnotic suggestions
9. Dental treatment under hypnosis
10. Initial hypnotherapy in psychosomatic dentistry
11. Hypnotherapy combined with photo-acoustic stimulation, and their use in dentistry
12. Hypnotherapy combined with bio-feedback methods, and their use in dentistry
13. Group-hypnosis, self-hypnosis, meditation. Their utilization in dentistry
14. Consultation, written exam (test)

Postgraduate courses

Postgraduate courses are available at the Faculty of Dentistry at Semmelweis University, ending with a specialty exam in the following fields:
1. Pedodontics
2. Orthodontics
3. Periodontology
4. Dentoalveolar Surgery
5. Conservative and Prosthetic Dentistry.

The language of the postgraduate courses and the specialty exams is Hungarian. The courses convey theoretical knowledge and practical skills.

If you wish to take a specialty exam you must meet the following requirements:
– you can take a specialty exam after 36 months of professional practice fulfilled as an employee, according to Hungarian law. To complete this practice, therefore, you must obtain a work permission.
– professional practice includes theory and treating patients. You will need a good command of the Hungarian language to understand theory, and be able to communicate with patients
– Non-European citizens must have their degree nostrificated
## STUDY PROGRAMME

### First Year

<table>
<thead>
<tr>
<th>1st semester</th>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>General and Inorganic Chemistry I. Practice</td>
<td>GYASKASKG1A</td>
<td>–</td>
<td>5</td>
<td>5</td>
<td>–</td>
<td>practical course grade</td>
</tr>
<tr>
<td>General and Inorganic Chemistry I.</td>
<td>GYASKASKE1A</td>
<td>4+1</td>
<td>–</td>
<td>5</td>
<td>–</td>
<td>semi-final</td>
</tr>
<tr>
<td>Introduction to Health Informatics I. Practice</td>
<td>GYINFBEIG1A</td>
<td>–</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>signature</td>
</tr>
<tr>
<td>Introduction to Health Informatics I.</td>
<td>GYINFBEIE1A</td>
<td>1</td>
<td>–</td>
<td>2</td>
<td>–</td>
<td>semi-final</td>
</tr>
<tr>
<td>Biophysics I. Practice</td>
<td>GYFIZBIFG1A</td>
<td>–</td>
<td>3</td>
<td>2</td>
<td>–</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Biophysics I.</td>
<td>GYFIZBIFE1A</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>–</td>
<td>semi-final</td>
</tr>
<tr>
<td>Biology I. Practice</td>
<td>GYGENBIOG1A</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>–</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Biology I.</td>
<td>GYGENBIOE1A</td>
<td>1,5</td>
<td>–</td>
<td>2</td>
<td>–</td>
<td>semi-final</td>
</tr>
<tr>
<td>Medical Terminology**</td>
<td>GYLEKOTRG1A</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>–</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Mathematics I. Practice</td>
<td>GYEYMATG1A</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>–</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Mathematics I.</td>
<td>GYEYMAT1A</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>–</td>
<td>semi-final</td>
</tr>
<tr>
<td>Physical Education I.</td>
<td>GYTSITSNG1A</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>–</td>
<td>signature</td>
</tr>
<tr>
<td>History of Sciences, Propedeutics</td>
<td>GYEYITYPE1A</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>–</td>
<td>semi-final</td>
</tr>
<tr>
<td>Hungarian Language I. *</td>
<td>GYLEKMSZG1A</td>
<td>–</td>
<td>4</td>
<td>4</td>
<td>–</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Subjects</td>
<td>Lectures</td>
<td>Practices</td>
<td>Credit Points</td>
<td>Prerequisites</td>
<td>Examination</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>----------</td>
<td>-----------</td>
<td>---------------</td>
<td>----------------------------------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>General and Inorganic Chemistry II. GYASKASKE2A</td>
<td>3</td>
<td>–</td>
<td>3</td>
<td>GYASKASKE1A General and Inorganic Chemistry I.</td>
<td>final #</td>
<td></td>
</tr>
<tr>
<td>Analytical Chemistry (qualitative) GYASKANKG1A</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>GYASKASKE1A General and Inorganic Chemistry I.</td>
<td>practical course grade</td>
<td></td>
</tr>
<tr>
<td>Anatomy GYHUMANANAE1A</td>
<td>2</td>
<td>–</td>
<td>4</td>
<td>GYGENBIOE1A Biology I.</td>
<td>semi-final</td>
<td></td>
</tr>
<tr>
<td>Anatomy Practice GYHUMANANAG1A</td>
<td>–</td>
<td>2</td>
<td>–</td>
<td>GYGENBIOE1A Biology I.</td>
<td>signature</td>
<td></td>
</tr>
<tr>
<td>Introduction to Health Informatics II. Practice GYINFBEIG2A</td>
<td>–</td>
<td>1</td>
<td>–</td>
<td>GYINFBIE1A Introduction to Health Informatics I.</td>
<td>signature</td>
<td></td>
</tr>
<tr>
<td>Introduction to Health Informatics II. GYINFBEIE2A</td>
<td>1</td>
<td>–</td>
<td>2</td>
<td>GYINFBIE1A Introduction to Health Informatics I.</td>
<td>semi-final</td>
<td></td>
</tr>
<tr>
<td>Biophysics II. Practice GYFIZBIFG2A</td>
<td>–</td>
<td>3</td>
<td>2</td>
<td>GYFIZBIF1A Biophysics I.</td>
<td>practical course grade</td>
<td></td>
</tr>
<tr>
<td>Biophysics II. GYFIZBIFG2A</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>GYFIZBIF1A Biophysics I.</td>
<td>final #</td>
<td></td>
</tr>
<tr>
<td>Biology II. Practice GYGENBIOG2A</td>
<td>–</td>
<td>1,5</td>
<td>1</td>
<td>GYGENBIOE1A Biology I.</td>
<td>practical course grade</td>
<td></td>
</tr>
<tr>
<td>Biology II. GYGENBIOE2A</td>
<td>1,5</td>
<td>–</td>
<td>2</td>
<td>GYGENBIOE1A Biology I.</td>
<td>final #</td>
<td></td>
</tr>
<tr>
<td>Pharmaceutical Botany I. GYNOGYNG1A</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>GYGENBIOE1A Biology I.</td>
<td>practical course grade</td>
<td></td>
</tr>
<tr>
<td>Mathematics II. Practice GYEYMATG2A</td>
<td>–</td>
<td>1</td>
<td>1</td>
<td>GYEYMAT1A Mathematics I. Introduction to Health Informatics I.</td>
<td>practical course grade</td>
<td></td>
</tr>
<tr>
<td>Mathematics II. GYEYMATG2A</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>GYEYMAT1A Mathematics I. Introduction to Health Informatics I.</td>
<td>semi-final</td>
<td></td>
</tr>
<tr>
<td>Physical Education II. GYTSITSNG2A</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>GYTSITSNG1A Physical Education I.</td>
<td>signature</td>
<td></td>
</tr>
<tr>
<td>First Aid*** GYTRAELSE1A</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>GYTRAELSE1A First Aid</td>
<td>signature</td>
<td></td>
</tr>
<tr>
<td>Hungarian Language II. * GYLEKMSZG2A</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>GYLEKMSZG1A Hungarian Language I.</td>
<td>practical course grade</td>
<td></td>
</tr>
</tbody>
</table>

# The grade influences the qualification of the diploma
* Obligatory courses
** Obligatory elective courses: (2 credit points).
*** 4th year Pharmacy students of 2010/11 have to complete First Aid in the 4th year (second semester) of their studies.
Students of the 1st year study the program in the 1st year second semester of the 2010/11 academic year.
The 2nd and 3rd year students should have already done it in 2008/09 and 2009/10.
List of textbooks

7. Mihálik: Botany for Students of Pharmacy. (Szeged)
11. Körös: 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 not of less importance.

The aim of learning classical mathematics is to understand biological, chemical, and physical processes dealt with in the subjects mentioned. The most appropriate mathematical model for the processes in nature are functions of one or more variables. To obtain the proper function for a particular process a differential equation is to be solved. The notion and the way of solution of differential equations is the central point of the course. The others namely limits, differential and integral calculus, discussion of functions, series etc. are, however, necessary preparatory steps for getting acquainted with differential equations.

Biostatistics, the other subject under this title, is a more recent branch of sciences. Its importance is permanently increasing in each field where data are present, i.e. quite everywhere in scientific work. Pharmacological investigations, clinical trials, epidemiological studies (etc., etc.) cannot be carried on without the statistical analysis of the data obtained. The results of the above mentioned studies are always derived by statistical inference. Statistics is an indispensable part of any research from planning the experiment to interpretation of the results. Statistical methods are essential even for students in their laboratory work.

**First Semester**

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

- Differential and differential coefficient. Rules for derivations of functions.  
- The derivative of the power function.  
- Application of differentiation for calculation of limits of fractions.  
- An iterative method to solve equations (Newton-method).  
- Expansion of differentiable functions to power series. The Taylor series of exp x, sin x, cos x, ln x and other functions.  
- Qualitative examination of functions. Roots, extremes and inflexion points.  
- The multiplicity of a root.
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.
Analysis of variance. The F test. Discrete and dichotomous distributions; variables on a nominal scale. The Poisson distribution.
Analysis of qualitative data. Counting tables. Measures of association and statistical tests in fourfold tables.
Sets (finite and infinite). Natural, integral, rational, real and complex numbers.
Definition of a function.
General attributes of the functions. Classification of elementary functions.
Rational and irrational functions.
Transcendent functions: exponential, logarithmic, trigonometric and cyclometric functions. Limits of functions. Continuous functions.
Radius of convergency.

BIOLOGY I.
Tutor: Dr. Valéria László

1st Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The cell membrane: structure and function</td>
<td>The light microscope in use</td>
</tr>
<tr>
<td>2</td>
<td>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.</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.</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>
**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>Introduction to human genetics; special</td>
</tr>
<tr>
<td>5.</td>
<td>Epigenetics</td>
<td>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:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>monogenic inheritance</td>
</tr>
<tr>
<td>11.</td>
<td>Genetics and genomics of complex traits (disorders)</td>
<td>Medical application of genetic methods:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>complex traits (disorders)</td>
</tr>
<tr>
<td>12.</td>
<td>Genetic aspects of development and cancer</td>
<td>Medical applications of genetic methods:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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 reenerative 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

BIOPHYSICS

Second Semester

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

Laboratory (3 hours per week)
- Dosimetry
- Amplifier
- The attenuation of gamma-radiation
- Pulse generators
- Sine wave oscillators
- Audiometry
- Densitography (CT)
- Calculations
- Flow of fluids. Electric model of vascular system
- Electrocardiography
- Diffusion
- Sensory function
- Repetition
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.
Molecular geometry, the VSEPR theory. The formation of molecular orbitals. Bond polarity and molecular polarity. Single and multiple bonds.
Chemical equilibria, the law of mass action. \( K_p \) and \( K_c \). The Le Chatelier principle. The temperature and pressure dependence of the equilibrium constant.
Acid/base equilibria. Conjugated acid-base pairs and their strengths.
Complex formation equilibria. Types of ligands. Mass balance equations, calculation of complex equilibria. Heterogeneous equilibria, the solubility product constant, solubility.
PRACTICAL GENERAL AND INORGANIC CHEMISTRY
Tutor: Dr. Szabolcs Béni

First Semester

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practicals (5 hours per week)</th>
</tr>
</thead>
</table>
GENERAL AND INORGANIC CHEMISTRY
Lecturer: Dr. Zsuzsanna Nagy-Ungvárai

Second Semester

3 hours per week (lecture)

Weeks  Introduction

1   The elemental composition of the Universe. Origins of the elements.
The composition of the litosphere, hydrosphere and atmosphere. The evolution
of the atmosphere. The classification of the elements: metals, nonmetals and

2   Chemistry of hydrogen, oxygen, nitrogen and carbon.
Hydrogen: occurrence, preparation, chemical properties, uses. Binary hydrogen
compounds (hydrides). Oxygen: occurrence, preparation, chemical properties,
uses. Ozone. Peroxides, superoxides.

Oxides and oxyacids of nitrogen. The nitrogen cycle in nature.
The carbon-oxygen cycle in nature.

4   Chemistry of other nonmetallic elements
The noble gases. (He, Ne, Ar, Kr, Xe, Rn) and their compounds. The halogens
(F, Cl, Br, I, At): occurrences, preparation, properties and uses. Oxyacids and
oxyanions. The biological role of halogens.

5   The group 6A elements (S, Se, Te). General characteristics, occurrences,
preparation, properties. Oxides, oxyacids and oxyanions of sulfur and selenium.
Sulfur and selenium in biology.

6   The group 5A elements (P, As, Sb, Bi). General characteristics, occurrences,
preparation, properties. The oxycompounds of phosphorus. – The biological
significance of the P–O bond. Silicon. The major element of the geosphere.
Silicates. Clay minerals. Glass. – A comparison of the properties of carbon and
silicon. Boron and its compounds.

Metals

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

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

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

Chemistry of coordination compounds


11 The dynamics of coordination compounds: Complex equilibria, ligand exchange rates. The coordination chemistry of alkali metal ions. (Host-guest complexation.)

Metals in biology


13 Metals in biomineralization. Metal-induced toxicity. The biomedical use of metal complexes and metal complexation.

The chemistry of the environment

14 A brief overview of the chemistry of the lithosphere, hydrosphere and atmosphere.

ANALYTICAL CHEMISTRY I.
Qualitative Chemical Analysis
Lecturer:  Dr. István Szalai
Practical:  Dr. István Szalai
Tutor:  Dr. Krisztina Kurin-Csörgei

Second Semester

Lectures (2 hours per week)


Practicals (5 hours per week)


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/, /IV/, 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 II 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.


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


Analysis of unknown simple substances.
7 Amino acid and protein metabolism. The N cycle. Protein bodies, protein mobilization. Protein secretion.
8 Formation of alkaloids and phenolics. Lignification. Vacuole, cell sap, osmoregulation, crystal formation, autophagy, autolysis.
9 Nucleic acid metabolism. The nucleus. Plant specificities of mitosis and meiosis.
10 Organizational types of plants. The cormophyte plant body. Tissues, tissue system. Meristems.
11 Dermal tissue system.
12 Conductive tissue system.
13 Ground tissue system.
14 Secretory structures.

Analysis of dicots representing ancestral type (Ranunculaceae).
Simple tissues, meristems.
Dermal tissue system, trichomes.
2nd Test Examination
Analysis of living plants (Rosaceae, Apocynaceae), medicinal plants.
Conductive tissue system.
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.

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Introduction, general Embryology</td>
<td>Microscopy: stratified epithelium, connective tissue, cartilage, bone</td>
</tr>
<tr>
<td>2 Basic tissue</td>
<td>Macroscopy: bones and joints of the shoulder girdle and upper limb</td>
</tr>
<tr>
<td>3 Bone, joint and muscle types</td>
<td>Microscopy: artery and vein, blood, lymph node spleen, palatine, tonsil</td>
</tr>
<tr>
<td>4 Ossification, development of the vertebral column</td>
<td>Macroscopy: bones and joints of the pelvis girdle and lower limb</td>
</tr>
<tr>
<td>5 Heart and its development</td>
<td>Microscopy: lung, submandibular gland, liver, pancreas</td>
</tr>
<tr>
<td>6 Blood vessels</td>
<td></td>
</tr>
<tr>
<td>7 Blood, development of the blood cells</td>
<td></td>
</tr>
<tr>
<td>8 Lymphatic organs</td>
<td></td>
</tr>
<tr>
<td>9 Respiratory system</td>
<td></td>
</tr>
<tr>
<td>10 Development of lung and intestines</td>
<td></td>
</tr>
</tbody>
</table>
Lecture Practice

11 Intestinal tract
12 Digestive glands
13 Kidney
14 Ureter, urinary bladder, urethra
15 Inner and outer genitals
16 Development of the urogenital organs
17 Endocrine gland
18 Development of the nervous system
19 Spinal cord
20 Oblongate medulla, pons, mesecephalon
21 Diencephalon, neurosecretion
22 Cerebral cortex
23 Cerebellum, extrapyramidal system
24 Olfactory and limbic systems
25 Eye, optic tracts and centers
26 Auditory and static system
27 Gustatory buds, skin and accessory organs
28 Development of the sensory organs
29–30 Repetition, complementary day

Practice

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

HISTORY OF PHARMACY, PROPEDEUTICS
University Pharmacy, Department of Pharmacy Administration
Lecturer: Prof. Dr. Ágnes Kéry
Tutor: Dr. Andrea Balázs

First Semester

Week Lectures (2 hours per week)

1 The place and importance of the subject in the curriculum.
   Profession’s history as bridge, methods, main fields.
   Symbols of medicine and pharmacy.
2 Knowledge of medicine and pharmacy in Babylonia-Assyria.
   Knowledge of medicine and pharmacy in Egypt.
3 Knowledge of medicine and pharmacy in Greece. Hippocratic medical writing.
   Knowledge of medicine and pharmacy in Rome. Galen.
4 The Arabs and the European Middle Ages. Transit ways of knowledge.
   Monastic medicine and pharmacy. The School of Salemo.
   Universities emerge, the birth of European professional pharmacy.
5 The idea of renaissance. Paracelsus and chemical drugs.
   Homeopathy as an example of medical sectarianism.
6 Development of pharmacy in Italy and France.
   Development of pharmacy in Germany and Britain.
7 Development of Pharmacy in Hungary.
9 Definition of drugs. Aspects of classification.
   Classification of drugs according to their origin and on the basis of strength.
Week  Lectures (2 hours per week)

10 Classification of drugs by their pharmaceutical action, use and by the place of application.
Drug and doses. Specially named doses.

11 Drug utilization. How could be influenced the increased drug consumption?
Narcotic controls.

Pharmaceutical literature: treatises, pharmacopeias, formularies, journals, periodicals.

13 Ordering of drug preparation. Pharmacy, galanic laboratories, pharmaceutical factories.

14 Pharmacists, connections with physicians, etc.
Health for all – all for health by the year 2000.

FIRST AID
Institute of Traumatology
Tutor: Dr. Miklós Szebeny

Second Semester

Week  Lecture

1–2 Introduction. The purpose of the education of first aid.
Initial assessment and management.

3–4 Mechanical injuries; open-closed.
Hemorrhage, control of hemorrhage.

5–6 Thoracic and abdominal traumas.

7–8 Unconscious patient. Endocrine emergencies.

Cardiorespiratory emergencies.

11–12 Resuscitation theory and practice.

13–14 Thermal and chemical injuries.
Transport of injured patients.

Practice: Reanimation
INTRODUCTION TO HEALTH INFORMATICS

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

1 lect. + 1 pract/ week / two semesters

1. GENERAL INFORMATION:
The program in Medical Informatics trains students in the application of computer and information sciences to the quantitative aspects and decision needs of the health and life sciences. Medical Informatics encompasses not only mathematics, statistics and computing, but also includes other engineering, management, and information sciences applied to problems arising in biology, medicine and the delivery of health care. In addition to basic biostatistical and computing techniques, it is necessary that students be familiar with other methodologies such as mathematical modeling, systems analysis, image and signal processing, management information systems and decision sciences. Possible areas of emphasis include health information systems, biomathematical modeling, evaluation of health programs, system development, clinical decision studies and WEB 2.0 solutions in health care system.

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

3. REQUIREMENTS:
The student is allowed to take the semi-final examination
1st semester: presented the masterwork completed during the practices and his/her absences did not exceed 25% of all practices.
2nd semester: passed the two midterm written examinations and his/her absences did not exceed 25% of all practices.
Semi-final examination is in written form.

THEME/ 1. semester

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>e-HEALTH</td>
</tr>
<tr>
<td>2</td>
<td>Networks and telecommunication, The Internet</td>
</tr>
<tr>
<td>3</td>
<td>Data handling by computer</td>
</tr>
<tr>
<td>4</td>
<td>The World Wide Web – WEB 2.0 and the health care system</td>
</tr>
<tr>
<td>5</td>
<td>Data manipulation</td>
</tr>
<tr>
<td>6</td>
<td>Databases</td>
</tr>
<tr>
<td>7</td>
<td>Digital signature, e-card</td>
</tr>
</tbody>
</table>

lecture
### THEME/ 1. semester

| 1. | 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>GYASKAKKG1A, GYEGYMATE2A, Analytical Chemistry (quantitative), 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>GYASKASE2A, GYEGYMATE2A, General and Inorganic Chemistry II, Mathematics II.</td>
<td>semi-final</td>
</tr>
<tr>
<td>Pharmaceutical Botany II. Practice GYNOVGYNG2A</td>
<td>–</td>
<td>3</td>
<td>2</td>
<td>GYGENBOE2A, GYNOVGYNG1A, Biophysics II, 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>GYGENBOE2A, GYNOVGYNG1A, Biophysics II, 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>GYASKASE2A, GYASKAKKG1A, Analytical Chemistry (quantitative), Introduction to Health Informatics II,</td>
<td></td>
</tr>
<tr>
<td>Organic Chemistry I. GYSZKSZKE1A</td>
<td>4</td>
<td>–</td>
<td>5</td>
<td>GYASKASE2A, GYASKAKKG1A, Analytical Chemistry (quantitative), Introduction to Health Informatics II,</td>
<td></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>GYLEKMSZG1A, Hungarian Language II,</td>
<td>practical course grade</td>
</tr>
</tbody>
</table>

27
### 4th semester

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical Chemistry (quantitative) II, Practice GYASKAKKG2A</td>
<td>–</td>
<td>5</td>
<td>3</td>
<td>GYSZKSZKE1A GYASKAKKG1A Organic Chemistry I, 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>GYSZKSZKE1A GYASKAKKG1A Organic Chemistry I, Analytical Chemistry (quantitative) I,</td>
<td>final #</td>
</tr>
<tr>
<td>Biochemistry I, Practice GYOBIBHKG1A</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>GYGENBIOE2A GYSZKSZKE1A GYFZBIFEE2A GYHUMANAE1A Biology II, Organic Chemistry I, Biophysics II, Anatomy</td>
<td>practice mark</td>
</tr>
<tr>
<td>Biochemistry I, GYOBIBHKE1A</td>
<td>3</td>
<td>–</td>
<td>3</td>
<td>GYGENBIOE2A GYSZKSZKE1A GYFZBIFEE2A GYHUMANAE1A Biology II, Organic Chemistry I, Biophysics II, 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, GYKOKLID1E1A</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 GYSZKSZKG2A</td>
<td>–</td>
<td>5.5</td>
<td>4</td>
<td>GYSZKSZKE1A Organic Chemistry I</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Organic Chemistry II, GYSZKSZKE2A</td>
<td>4</td>
<td>–</td>
<td>5</td>
<td>GYSZKSZKE1A Organic Chemistry I</td>
<td>final #</td>
</tr>
<tr>
<td>Hungarian Language IV, * GYLEKMSZG4A</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>GYLEKMSZG1A Hungarian Language III.</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Physical Education IV, GYTSITSNGA4A</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>GYTSITSNG3A Physical Education III.</td>
<td>signature</td>
</tr>
<tr>
<td>Summer Practice I, ** GYSZGAKKG1A</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 course.
** 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. Krisztna Kurin-Csőrgei

**First Semester**

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practical (5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid-base reactions, repetition of different calculations. Titration curves in acid-base titration.</td>
<td><strong>Task</strong> Calibration</td>
</tr>
<tr>
<td>End point detection Acid-base indicators. Standard solutions in acid-base acid titrations and the survey of the most important methods. Acid-base titrations in non-aqueous solutions. Determination of organic bases in glacial acetic acid.</td>
<td>Acidi-Alkalimetry Calibration of burette (3-6-9-12 ml); Calibration of pipettes (10, 20 ml)</td>
</tr>
<tr>
<td>Laboratory introduction; Safety and order in the laboratory; The schedule of the semester; Practical and theoretical requirements in the semester.</td>
<td><strong>Acidi-Alkalimetry</strong> Practicing the use of the laboratory tools; Determination of sulfuric acid</td>
</tr>
<tr>
<td>Calibration of burette (3-6-9-12 ml); Calibration of pipettes (10, 20 ml)</td>
<td><strong>Acidi-Alkalimetry</strong> Standardization of + 0.1N hydrochloric acid</td>
</tr>
<tr>
<td>Test I. Determinations of hydroxide and carbonate ions in the presence of each other.</td>
<td>Acidi-Alkalimetry Potentiometric determination of acetic acid; Conductometric determination of Betaine hydrochloride</td>
</tr>
<tr>
<td>Test II. Determination of lactic acid; Determination of calcium and magnesium ions in mineral water; Determination of aluminium in “Aluminium tartaricum solutum”</td>
<td>Acidi-Alkalimetry Indirect determination of sodium thiosulfate Determination of “Lidocain” in nonaqueous solution</td>
</tr>
<tr>
<td>Test III. Determination of copper and zinc in the presence of each other; Determination of aluminium in “Aluminium tartaricum solutum”</td>
<td>Acidi-Alkalimetry Determination of sodium thiosulfate; Determination of lactic acid; Chelatometry Chelatometric determination of lead. Chelatometry Test II.</td>
</tr>
<tr>
<td>Determination of calcium and magnesium ions in mineral water.</td>
<td>Acidi-Alkalimetry Determination of calcium and magnesium ions in mineral water.</td>
</tr>
<tr>
<td>Determination of aluminium in “Aluminium tartaricum solutum”</td>
<td>Gravimetry Gravimetric determination of sulfate ions in the form of BaSO4; (precipitation, preparation of filter)</td>
</tr>
<tr>
<td>Filtration, washing, weighing of BaSO4 precipitate; Determination of chloride ions by Mohr’s method</td>
<td>Argentometry Determination of bromide ions by Volhard’s and Fajans’ methods</td>
</tr>
<tr>
<td>Determination of cyanides by Liebig-Denigees’ Method;</td>
<td>Komplexometry</td>
</tr>
<tr>
<td>Supplements Supplements</td>
<td></td>
</tr>
<tr>
<td>Supplements Supplements;</td>
<td><strong>Closing</strong></td>
</tr>
</tbody>
</table>

---

**SEMELWEIS UNIVERSITY / FACULTY OF PHARMACY**

379
## QUANTITATIVE ANALYTICAL CHEMISTRY

### Second Semester

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practical (5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic</strong></td>
<td><strong>Task</strong></td>
</tr>
<tr>
<td>Titration curves in oxidimetry. 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 ( 0.1\text{N} ) potassium permanganate solution</td>
</tr>
<tr>
<td>Titrations with chromate and cerium (IV). Bromatometry I.</td>
<td>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>Chromatometry Determination of Mohr salt with chromatometric titration Bromatometry Bromatometric determination of arsenic (III) (from As2O3) or antimony (III) compounds (in form of “tartar emetic”; antimonyl tartarate) Determination of azophenol</td>
</tr>
<tr>
<td>Iodometric titrations and other reductometric methods.</td>
<td>Bromatometry Bromatometric determination of ascorbic acid (Vitamin C) in tablets (e.g., Vit C, Rutascorbin, Béres C) Bromatometric determination of amidophenol</td>
</tr>
<tr>
<td>Sampling and preparatory processes in analytical chemistry.</td>
<td>Iodometry Standardization of ( 0.01\text{N} ) 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>Molecular absorption spectroscopy in UV–VIS region as well as in IR. Possibilities of spectrophotometric method(s) in complex systems. Separation methods in analytical chemistry. Distillation, extraction and their possibilities.</td>
<td>Optional measurements* Instrumental analysis Spectrophotometry</td>
</tr>
<tr>
<td><strong>TEST I.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>TEST II.</strong></td>
<td>One selection from “Other determinations” Computer aided learning of modern instrumental analytical methods (HPLC; GC; UV–Vis Spectrophotometry) From “Potentiometric determinations” Spectrophotometric determination of iron content in multivitamin tablets</td>
</tr>
</tbody>
</table>
Lectures (2 hours per week)

\begin{tabular}{|c|c|}
\hline
\textbf{Topic} & \textbf{Task} \\
\hline
Spectrophotometric determination of phosphate content in egg shell & \\
Semi-quantitative analysis using “Merkoquant” test papers (Public) Holiday & \\
Different planar chromatographic methods and their use in pharmaceutical analyses. Gas chromatographic methods. & \\
High performance liquid chromatography. Supercritical fluid extraction and chromatography. HPCE and its future application. Survey on analytical chemistry. & \\
Optional measurements* & From “Potentiometric determinations” \\
Final test & From “Other determinations” \\
\textit{TEST III.} (Qualitative and quantitative analysis of complex samples) & \\
+ Determination Quantitative determination of the sample & \\
\hline
\end{tabular}

Summary.

Potentiometric determinations:

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

Other determinations:

1. Complexometric determination of metals in coins: (e.g. 1,- Ft; 2,- Ft; 5,- Ft; US cent; Groschen) (Cu²⁺ - Ni²⁺ - Cu²⁺ - Ni²⁺ - Zn²⁺ - Cu²⁺ - Al³⁺)
2. Determination of calcium and magnesium ions in mineral water (e.g. Römerquelle, Teodora Quelle, Margitszigeti), in bitter water (Míra) and in tap water
3. Chelatometric determination of aluminium ions in “Aluminium aceticum tartaricum solutum”
4. Iodometric determination of Cr⁵⁺ 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
### First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (4+1*** hours per week)</th>
<th>No. of practices</th>
<th>Practical (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>2-3</td>
<td>Basic laboratory processes.</td>
</tr>
<tr>
<td>2</td>
<td>Saturated acyclic and cyclic hydrocarbons. Constitution, conformation</td>
<td>1-2</td>
<td></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>5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Isomerism. Steric and electronic effects in organic compounds and reactions.</td>
<td>6-7</td>
<td>Nomenclature of organic compounds without C=O bond</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>2-6</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>3-6</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Aromatic hydrocarbons. Electrophilic aromatic substitution</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Spectroscopy of organic compounds.</td>
<td>11-12</td>
<td></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>14</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Amines and other nitrogen containing compounds. Basicity of organic compounds. Organic sulfur compounds.</td>
<td></td>
<td></td>
</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>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>1-6</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></td>
</tr>
<tr>
<td>10-11</td>
<td>electron deficient heteroaromatic compounds.?</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Terpenoids, carotenoids, steroids.</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Nucleic acids, Alkaloids.</td>
<td>14</td>
<td>Electronic literature searching</td>
</tr>
<tr>
<td>14</td>
<td>Organic chemistry in the periodic system. Organic synthesis.</td>
<td>6</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).
PHYSICAL CHEMISTRY
Lecturers: Prof. Dr. Tamás Turányi, Dr. Mihály Takács

First Semester

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. (Kirchhoff’s law).
Week Lectures (4 hours per week)


14 Kinds of cells. 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) Practical (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.
What are colloids? Definitions, nomenclature, historical perspective.

Basic principles of colloid stability
Intermolecular forces, interparticle forces, effect of the intervening medium.
Electrostatic forces and the electrical double layer.

Steric repulsion, the effect of adsorbed or anchored layers.
The total interaction potential curve.

Preparation of colloidal dispersions
Dispersion methods, condensation methods: nucleation and particle growth.
Emulsion and dispersion polymerization. Preparation of monodisperse colloids.

Interfaces
Surface tension, surface energy, wetting phenomena.

Adsorption: the Gibbs adsorption equation, the influence of adsorption
on interparticle forces The effect of the curvature of surfaces on equilibrium.

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.

Rheology: viscosity, Newtonian and non-Newtonian systems, rheology
of suspensions of colloidal particles.

Aggregation processes in colloidal dispersions
Flocculation and coagulation of electrostatically stabilized dispersions,
the Deryagin–Landau–Verwey–Overbeek (DLVO) theory. Reversible flocculation,
bringing flocculation, depletion flocculation, sterically stabilized systems.
Kinetics of coagulation, heterocoagulation.

Structure of flocs and sediments.
Coalescence and particle growth.

Association colloids and self-assembly systems
Micellisation, solubilization.

Thin films, foams and emulsions
Film stability, film tension.
Foams, foaming and antifoaming agents, froth flotation.
Emulsions and microemulsions.

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.

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. Root modifications</td>
<td>Germination, seedlings. Plants representing fam.: Fabaceae, Brassicaceae</td>
</tr>
<tr>
<td>3</td>
<td>Secondary growth of roots and stems.</td>
<td>Stems I. Plants representing fam.: Solanaceae, Lamiaeae</td>
</tr>
<tr>
<td>4</td>
<td>Development and anatomy of leaves. Adaptations to the environment. Shoot modifications.</td>
<td>Stems II. Plants representing fam.: Asteraceae</td>
</tr>
<tr>
<td>5</td>
<td>The movement of water in plants. Mineral nutrition. Transport of assimilates. Plants representing fam.: Cannabaceae</td>
<td>1. Test Work:</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, Gymnospermophyta</td>
<td>The Fungi II.</td>
</tr>
<tr>
<td>9</td>
<td>Angiospermophyta: Magnoliidae</td>
<td>2. Test Work: Fungi Preparing a cleared specimen</td>
</tr>
<tr>
<td>10</td>
<td>Angiospermophyta: Hamamelididae, Caryophyllidae</td>
<td>Leaf and flower anatomy</td>
</tr>
<tr>
<td>11</td>
<td>Angiospermophyta: Rosidae</td>
<td>Morphology and anatomy of the seed 2. Test Work on the knowledge of medicinal plants.</td>
</tr>
<tr>
<td>12</td>
<td>Angiospermophyta: Dilleniidae</td>
<td>Morphology and anatomy of the fruit.</td>
</tr>
<tr>
<td>13</td>
<td>Angiospermophyta: Asteridae</td>
<td>3. Test Work: woody stems, leaf, flower, seed, fruit.</td>
</tr>
<tr>
<td>14</td>
<td>Angiospermophyta: Monocotyledoneae</td>
<td>Consultation, questioning, finishing the practicals.</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).
Second Semester

**Lectures** (3 hours per week)

Proteins. The amino acids building blocks of proteins.
Determination of amino acid composition and primary structure of proteins.
Ordered conformations of polypeptide chains. Four levels of protein structure. Determination of secondary and tertiary structure. Oxygen transporting proteins.
Myoglobin and hemoglobin. Structure of myoglobin and hemoglobin.
Fetal hemoglobin. Molecular pathology of hemoglobin.
Purification and characterization of proteins.
Separation procedures based on molecular size, solubility differences, electric charge and selective adsorption.
Fine mechanism of enzyme action. Three-dimensional structure of chymotrypsin, a serine protease.
Mechanism of acetylcholinesterase catalysis.
Oxidative decarboxylation of pyruvate.
Citric acid cycle.
Metabolic transport through the mitochondrial membranes. Respiratory chain.
Oxidative phosphorylation. Mitochondrial import and export of reductive equivalents.
Energetics of glucose oxidation. Pasteur effect. Heat production by the brown adipose tissue.
The phosphogluconate oxidative pathway. Significance and regulation of the pentose phosphate pathway.
Biosynthesis of hexosamines. Biological role and synthesis of glycoproteins and glycolipids.
Lectures (3 hours per week)

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 acquaintance with the equipments of these manipulations.
   Right selection of the accessories: scale, scale-relations, place etc.
7 Drug dispensing according to regulations. Corking of flasks for solutions, signal-signature, packing, presentation. Esthetic demunt.
8 Labour safety in a pharmacy. (Inflammable, explosive goods, acids, corrosive chemicals etc.)
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>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry II. Practice GYOBBIKME2A</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>GYSZKSZKE2A GYOBBIKME1A</td>
<td>Organic Chemistry II.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Biochemistry I.</td>
<td>signature</td>
</tr>
<tr>
<td>Biochemistry II. GYOBBIKME2A</td>
<td></td>
<td></td>
<td></td>
<td>GYSZKSZKE2A GYOBBIKME1A</td>
<td>Organic Chemistry II.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Biochemistry I.</td>
<td>final #</td>
</tr>
<tr>
<td>Physiology I. Practice GYKIKELTG1A</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>GYOBBIKME1A GYNYELATG1A</td>
<td>Biochemistry I.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Medical Terminology</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Physiology I. GYKIKELTE1A</td>
<td></td>
<td></td>
<td></td>
<td>GYKILGE1A</td>
<td>Medical Terminology</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Analitical Chemistry (quantitative) II.</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Pharmacological Chemistry I.</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>GYSZKSZKE2A GYKIKELTE1A</td>
<td>Organic Chemistry II.</td>
</tr>
<tr>
<td>GYGYKG1A</td>
<td></td>
<td></td>
<td></td>
<td>Colloidal Chemistry I</td>
<td>Medical Terminology</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Organic Chemistry II. (quantitative) II.</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Pharmacological Technology I.</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>GYKIKELTE1A GYKILGE1A</td>
<td>Organic Chemistry II.</td>
</tr>
<tr>
<td>GYGYKYG1A</td>
<td></td>
<td></td>
<td></td>
<td>Colloidal Chemistry I</td>
<td>Medical Terminology</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Organic Chemistry II. (quantitative) II.</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Basic Immunology GYGENIMME1A</td>
<td>1.5</td>
<td>2</td>
<td>2</td>
<td>GYGENIMME1A GYNYELATG1A</td>
<td>Biology II.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Medical Terminology</td>
<td>Anatomy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Human Anatomy</td>
<td>semi-final</td>
</tr>
<tr>
<td>Colloidal Chemistry I. GYKOLKOLE1A</td>
<td></td>
<td>2</td>
<td>2</td>
<td>GYKOLKOLE1A GYKIKELTE1A</td>
<td>Colloidal Chemistry I.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Organic Chemistry II. (quantitative) II.</td>
<td>Medical Terminology</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>practical course grade</td>
<td></td>
</tr>
<tr>
<td>Hungarian Language V. GYLEMMSZG1A</td>
<td></td>
<td>4</td>
<td>2</td>
<td>GYLEMMSZG1A</td>
<td>Hungarian Language IV.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>practical course grade</td>
<td></td>
</tr>
<tr>
<td>Subjects</td>
<td>Lectures</td>
<td>Practices</td>
<td>Credit Points</td>
<td>Prerequisites</td>
<td>Examination</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>----------</td>
<td>-----------</td>
<td>---------------</td>
<td>----------------------------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Physiology II, Practice GYKIKELTG2A</td>
<td>–</td>
<td>1</td>
<td>2</td>
<td>GYOBIBKME2AGYKIKELTE1A, Biochemistry II, Physiology I</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Physiology II, GYKIKELTE2A</td>
<td>5</td>
<td>–</td>
<td>4</td>
<td>GYOBIBKME2AGYKIKELTE1A, Biochemistry II, Physiology I</td>
<td>final #</td>
</tr>
<tr>
<td>Pharmacognosy I, Practice GYFMGGNDG1A</td>
<td>–</td>
<td>4</td>
<td>3</td>
<td>GYNOVGYNELG2A, GYOBIBKME2A, Pharmaceutical Botany II, Biochemistry II, Pharmacological Chemistry I</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Pharmacognosy I, GYFMGGNDE1A</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>GYNOVGYNELG2A, GYOBIBKME2A, Pharmaceutical Botany II, Biochemistry II, Pharmacological Chemistry I</td>
<td>semi-final</td>
</tr>
<tr>
<td>Pharmaceutical Chemistry II, Practice GYGWGYK2A</td>
<td>–</td>
<td>5</td>
<td>4</td>
<td>GYKIKLOL2G2A, GYOBIBKME2A, Pharmaceutical Chemistry II</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Pharmaceutical Microbiology GYMIGMIE1A</td>
<td>3</td>
<td>–</td>
<td>5</td>
<td>GYKIKLOL2G2A, GYOBIBKME2A, Pharmaceutical Chemistry II</td>
<td>final #</td>
</tr>
<tr>
<td>Pharmaceutical Microbiology Practice GYMIGMIG1A</td>
<td>–</td>
<td>2</td>
<td>–</td>
<td>GYOBIBKME2A, GYNOVGYNELG2A, Basic Immunology</td>
<td>signature</td>
</tr>
<tr>
<td>Pharmaceutical Technology II, Practice GYGIGYG2A</td>
<td>–</td>
<td>5</td>
<td>4</td>
<td>GYKIGGYK2A, GYKIKLOL2G2A, Pharmaceutical Technology II</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Pharmaceutical Technology II, GYGIGYGTE2A</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>GYKIGGYK2A, GYKIKLOL2G2A, Pharmaceutical Technology II</td>
<td>semi-final</td>
</tr>
<tr>
<td>Hungarian Language VI, * GYLEKMSZG6A</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>GYLEKMSZG6A, Hungarian Language V</td>
<td>final #</td>
</tr>
<tr>
<td>Summer Practice II, ** GYSISZGIVK2A</td>
<td>–</td>
<td>35</td>
<td>4</td>
<td>GYKIGGYK2A, GYKIKLOL2G2A, Pharmaceutical Technology II</td>
<td>signature</td>
</tr>
<tr>
<td>**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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, Calenical laboratory, research institute, university department) after the second and third year.
LIST OF TEXTBOOKS

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

Recommended textbooks:

# First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (4 hours per week)</th>
<th>Practicals (5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Preliminary testing of organic compounds, classification Identification of organic functional groups</td>
<td>Preliminary testing and systematization of inorganic and organic compounds official in Ph. Eur.</td>
</tr>
<tr>
<td>3</td>
<td>General purity tests in Pharmacopoeias</td>
<td>Preliminary testing and systematization of inorganic and organic compounds official in Ph. Eur.</td>
</tr>
<tr>
<td>4</td>
<td>Structural and physical chemistry of drug action I.-II</td>
<td>General reaction of organic functional groups Analysis of IR spectra</td>
</tr>
<tr>
<td>5</td>
<td>Structural and physical chemistry of drug action III-IV. Narcotics</td>
<td>General purity tests of inorganic ions I.</td>
</tr>
<tr>
<td>6</td>
<td>Sedato-hypnotics and anxiolytics</td>
<td>General purity tests of inorganic ions II.</td>
</tr>
<tr>
<td>7</td>
<td>Major analgetics</td>
<td>General purity tests of inorganic ions III.</td>
</tr>
<tr>
<td>8</td>
<td>Minor analgetics</td>
<td>Complete pharmacopoeial qualification of an inorganic compound official in Ph. Eur.</td>
</tr>
<tr>
<td>9</td>
<td>Psychopharmacons</td>
<td>Narcotics, sedato-hypnotics</td>
</tr>
<tr>
<td>10</td>
<td>UV-VIS spectroscopy in the analysis of drug mixtures</td>
<td>Major analgetics I.</td>
</tr>
<tr>
<td>11</td>
<td>ORD and CD spectroscopy in the analysis of drug mixtures Separation techniques I.-V.</td>
<td>Major analgetics II.</td>
</tr>
<tr>
<td>12</td>
<td>Application of chromatographic methods for the drug analysis. TLC</td>
<td>Minor analgetics I.</td>
</tr>
<tr>
<td>13</td>
<td>GC, HPLC, CE</td>
<td>Minor analgetics II.</td>
</tr>
<tr>
<td>14</td>
<td>Cholinergic and adrenergic agents</td>
<td>Psychopharmacons</td>
</tr>
</tbody>
</table>
# PHARMACEUTICAL CHEMISTRY

## Second Semester

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

Lectures
History of pharmaceutical compounding and technology
Dosage forms as drug carrier systems. Classification of dosage forms and routes of administration.

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

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

Second Semester

Lectures
Dosage forms with coherent structure
Ointments, gels, pastes. Eye ointments.
Tests of semisolid preparations. Rheology and other characteristics.
Cosmetics.
Rectal and vaginal preparations.
Tests of suppositories.
Dosage forms prepared by aggregation. Pills, boluses, sticks, foams, medicated chewing gums.
Compounding powder preparations.
Compounding veterinary preparations.
Incompatibility problems I. Solutions.
Incompatibility problems II. Solid dosage forms
Incompatibility problems II. Other dosage forms and role of excipients.
Good Pharmacy Practice.
Laws governing the pharmacy practice.

Practice
Formulae Normales: the guide for pharmaceutical compounding in Hungary.
Preparation of ointments of solution and emulsion type.
Preparation of ointments of emulsion and suspension.
Preparation of ointments of composite type.
Directions of eye ointments and gels. Preparations of eye ointments.
Preparation of pastes.
Preparation of cosmetics.
Preparation of suppositories by cold compression and by by moulding.
Preparation of vaginal preparations.
Preparation of pills.
Preparation of multidose powders. Topical powders.
Preparations of veterinary preparations.
Guidelines for the preparation of incompatible drugs.
Incompatibility problems of solutions
Incompatibility problems of powder mixtures.
Incompatibility problems of emulsions.
Incompatibility problems of ointments.
Health accessories in pharmacy.
Dispensing a test preparation independently.
PHARMACOGNOSY

Second Semester

Lectures (2 hours per week)

Pharmacognosy, History of pharmacognosy.
Medicinal plant - vegetable drug.
Nomenclature. Classification of vegetable drugs.
From plant to phytopharmaceutical (phytotherapy).
Sources of drugs, factors involved in the production of drugs. Quality control.
Compounds of primary metabolism.
Lipids. Generalities, vegetable oils, alkyne derivatives.
Amino acids (which are not constituents of proteins).
Cyanogenic glycosides, glicosinolates, Betalains.
Protein sweeteners. Lectins. Enzymes.
Compounds of special (secondary) metabolism.
Plant phenolics in general. Phenols, phenolic acids, derivatives and crude drugs.
Coumarins and coumarin containing drugs.
Medicinal application and toxicity.
Lignans, lignan containing drugs. Biological interest of lignans. Silybum marianum and its significance.
Flavonoids, chemical structure and classification, biological properties, use of flavonoid-containing drugs, therapeutical significans.
Chief flavonoid containing vegetable drugs.
(Crataegus species, Ginkgo biloba, etc.)
Isoflavonoids, rotenoids, biological significance.
Anthocyanins, chief anthocyanin-containing drugs.
Phenoloids in Zingiberaceae family (diarylethanooids and alykanonones)
Tannins. Classification of tannins. Structures and properties of hydrolyzable and condensed tannins, biological significance. Chief tannin-containing drugs.
Pharmacological properties.
Main hydroxyanthraquinone glycoside-containing drugs.
Naphthodianthrone and diterpene quinone containing drugs. Hypericum perforatum.
Orcinols and phloroglucinols. Cannabis.
Humulus lupulus.

Practicals (4 hours per week)

Introduction, safety rules.
General methods in quality control of vegetable drugs.
Vegetable drugs containing carbohydrates.
(Starches, mucilages, etc.)
Plant acids and their drugs.
Vegetable oils.
Flavonoids and chief flavonoid drugs.
Anthocyanins.
Methods, used in flavonoid and phenoloid chemistry.
HPLC of flavonoids.
Tannins and chief tannin drugs.
Methods used in tannin chemistry.
Laxative hydroxy-anthraquinone drugs.
Naphthodianthrone.
Methods used in hydroxyanthraquinone chemistry
Phloroglucinols.
Cannabis sativa.
Personal task.
Consultation.
First Semester

**Lectures** (2 hours per week)


**Practicals**

Seminar: Lipoprotein lipase and carnitine deficiency

Seminar: Pyruvate dehydrogenase and pyruvate carboxylase deficiency

Seminar: Liver failure

Midterm: lipids and amino acids

Seminars: Vitami B12 and folate deficiency

Midterm: nucleotides and macromolecules
Lectures (2 hours per week)


Mechanism of the regulation of biomechanical pathways by hormones. Biochemistry of the hormonal action.

Receptors, classification of receptors. The ion channels.

Calcium homeostasis.

The signal transduction: the G-proteins, role of the adenylate cyclase and phosphoinositol system in signal transduction. The proteine kinases and phosphorylation of specific proteins.

Interaction of receptors and hormones. Mechanism of neurotransmission. The cholinergic and adrenergic transmission. The insulin and steriodreceptors.

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

Determination of particle size distribution by Andreasen pipette.

**Practice (2 hours per week)**

Association colloids
Determination of critical micelle formation concentration by conductometric titration.
Solubilization of organic acids, determination of solubilization saturation.
Macromolecular colloids
Determination of the relative molecular mass of polymers by viscosity measurements.
Dependence of the viscosity of polyelectrolyte solutions on pH.
Phase states and structures of polymers
Determination of the thermomechanical curve of a polymer by Höppler consistometer.
Determination of the relative deformation of a polymer at various loading times.

---

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

**First Semester**

**Week**

**Lecture (5 hours per week)**

5. Cardiac functions: Biomechanical basis of cardiac functions. Cardiac pump. Signal transduction in the cardiomyocytes.
8. Cardiovascular control mechanisms: Systemic control mechanisms. Local control mechanisms. Control of cardiac output.
Semmelweis University / Faculty of Pharmacy

Week  Lecture  (5 hours per week)


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

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


Practice and consultation  (2 hours biweekly)

Recording of compound action potential of the frog sciatic nerve, Sim Nerve
Experiments on the rat nerve-muscle preparation, Sim Muscle
Experiments on isolated rat heart, Sim Heart
Smooth muscle activity of isolated, superfused muscle strips, Sim Vessel

Physiology

Second Semester

Week  Lecture  (5 hours per week)

1  Formation and excretion of urine. Physiological functions, their significance in the maintenance of the internal milieu and in healthy functioning of the organism. Renal circulation. Glomerular filtration.


3  Regulation of acid-base balance.


Week
Lecture (5 hours per week)


Practice and consultation (2 hours biweekly)

Indirect measurement of arterial pressure and recording heart sounds
Kidney function
Determination of parameters of acid/base equilibrium
Endocrinology lab
Electroencephalogram (EEG) experiment
PHARMACEUTICAL MICROBIOLOGY
Program director: Prof. Dr. Éva Ádám
Tutor: Dr. Zsuzsanna Csukás

Second Semester

Lectures (3 hours per week)


Practices (2 hours per week)


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
Immuno-pharmacology
Immunotolerance
Natural and pathological autoimmunity

Notes
The semester is completed with a written exam.
Deadline of claims for exemptions: 30th September
Updated information is available on our web site: www.dgci.sote.hu

COMPULSORY SUMMER PRACTICE
Program

Four weeks: 35 hours/week; min. 6 max. 8 hours/day.

The aim of summer practical training: to deepen theoretical and practical knowledge of
Pharmaceutical Technology learnt in the 3rd year; adaptation of basic knowledge (chemistry,
physics, 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.
Faculty of Pharmacy
4th year
## STUDY PROGRAMME

### Fourth Year

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

<table>
<thead>
<tr>
<th>7th semester</th>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pharmacognosy II. Practice GYFMGGNDG2A</td>
<td>–</td>
<td>4</td>
<td>3</td>
<td>GYFMGGNDE1A, GYGYKGYKE2A, Pharmaceutical Chemistry II</td>
<td>practical course grade</td>
</tr>
<tr>
<td></td>
<td>Pharmacognosy II. GYFMGGNDG2A</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>GYFMGGNDE1A, GYGYKGYKE2A, Pharmaceutical Chemistry II</td>
<td>final #</td>
</tr>
<tr>
<td></td>
<td>Pharmaceutical Chemistry III. Practice GYGYKGYKG3A</td>
<td>–</td>
<td>4</td>
<td>3</td>
<td>GYGYKGYKE2A, GYKIKELTE2A, Pharmaceutical Chemistry II, Physiology II</td>
<td>practical course grade</td>
</tr>
<tr>
<td></td>
<td>Pharmaceutical Chemistry III. GYGYKGYKE3A</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>GYKIKELTE2A, GYGYKGYKE2A, Pharmaceutical Chemistry II, Physiology II</td>
<td>final #</td>
</tr>
<tr>
<td></td>
<td>Pharmacology and Toxicology I. Practice GYKIKELTE2A, GYGYKGYKE2A, Pharmaceutical Chemistry II, Physiology II</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>GYKIKELTE2A, GYKIKELTE2A</td>
<td>practical course grade</td>
</tr>
<tr>
<td></td>
<td>Pharmacology and Toxicology I. GYKIKELTE2A, GYKIKELTE2A, Pharmaceutical Chemistry II, Physiology II</td>
<td>4</td>
<td>–</td>
<td>4</td>
<td>GYKIKELTE2A, GYKIKELTE2A</td>
<td>semi-final</td>
</tr>
<tr>
<td></td>
<td>Pharmaceutical Technology III. Practice GYKIKELTE2A, GYKIKELTE2A, Pharmaceutical Chemistry II, Physiology II</td>
<td>–</td>
<td>9</td>
<td>5</td>
<td>GYKIKELTE2A, GYKIKELTE2A</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Subjects</td>
<td>Lectures</td>
<td>Practices</td>
<td>Credit Points</td>
<td>Prerequisites</td>
<td>Examination</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>-----------</td>
<td>---------------</td>
<td>---------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>Pharmacology and Toxicology II, Practice GYGYHHRG2A</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>GYGYHHRG2A, GYGYKGYKE3A, GYGYIGYTE3A, GYGYHKKAE1A</td>
<td>practical course grade</td>
<td></td>
</tr>
<tr>
<td>Pharmacology and Toxicology II, GYGYHHRG2A</td>
<td>4</td>
<td>–</td>
<td>4</td>
<td>GYGYHHRG2A, GYGYKGYKE3A, GYGYIGYTE3A, GYGYHKKAE1A</td>
<td>final #</td>
<td></td>
</tr>
<tr>
<td>Pharmaceutical Technology IV, Practice GYGYGTYG4A</td>
<td>–</td>
<td>9</td>
<td>6</td>
<td>GYGYKGYKE3A, GYGYIGYTE3A, GYGYHKKAE1A</td>
<td>practical course grade</td>
<td></td>
</tr>
<tr>
<td>Pharmaceutical Technology IV, GYGYGTYG4A</td>
<td>3</td>
<td>–</td>
<td>4</td>
<td>GYGYKGYKE3A, GYGYIGYTE3A, GYGYHKKAE1A</td>
<td>final #</td>
<td></td>
</tr>
<tr>
<td>Pharmacy Administration I, GYGYGITS3A</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>GYGYSE2A, GYGYHHRG2A, GYGYIGYTE3A</td>
<td>semi-final</td>
<td></td>
</tr>
<tr>
<td>Basic Medical Pathophysiology II, GYGYHHRG2A</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>GYGYHHRG2A, GYGYKGYKE3A, GYGYIGYTE3A</td>
<td>final #</td>
<td></td>
</tr>
<tr>
<td>Public Health GYKOZKTE1A</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>GYGYKGYKE3A, GYGYIGYTE3A</td>
<td>final #</td>
<td></td>
</tr>
<tr>
<td>Public Health Practice GYKOZKTE1A</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>GYGYKGYKE3A, GYGYIGYTE3A</td>
<td>practical course grade</td>
<td></td>
</tr>
<tr>
<td>Written scientific thesis (diploma work) I, GYSZAKD3A</td>
<td>–</td>
<td>4</td>
<td>0</td>
<td>All of the 7th semester subjects</td>
<td>signature</td>
<td></td>
</tr>
<tr>
<td>First Aid * GYTRAELSE1A</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
<td>signature</td>
<td></td>
</tr>
</tbody>
</table>

# The grade influences the qualification of the diploma
* 4th year Pharmacy students of 2010/11 have to complete First Aid in the 4th year (second semester) of their studies. Students of the 1st year study the program in the first year second semester of the 2010/11 academic year. The 2nd and 3rd year students should have already done it in 2009/10 and 2009/10.
** 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>
<th>Practicals (4 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Antibiotics I.</td>
<td>Equipping, identification</td>
</tr>
<tr>
<td>2</td>
<td>Antibiotics II.</td>
<td>Desinfectants, chemoterapeutics</td>
</tr>
<tr>
<td>3</td>
<td>Antibiotics III.</td>
<td>Antibiotics</td>
</tr>
<tr>
<td>4</td>
<td>Analysis of drug mixtures I.</td>
<td>Identification of drug mixtures</td>
</tr>
<tr>
<td>5</td>
<td>Analysis of drug mixtures II.</td>
<td>Identification of drug mixtures</td>
</tr>
<tr>
<td>6</td>
<td>Analysis of drug mixtures III.</td>
<td>Quantitative determination of drug mixtures</td>
</tr>
<tr>
<td>7</td>
<td>Anticancer agents</td>
<td>Quantitative determination of drug mixtures</td>
</tr>
<tr>
<td>8</td>
<td>Antiviral agents</td>
<td>Quantitative determination of drug mixtures</td>
</tr>
<tr>
<td>9</td>
<td>Lipophilicity in drug research</td>
<td>Quantitative determination of drug mixtures</td>
</tr>
<tr>
<td>10</td>
<td>Rational methods of drug design I.</td>
<td>Quantitative determination of drug mixtures</td>
</tr>
<tr>
<td>11</td>
<td>Rational methods of drug design II.</td>
<td>Quantitative determination of drug mixtures</td>
</tr>
<tr>
<td>12</td>
<td>Lead compound discovery strategies I.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Lead compound discovery strategies II.</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Antihistamines</td>
<td></td>
</tr>
</tbody>
</table>

# PHARMACEUTICAL TECHNOLOGY

**Department of Pharmaceutics**  
**Director:** Prof. Dr. Imre Klebovich  
**Tutor:** Dr. István Antal

## First Semester

**Lectures**  
Scope of industrial pharmaceutical technology. History and development.  
Aspects of the pharmaceutical development. Preformulation studies.  
Applying principles of chemical engineering for the manufacturing of pharmaceutical preparations.  
Critical manufacturing parameters and principles of scaling up.  
Requirements and conditions for manufacturing (Good Manufacturing Practice)  
Quality assurance and manufacturing. Safety regulations.  
Validation. Concepts of the statistical process control.  
Basic procedures: comminution, powdering, sieving.  
Basic procedures: separation, filtering, settling, extraction.  
Basic procedures: homogenization, dispersing, distillation, evaporation.  
Basic procedures: fluidization.  
Basic procedures: drying.  
Basic procedures: freeze-drying.
Basic procedures: crystallization.
Sterilization.
Formulation of parenteral preparations.
Manufacturing of large and small volume parenterals.
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 salicylic acid by changing permittivity.
Concentration determination of sugar syrups by viscometry.
Viscometric evaluation of macromolecular colloids used as stabilizers
Investigation of phase-inversion of emulsions by viscometry.
Determination of the average molecular mass of polyethylene glycols by viscometry.
Determination of the critical micelle concentration by stalagmometry.
Investigation of surfactants using the Donnan’s pipette.
Investigation of solubilization of volatile oils by aqueous titration method.
Particle size analysis of suspensions by the Andreasen’s cylinder.
Particle size analysis of suspensions by the the Wiegner’s tube.

Second Semester

Lectures

Physical chemistry for solid dosage forms.
Characterization of particle systems. Powder rheology.
Granules and granulation.
Pellets and pelletization.
Capsules and microcapsules.
The tablet compression process.
 Tablets and their characteristics. Testing tablets.
 Manufacturing methods and excipients for tablets.
Coated dosage forms and the coating procedure. Coating materials.
Traditional sugar coating and film-coating. Solvent-free coating.
Dosage form design: modified drug release and prolonged action.
Dosage form design: improving bioavailability and enhancement of absorption.
Modern dosage forms: concepts of the therapeutic systems.
Oral preparations with modified release.
Locally applied therapeutic systems.
Transdermal drug delivery systems.
Alternative routes of drug administration.
Colloidal drug delivery systems.
Micro- and nanofabrication.
Molecular pharmaceutics.
Technological aspects of genomics and biopharmaceuticals.
Technological aspects of veterinarian 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 und 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.
- Carotenoids. Chief carotenoid-containing drugs.
- Alkaloids in general. Protobase alkaloids and their drugs.
- Alkaloids derived from ornithine and lysine.
- Tropane-, pyrrolizidine-, quinolizidine-, indolizidine-, piperidine alkaloids and their drugs.
- Alkaloids derived from nicotinic acid.
- Alkaloids derived from phenylalanine and tyrosine: phenethylamines-, isoquinolines-, benzyltetraisoquinoline-, phenethylisoquinoline alkaloids and their drugs.
- Alkaloids derived from phenylalanine and tyrosine: Morphinan alkaloids.
- Alkaloids derived from tryptophan: ergotine alkaloids, monoterpenoid indole alkaloids and chief drugs.
- Purine bases.
- Alkaloids with miscellaneous structure.
- Vitamins and vitamin containing drugs.
- Plants in complementary and traditional systems of medicine.
- Plants in prevention, 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 antihelminthic drugs
Antifungal drugs
Antimycobacterial and antiviral drugs
Cancer chemotherapy I.
Cancer chemotherapy II.
Pharmacotherapy of heart failure
Diuretic drugs
Antidyssrhythmic 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 Zeikő
Tutor: Dr. Ágnes Meszáros

4th year term 2

Lecture

Objectives and research methods of pharmacy administration
European Pharmacopoeia, Ph. Hg. VIII, FoNo VII.
Managing health care
Financial pressures and human resource management
Resource allocation in health care
Managing quality in health care
Quality systems and total quality management
Good Clinical Practice (GCP)
European marketing authorisation procedures
The registration dossier
Legal regulations in health care
Health promotion
Good Pharmacy Practice (GPP)
International pharmaceutical organisations
Pharmaceutical ethics
BASIC MEDICAL PATHOPHYSIOLOGY
Institute of Pharmacodynamics
Course Director and Tutor: Prof. Dr. Kornélia Tekes

First Semester

Fundamental pathological processes
Psychiatry: diagnostic systems
Delirium, dementia, amnestic disturbances
Injuries produced by high and low temperatures and electricity
Schizophrenia. Depressive disorders
Anxiety disorders. Drug induced disorders
Sleep disorders. Eating disorders. Impulse control disorders
Epilepsy. Neurodegenerative disorders
Inflammatory diseases of the central nervous system
Headache. Backache Disorders of erythropoiesis and haemostasis
Varicose veins. Thrombo-embolic disorders
Congestive heart failure. Atherosclerosis
Ischaemic heart disease. Cardiac arrhythmia
Inflammatory diseases of the heart
Hypertension. Circulatory shock

Second Semester

Gastrointestinal disorders I
Gastrointestinal disorders II
Gastrointestinal disorders III
Respiratory diseases I.
Respiratory diseases II.
Genitourinary disorders
Infectious disorders I.
Infectious disorders II.
Ophtalmologic disorders I.
Ophtalmologic disorders II., Ear disorders
Endocrine and metabolic disorders I.
Endocrine and metabolic disorders II.
Musculoskeletal disorders
Immunologic disorders, Oncologic disorders
Dermatologic disorders, Consultation
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.
- Occupational diseases, accidents. Vibration, noise.
- Toxicology. Radiation hygiene.
- Practical aspects of maternal, infant, child and young people hygiene.
- Practical aspects of health education.

Practices are compulsory for each student.

**The obligatory material for the final exam:**
The material of the lectures and practices, compulsory textbooks, see List of Textbooks
INDUSTRIAL PHARMACEUTICAL TECHNOLOGY I:
Dosage form and product development
Department of Pharmaceutics
Director: Prof. Dr. Imre Klebovich
Tutor: Dr. István Antal

First semester

The subject is recommended for the students interested in several fields of industrial pharmaceutical technology such as research and development of new dosage forms and medicinal preparations.

Topics:

INDUSTRIAL PHARMACEUTICAL TECHNOLOGY II:
Operations and procedures
Department of Pharmaceutics
Director: Prof. Dr. Imre Klebovich
Tutor: Dr. István Antal

Second semester

The subject is recommended for the students interested in several fields of industrial pharmaceutical technology such as operations and procedures in the manufacture of medicinal preparations.

Topics:
COMPULSORY SUMMER PRACTICE

Program

Four weeks: 35 hours/week; max. 8, min. 6 hours/day. The aim of the summer practical training: to 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 of prescriptions, reading of prescriptions (Formula Magistralis, Formulae Normales, Formula Originalis). The forms of dispensation, dose calculating, etc. Preparation of medicaments (Formula Magistralis) under supervision of the instructing pharmacist.
2. Prescriptions and regulations of narcotics.
3. Various dosage forms (solutions, suspensions, emulsions, ointments, solid dosage forms, etc.), their preparation.
4. Practising of the pharmaceutical-technological manipulations, procedures, etc.
5. Aseptic production of medicaments. Main technological steps.
6. Guideline for the preparation of incompatible drugs. Preparation of these medicaments.
# STUDY PROGRAMME

## Fifth Year

### 9th semester (12 weeks)

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compulsory Practical Training I. (2 months) * GYSZGSZVG1A</td>
<td>–</td>
<td>40</td>
<td>8</td>
<td>signature</td>
</tr>
<tr>
<td>Biopharmacy-Pharmacokinetics Practice GGYYBFKG1A</td>
<td>–</td>
<td>3</td>
<td>2</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Biopharmacy-Pharmacokinetics GGYYBFKE1A</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>semi-final</td>
</tr>
<tr>
<td>Pharmaceutical Sociology, Ethics GYAMGYYEE1A</td>
<td>2.5</td>
<td>–</td>
<td>2</td>
<td>semi-final</td>
</tr>
<tr>
<td>Drug Therapy Practice GGYHY6TAG1A</td>
<td>–</td>
<td>2</td>
<td>0</td>
<td>signature</td>
</tr>
<tr>
<td>Drug Therapy GGYHY6TAE1A</td>
<td>2</td>
<td>–</td>
<td>4</td>
<td>semi-final</td>
</tr>
<tr>
<td>Pharmacy Administration II. Practice GYEYGYSGZ2A</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Pharmacy Administration II. GYEYGYSGZE2A</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>final #</td>
</tr>
<tr>
<td>Pharmaceutical Care ** GYEYGYGYE1A</td>
<td>2</td>
<td>–</td>
<td>4</td>
<td>semi-final</td>
</tr>
<tr>
<td>Pharmaceutical Care Practice GYEYGYGYG1A</td>
<td>–</td>
<td>3</td>
<td>–</td>
<td>semi-final</td>
</tr>
<tr>
<td>Written Scientific Thesis (diploma work) II. GYXXXSZD_2A</td>
<td>–</td>
<td>6</td>
<td>0</td>
<td>signature</td>
</tr>
<tr>
<td>Faculative subject 1.</td>
<td>3</td>
<td>–</td>
<td>2</td>
<td>semi-final</td>
</tr>
<tr>
<td>Faculative subject 2.</td>
<td>3</td>
<td>–</td>
<td>2</td>
<td>semi-final</td>
</tr>
<tr>
<td>Faculative subject 3.</td>
<td>3</td>
<td>–</td>
<td>2</td>
<td>semi-final</td>
</tr>
</tbody>
</table>

** The new name of Clinical Pharmacy is Pharmaceutical Care

### 10th semester (16 weeks)

<table>
<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>
</tr>
<tr>
<td>Diploma Defence GYXXXDIVE1A</td>
<td></td>
<td></td>
<td>15</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 17, 2010 to July 9, 2010. 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 2, 2010 to September 24, 2010. 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 27, 2010 to December 17, 2010.
3. Examination Period (6 weeks) from December 20, 2010 to January 28, 2011.

Program in the 10th semester:
4. Second part of the practical training (4 months/640 hours) has to be done in a public pharmacy and in a hospital pharmacy (4 weeks at the same place) from January 31, 2011 to May 20, 2011.
5. The deadline of the defence of the diploma work is March 25, 2011.

IMPORTANT:
Pharmacy graduates are entitled to bear the title of doctor. The name of the degree is Doctor of Pharmacy (dr. pharm.)

LIST OF TEXTBOOKS

2. Z. Vincze: Pharmacy Administration. Lecture Administration.

Recommended textbooks:

PHARMACEUTICAL CARE
Faculty of Pharmacy
University Pharmacy Department o Pharmacy Administration
Director: Prof. Dr. Romána Zelkó
Tutor: Dr. Ágnes Mészáros

5th year term 1

Lectures
1. About clinical pharmacy
2. Pharmaceutical care
3. Individual therapy with magistral preparation
5. Clinical guidelines in the treatment of hypertension
6. Special conditions influencing drug therapy
7. Clinical bio-analytical analyses
8. Therapeutic drug monitoring, Pharmaco-genetics
9. Pediatrics
10. Total Parenteral Nutrition
11. Pharmaceutical care in asthma
12. Patient education in OTC products I.

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

BIOPHARMACY – PHARMACOKINETICS
Department of Pharmaceutics
Director: Prof. Dr. Imre Klebovich
Tutor: Prof. Dr. Sylvia Marton

First Semester

Lectures
Introduction into biopharmacy and pharmacokinetics. Terms and definitions.
Modeling the fate of drugs in the body (LADME and other models).
Transport processes and absorption mechanisms. Factors influencing the absorption.
Basic concepts and importance of the Biopharmaceutical Classification System.
Biopharmaceutical considerations of drug distribution and metabolism.
Bioanalytical methods.
Excretion and clearance of drug. The biological half-life.
Bioavailability and influencing factors.
Studies and regulations on bioequivalence.
Importance of food-drug interactions.
Compartmental and non-compartmental modeling.
Physiologically based pharmacokinetic models.
Pharmacokinetics of multiple dosing.
In vitro – in vivo correlation and relationship.
Pharmacokinetic and metabolism investigations during preclinical and clinical development.

Practice
Study on the distribution of salicylic acid in a three-phase system.
In vitro test for drug liberation from a patch system.
In vitro drug release from ointments with local effect.
In vitro dissolution profile of conventional and modified release nitrofurantoin containing preparations.
Determination of diclofenac sodium in synovial fluid samples.
Urinary excretion kinetics of aspirin.
Determination of theophylline plasma levels in beagle dogs after iv. administration.
Determination of theophylline plasma levels in beagle dogs after po. administration.
Calculation of bioavailability.
Computer modeling and analysis in pharmacokinetics.
Analyzing data to establish in vitro-in vivo correlation.

PHARMACEUTICAL ETHICS

Credit: 2

Lecturer: Prof. Dr. József Kovács

Syllabus (14 hours)

Course objectives:

a. To enable students to recognize ethical issues when encountered in everyday practice and research
b. To provide students with a conceptual-logical system, which helps them to address ethical questions and to resolve ethical dilemmas in an efficient way
c. To introduce students to a body of knowledge, which helps them to understand, respect and protect the rights of patients, research subjects and fellow health care professionals
d. To help the would be health care professional to understand the responsibility of the individual, of the health care system and of the society as a whole in maintaining health
1. week (Lecture)
Basic concepts of ethics.
Descriptive ethics, normative ethics, metaethics.
General ethics and applied ethics.
Bioethics, medical ethics, health care ethics. Similarities and differences.
The role of bioethics in a pluralistic society.
The relationship between law and ethics.
Reasoning in ethics. The most common mistakes.

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

3. week (Lecture)
Justice in Health Care .. Ethical questions of macro- and microallocation
Higher and lower level macroallocational problems.
The principles and practice of rationing in contemporary health care systems. (Soft and hard rationing.)
Medical ethics and medical economics. Ethical questions of cost-benefit and cost effectiveness analysis.
The problem of right to health care. (The libertarian, the liberal and the socialist views about the right to health care.)
The role of the market and that of the state in the health care system.
The concept of microallocation.
Ethical analysis of various selection criteria. (Medical benefit, psychological ability, supportive environment, social value criterion, resources required criterion, age, ability to pay, random selection, personal responsibility for the illness, etc.)

4. week (Lecture)
Informed consent and truth telling
Simple consent and paternalism in medicine.
The emergence of the doctrine of informed consent.
Standards for information disclosure for patients.
When is informed consent not necessary?
Standards of competence and incompetence.
The right to refuse medical treatment.
Some psychological and communicational aspects of informed consent.
The history of information disclosure to terminally ill patients.
Pros and cons for lying to terminally ill patients.
The weaknesses of the arguments in favour of lying.
The dying process according to E. Kübler-Ross.
How to communicate the bad news to terminally ill patients.
The physicians’s relationship with the relatives of the deceased patient.

5. week (Lecture)
Euthanasia and the withholding of life-sustaining treatment
Definitions.
The sanctity of life versus the quality of life doctrine.
Is there any difference between active and passive euthanasia?
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.
11. Objection to Transplantation of Organs and Counterarguments.
12. Ethical problems of live organ donation.
15. Stages of Dying.
17. Withdrawing and withholding life sustaining treatment.

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

Justification of an absence: Doctor’s certificate.

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

Grade: The result of the semi-final.

Sign up for the exam: Through the NEPTUN system.
Modifying of the exam date: Through the NEPTUN system.

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

Textbook:
SOCIOLOGY

(14 hours)

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

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

Course Faculty:
Zsuzsa Szántó, PhD, (Head of the Department of Sociology), 210-2930/56338; e-mail:
szanzsu@net.sote.hu
Katalin Kovács, PhD e-mail: 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:
2. Handouts for the lectures will be accessible on the homepage of the Institute of Behavioral Sciences:
www.magtud.sote.hu.
PHARMACY ADMINISTRATION
Faculty of Pharmacy
University Pharmacy Department of Pharmacy Administration
Director: Prof. Dr. Romána Zelkó
Tutor: Dr. Ágnes Mészáros

5th year term 1

Lectures
1. Dispensing in Pharmacy
2. Reimbursement systems
3. RCT and clinical trials
4. Evidence Based Pharmacy
5. Pharmacoconomics 1.
7. Quality of life analysis
8. Pharmaceutical research and development, Pharmaceutical industry
9. Good Manufacturing Practice (GMP), Good Laboratory Practice (GLP)
10. Good Documentation Systems, QC
11. Trends in the international drug markets
12. Marketing of pharmaceuticals

Practical lessons
1. Hospital Pharmacy Management
2. Micromedix, drug information
3. Publication strategies
4. Medline 1
5. Medline 2, IPA
6. Drug information, Micromedix
7. Presentation concerning health promotion
8. Internet in Pharmacy, computer skills
9. Quality criteria of economic evaluations
10. Critical decision making
11. Supply of OTC medicines
12. Consultation, assessment

BASIC DRUG THERAPY

Course Director: Prof. Dr. Éva Szökő
Tutor: Dr. Melinda Pálfí

Department of Pharmacodynamics

Lecture: 2
Practice: 2
Credit: 4
Exam: semi-final (oral)
First semester

Program:

Lectures:
Strategies of drug therapy. Evidence based medicine
Pharmacotherapy of heart failure
Pharmacotherapy of hypertension
Pain management
Cancer chemotherapy: colorectal and breast cancer
Allergic disorders, therapy of dermatitis
Drug therapy of rheumatoid arthritis, back pain and sport injuries
Treatment of inflammatory bowel diseases
Drug abuse
Contraception, drug therapy during pregnancy
Pharmacotherapy of osteoporosis
Treatment of urology disorders (incontinence, erectile dysfunction, benign prostate hyperplasia)

Seminars:
Chemotherapy of common respiratory and urinary tract infections
Therapy of ischemic heart disease and myocardial infarction
Drug therapy of venous disorders
Treatment of peptic ulcer disease and gastroesophageal reflux disease
Therapy of diarrhea, constipation and irritable bowel syndrome
Therapy of common skin disorders (acne, fungal skin infections)
Therapy of allergic rhinitis
Treatment of bronchial asthma and chronic obstructive pulmonary disease
Drug therapy of anxiety and sleeping disorders
Therapy of alcohol abuse
Treatment of nausea and vomiting
Therapy of neurological disorders (Parkinson’s disease and schizophrenia)

FACULTATIVE SUBJECTS

PHYTOCHEMISTRY
Institute of Pharmacognosy

The aim of this subject is to introduce the pharmacy students interested in crude drug researches and knowledges deeper into phytochemistry. It is a laboratory practice completed with some theoretical lectures. Learning this theses, the students obtain an expertness in the qualification and standardization of crude drugs and herbal remedies, as well as in discovery of biologically active substances from them, using different isolation methods and chromatographic (TLC, GC, HPLC) techniques, photometry or other equipment. They acquire the identification and characterization of the most important substances and attain the mode of the scientific research work in this field.
1 Investigation methods used in phytochemistry
   UV and IR spectroscopy in phytochemical analysis
2 Chromatography (TLC, PLC, HPLC, GC) in phytochemical analysis.
3 Type of active substances and their quantitative
determination in plant material
   Different methods and their comparing valuation for the
determination of flavonoid content.
4 Determination of tannin and procyanidin content,
determination of anthraglycoside content,
determination of total essential oil content.
5 Determination of alkaloid content, determination of bitter substance content.
6 Qualitative investigation and detection of active components
   TLC investigations of different glycosides and their aglycons.
7 GC investigation of essential oil components
8 Possibility of standardization of complex plant products
   Preparing (extraction, purification, etc.) of investigated samples
   dependent on different medicament forms.
9 Chemical analysis of tea mixtures, tea decocts, aqueous solutions
10 Chemical analysis of tinctures, aqueous alcoholic solution
11 Chemical analysis of oleaginous solutions, ointments
12 Consultation

INSTRUMENTAL PHARMACEUTICAL ANALYSIS
Institute of Pharmaceutical Chemistry

Chromatography
   Thin-layer chromatography (theory and practice)  4 hours
   Gas chromatography (theory and practice)         3 hours
   High pressure liquid chromatography (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 cardiotoic 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 occurance of rutin and diosmine.
4. The bitter principals.
   The appetiser preparations.
5. The essential oils.
   Procyanidine crude drugs and preparations.
6. The liver therapy (natural products and medical plants).
   Choloretics and cholagoges with plant origin.
7. Cholesterol level decreasing diets and others for diabetics.
   Slimming cures and their aims. Fat-reducing mechanism.
8. Plant sedatives, their effects and combinations.
   Natural products with stimulating and animating activity (stress).
9. Urological phytopreparations and some for prostatas diseases.
10. The Kneipp cures and their possibilities.
    Gerontology.
    Treatment of rheumatism.
    Immunstimulant medicinal plants.
13. Cure of cold with medicinal plant remedies, Phytopreparations.
    Plant compounds for the badly healing wounds.
14. Medical plant remedies in the family doctor’s activity.
    Importance of medicinal plants in pediatrics.
HEALTH INFORMATICS
Institute of Development and Higher Education in the field of Medical Informatics
Director: Dr. Elek Dinya
Tutor: Dr. Mariann Szabó Dinya

2 hours/week

THEMES
Statistics in drug development

1. Elements of SPSS program: interactive means, data matrix, windows
2. Command of Edit menu in the SPSS program: file menu, edit menu, view menu, data menu, transform menu, graphs menu, utilities menu, help menu
4. Deviation analysis: ANOVA methods (Student’s test, Fisher’s dissociation, one way and multiple-way ANOVA designs)
5. Regression analysis: correlation coefficient, one and multiple variable regression models, GLM models, logistic model
6. Taxonomy: clusters, factorial analysis
7. Final test: solution of data processing problem

BIOORGANIC CHEMISTRY
Institute of Organic Chemistry

Organic compounds are produced by nature in inexhaustible richness. One of the basic sources of therapeutically useful compounds is the molecular storage of the pharmacy of nature. Natural products are generally environment friendly. Their chemistry is in rapid development in our days, too. What are the most important steps of molecular evolution in the cosmos and on our Earth? What is the origin of the chirality of life? How can natural products be isolated from the sources? How can their structure be elucidated? How can the ingenious synthetic methods of nature be imitated in laboratory? How can the chirality of natural products be transferred to synthetic drug molecules? How can the complete base sequence of the human genom be determined? These are some questions of the many others, which are tried to be answered in the special collegium.

Programme
1. Isolation of natural products (e.g., iridioids, peptides).
3. Application of NMR spectroscopy for the stereostructure of organic micromolecules (e.g., alkaloids, iroidis).
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. Biomorphic transformation in the chemistry of iridoid compounds.
7. Chemistry of alkaloids derived from the coupling of biogenic amines (phenylethylamine and tryptamine) with secologanin.
8. Total synthesis of natural products (e.g., vitamin B12, gingkolide).
10. Total synthesis of saccharides, sasharides in total synthesis.
During the last two decades our knowledge on the behavior of metals and some nonmetals (e.g. boron, silicon, selenium) has widened considerably. As a result of this the cooperation between inorganic chemists, biochemists and biologists became most involved and a new multidisciplinary branch of natural sciences developed that is termed bioinorganic chemistry or inorganic biochemistry.

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

In order to understand all aspects of the material discussed in the course a brief summary is given on metal coordination compounds: on their stereochemistry, equilibria and kinetics. A rather fascinating problem is how certain metal ions have been selected during a long evolutionary process for biological purposes, and how the various metal containing systems developed due to the change of the geoenvironment.

The biosystems take up metals and non-metals from the geosphere. The entry of an element into the living system and its incorporation into a specific site of a biomolecule is a multistep process controlled both by thermodynamic and kinetic factors. This will be demonstrated on many examples including metal ions, anions, and neutral molecules.

In the following topics the roles of bioessential metals are dealt with. Many physiological phenomena are connected to the biochemistry of sodium, potassium, magnesium, and calcium, e.g. the conduction of nerve impulses, muscle contraction, and blood clotting.

Zinc metalloenzymes are most abundant in the living organism and catalyze a large number of hydrolitic and group transfer reactions. Iron, copper and molybdenum take part in many bioredox processes, and the former two metals also in the transport of molecular oxygen. Also, cobalt, manganese, chromium, nickel and vanadium have their roles in important biochemical processes.

Transition metals are needed to activate small molecules as CO2, N2 and O2. The biochemistry of the latter is an intriguing topic of bioinorganic chemistry. The deposition of certain solid inorganic compounds (CaCO3, Ca-phosphates, etc.) in the organism is under biological control and worth dealing with briefly.

Among the biomedical problems some metaldependent diseases (e.g. Wilson’s disease, Menkes’ disease) are touched upon. Much time will be devoted to metal complexes of antitumor activity and to those that are used in the treatment of rheumatoid artritis. Metal ion toxicity, an increasing hazard due to the contaminated environment, and chelate therapy are the topics that also deserve attention.

A look into the future closes the course.
BIOTECHNOLOGY
Department of Plant Anatomy (ELTE)

Topics
1. Introduction to biotechnology
   Historical evolution of biotechnology. Biotechnology as an interdisciplinary pursuit.
   Application of biotechnology. Substrates of biotechnology.
2. Applied genetics
   Selection and screening, Culture maintenance, Mutagenesis. Protoplast and cell fusion technologies.
3. Introduction to genetic engineering
   The emergence of recombinant DNA technology. Regulation and control of recombinant DNA experimentation. Basic recombinant DNA techniques. Restriction endonucleases and other DNA and RNA modification enzymes.
4. Gene cloning
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.
The number of registered organic compounds is well over 15 million. Innumerable basic reactions contact them. How can we find an order in this jungle of compounds and cavalcade of reactions? How can the reactions be oriented? How can they be used for synthesis of drugs and many other practically important compounds (polymers, dyestuffs, etc.)? How do energy changes direct organic reactions? How can we control the factors influencing them? Organic reactions take place in the interaction of atomic and molecular orbitals. These changes are the molecular base of life, too. Is it possible to get an insight into them by simple mathematical methods? All these questions concern physical organic chemistry, i.e. the study of organic reaction mechanism.

Programme
1. Systematics of organic reaction mechanism according to the notation system of IUPAC.
2. The basic concepts and applications of perturbational molecular orbital (PMO) method for interpretation of reaction mechanism.
3. Energetics or organic reactions.
4. Experimental methods for investigation of reaction mechanism.
5. Factors which influence the reaction (reagents, concentration, solvent, catalyst, temperature, etc.).
6. Analysis of the basic organic reaction types on selected examples.
7. Symmetry principles in organic reactions.
8. Orbital interactions as the molecular base of life processes.

COMPUTATIONAL CHEMISTRY AND QSAR METHODS
Institute of Organic Chemistry

1. Computational chemistry and molecular modeling: topics, scope and limits.
2. Quantum chemistry: basic principles and methods.
3. Molecular mechanics and dynamics.
5. Secondary interactions: molecular basis of receptor-ligand interactions.
6. QSAR methods: prediction of biological activity.
7. Applications and practice.
ENIRONMENT PROTECTION – ECOLOGY
Institute of Public Health

“... One of the fundamental human rights is to live in a healthy environment appropriate to the
dignity of man ... But the man is responsible for this environment not only to the contemporary
society but to the rising generations too...”
(Proclamation of the UNO conference on Environmental Protection, Stockholm, 16. June, 1972.)

Aim of the training:
Teaching of general and profession-orientated subjects of environment protection based on the
studies of human ecology and environmental hygiene/epidemiology, which are obligatory for all
students in the course of Hygiene and Epidemiology in the first semester of the fourth study-year.

PROGRAMME

A) General relations
   I Environmental conditions of living, Biosphere, Adaptation to the
      environment.
      Self regulating systems in (global and local) ecosystems. “Nourishment chains”
      (systems) – ability for maintaining.
      The “environment” as a unified system.
   II Regenerating and non-regenerating resources for the humans
      (thesis of the “Roman Club”).
      Influences of human activities on biogeochemical circulation.
      Anthropogenic pollution of the environment – indirect and direct dangers.
      Possibilities of protection: environment – spare technological procedures;
      biodegradability, technical development; waste materials: reduction of its
      quantity, reutilization, neutralization of toxic and radioactive materials.
   III Primary prevention of actual environmental damages,
      hygienic standardization.

B) Professional knowledge
   I Environmental pollution due to sanitary activities – prophylaxis, protection.
   II Environmental pollution due to pharmaceutical activities-prophylaxis,
      protection:
      a) production and preparation of drugs
         biotechnology,
         medical plants/drugs,
         basic and subsidiary materials of drugs,
         packaging materials,
         chemical medicaments,
         biological, immunological and microbiological products,
         plant protecting materials, insecticides, pesticides;
      b) distribution and utilization of drugs;
      c) scientific and laboratory activities.
Pharmaceutical Compounding
Department Of Pharmaceutics
Head: Prof. Dr. Imre Klebovich
Tutor: Dr. István Antal

Second semester

1 hour/week

The subject is recommended for the students interested in fields of traditional pharmaceutical compounding such as preparation of several dosage forms (solutions, eyedrops, ointments, suppositories, powders).

Topics:
Past and future of pharmaceutical compounding
Combined preparations for individual therapy
Pharmacopoeial aspects of compounded dosage forms.
Practical guidelines for traditional compounding (Formulae Normales)
Pharmaceutical substances, synonyms.
Dose calculations.
Functional excipients in the formulation.
Practical problems of incompatibilities in combined preparations.

PHARMACOINFORMATICS
Director: Dr. Elek Dinya

3 hours/ week

1. Aims:
   to present state of art computing and telecommunication techniques including the INTERNET and to illustrate how these techniques are applied in drug industry, pharmacies and clinical patent management.
   to discuss various data base and knowledge base management systems, health care information systems, decision support tools for pharmacotherapeutic problem solving, educational programs and telemedicine techniques as they are applied in drug research and development, and in evidence based pharmacotherapy
   to teach pharmacy students how to rely on informatics tools when making cost effective decisions and trying to improve patient compliance.

2. Organization of the course:
The course consists of lectures and practices. Lectures provide theoretical foundations as well as examples of the use of various technologies and methods in research and pharmacy practice. Practices allow students to work with different medical databases, information systems, and decision support tools that address various drug related problems.
<table>
<thead>
<tr>
<th>Lectures</th>
<th>References</th>
<th>Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. MEDICAL INFORMATICS AS A DISCIPLINE</td>
<td>HEALTH INFORMATICS IN THE 21st CENTURY by John Mantas, Document 506</td>
<td>2</td>
</tr>
<tr>
<td></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>TERMINING, CODING AND GROUPING SYSTEMS IN HEALTH by Rudiger Klär, Document 416</td>
<td>2</td>
</tr>
<tr>
<td></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>4. HEALTH CARE INFORMATION SYSTEMS</td>
<td>OPERATIONAL USES OF HOSPITAL INFORMATION SYSTEMS by Marie-Christine Jaulent, Document 405</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>ARCHITECTURES IN HEALTH by Sergio Torres, Jose Torres, Document 422</td>
<td></td>
</tr>
<tr>
<td>5. COMPUTER-BASED SUPPORT FOR PHARMACISTS (AN OVERVIEW)</td>
<td>EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990</td>
<td>2</td>
</tr>
<tr>
<td>6. REPRESENTING DRUG-RELATED KNOWLEDGE (classification of drugs, describing drug properties, drug information systems, examples)</td>
<td>EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990</td>
<td>2</td>
</tr>
<tr>
<td>7. HOSPITAL PHARMACY AND DRUG-USE MONITORING SYSTEMS (informatics of public and hospital pharmacies, patient education)</td>
<td>EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990</td>
<td>2</td>
</tr>
<tr>
<td>EVIDENCE-BASED DRUG THERAPY (pharmacoeconomics and outcome research planning therapeutic protocols)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. INFORMATICS OF DRUG PRESCRIPTION</td>
<td>EXPERT SYSTEMS AND ARTIFICIAL INTELLIGENCE IN HEALTH by Jana Ziarova, Jan Talmón Document 424 COMPUTER-AIDED DIAGNOSTIC SUPPORT by Ann Oostendorp, Document 408</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. COMPUTER SUPPORT FOR PLANNING DRUG THERAPY (Watchdog, focusing, critiquing, and advisory systems, patient-centred pharmacotherapy), PLANNING DRUG DOSAGE</td>
<td>EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Van Bemmel and M. Musen: Handbook of Medical Informatics, Springer, 197 (<a href="http://www.mihandbook.stanford.edu">www.mihandbook.stanford.edu</a>)</td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

**PRACTICES:**

<table>
<thead>
<tr>
<th>Practises</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) Resources of evidence based medicine (Cochrane library)</td>
<td>2</td>
</tr>
<tr>
<td>3. Analysis of dose response data in pharmacology (PROBIT analysis) Evaluation of clinical trial data (analysis of variance)</td>
<td>2</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
EXEMPTION

Exemption from examinations can be granted on the basis of the student’s previous documented studies and the additional examinations prescribed by the Departments of Semmelweis University. The student has to hand in all the documents (study programs, examination grades) at the Department concerned. The exemption is granted by the director of the Foreign Language Programs on the basis of the Department’s opinion.

*Application deadline:* October 1st – first semester
March 1st – second semester

No reduction of tuition fee is granted in case of exemptions.
DIPLOMA WORK (Thesis)

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

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

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

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

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

6. The deadline for submitting:
   The student must consult with the consultant at least three times:
   – first: by no later than 1 October in the final year – The consultant informs the student on the requirements and topic choices,
   – second: by no later than 15 November in the final year - The student reports on the work completed up until that point,
   – third: by no later than 1 January in the final year – the consultant evaluates the results of the student and gives advice on the finalization.
   The diploma work prepared has to be submitted at the department by 15 January in 2 copies.
   At the Faculty of Pharmacy the deadline of submission is March 1 in the year of graduation.
7. The diploma work must be handed over to a referee. The referee must be either an external expert holding a university (or college) degree or a university instructor invited by the head of the organizational unit. The referee and the supervisor will recommend a grade.

8. The diploma work (as part of the compulsory subjects) is evaluated on a five-scale grade. The extent of individual research will be taken into consideration. The defense of the diploma work takes place before a three-member committee of the given unit, the member are the head of the unit (or the deputy), the consultant and an instructor of the unit. The unit may invite an external instructor of the university as a third member.

In case of a fail, the head of the unit notifies the student and informs him or her about the possibilities of correction.

A failed diploma work may only be corrected once.

9. The head of the unit hands over a copy of the diploma work to the student after the defense and the other copy along with minutes of the defense will be kept by the unit. The diploma work will be kept at the library of the unit for a period of five years. The minutes will be sent to the Dean’s Office by 1 April at the latest.

10. The obligation of preparing a diploma work may be waived by the dean or the director upon the recommendation of the unit for the following students:

– who prepare a rector paper as one of a maximum of two authors and receive a first or second prize,

– who publish a first author paper in a scientific periodical.

The request must be submitted at the at the Dean’s Office by the end of the year before the final year. If the waiver is granted, the student still has to defend the paper.

11. The unit will return a copy of the successfully defended diploma work to the student. The other copy will be kept by the unit in accordance with effective archiving rules.

One of the two copies of filled-out minutes will be sent to Dean’s Office at least 60 days prior to the final exam period, while the other will be kept by the unit.

LEAVING CERTIFICATE

After completion of the obligatory practices (internships at the Faculty of Medicine), all the final and semi-final examinations and the successful defense of the diploma work, the students receive a “Leaving Certificate” (Absolutorium) in their lecture book validated by the Dean’s signature.

The Leaving Certificate is essential for the permission to take the General Board Examination.
GENERAL BOARD EXAMINATION – GBE
(Complex Final Examination)

1. The final examination includes (as defined by the qualification requirements):
   a) a written part
   b) an oral part
   c) a practical exam.
   The defense of the thesis is part of the final exam, but is evaluated and conducted separately.
2. The dean is obliged to specify at least two final exam periods annually. The final exam may only be taken in such periods.
3. The Final Examination Committee includes at least two members in addition to the head. The head and the two members are recognized external experts of the special field and university professors or associate professors. At least one member must an external professor. The head of the Committee and the members are appointed by the dean for one to three years with the approval of the Faculty Council.
4. The student must report for the final exam in the Dean’s Office no later than 60 days before the first day of the final exam period.
5. The Faculty Dean is responsible for organizing the final exam. The number of committees will be decided based on the number of students registering for the exam in a way that a committee should have a maximum of 6 students a day.
6. The students must be divided among committees randomly. The division may only be announced at the Faculty on the day of the exam in the common announcement method used at the Faculty.
7. The Final Examination Committee grades the exam subjects in a private discussion. The head of the committee announces the results after the completion of the final exam.
8. The final grade of the final exam will be based on the arithmetic average of the partial grades.
9. The result of the final exam is established by the committee and records the result in the lecture book of the student.
10. The final examination is passed if all subjects are passed.
11. In case any subject is failed, or a partial exam is given a fail, the student must retake the relevant failed part or subject only.
12. The final exam may only be retaken twice. A final exam may only be retaken in later final exam periods.
13. No credit is granted for passing the final exam.
14. If the final exam is passed over seven years past the obtaining of the final certificate, the prerequisite of the final exam is the successful completion of the final year of studies.
THE DIPLOMA (dr. med.; dr. med. dent.; dr. pharm.)

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

2. A condition of issuing the diploma as a Hungarian basic level state language exam type C (or an equivalent exam).

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

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

5. The Appendix of the diploma is the obligation of the relevant Dean’s Office.

6. 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 2010/2011 academic year

<table>
<thead>
<tr>
<th>Program</th>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>USD 8,000</td>
<td>USD 8,000</td>
</tr>
<tr>
<td>Dentistry</td>
<td>USD 8,000</td>
<td>USD 8,000</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>USD 5,800</td>
<td>USD 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):

Within two weeks after receipt of the Letter of Acceptance

<table>
<thead>
<tr>
<th>Program</th>
<th>Amount</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>USD 8,200</td>
<td>(USD 8,000 tuition fee + USD 200 registration fee payable once during the studies)</td>
</tr>
<tr>
<td>Dentistry</td>
<td>USD 8,200</td>
<td>(USD 8,000 tuition fee + USD 200 registration fee payable once during the studies)</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>USD 6,000</td>
<td>(USD 5,800 tuition fee + USD 200 registration fee payable once during the studies)</td>
</tr>
</tbody>
</table>

Before February 1

<table>
<thead>
<tr>
<th>Program</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>USD 8,000</td>
</tr>
<tr>
<td>Dentistry</td>
<td>USD 8,000</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>USD 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, 2010.

Dentistry students pay additional material fee:
years 3, 4 & 5: USD 3,200
(first semester: USD 1,600
second semester: USD 1,600)

Please note that this fee is subject to change!

Transfer students pay the highest tuition fee in force in the actual academic year and pay the same sum during their studies.
Application fee for transfer students: USD 250

Bank account:
IS International Studies
IBAN: HU12-10300002-10476764-40120020
MKB Bank
All faculties:
Compulsory summer practice when at Semmelweis University: USD 330/month.
At the Faculty of Dentistry: HUF 31,000/week

Refund Policy of the First Academic Year
1. Prior to registration at the university
   Refundable: 100% of payment except for the deposit
2. After registration at the university
   a. Students are not entitled to a refund of the tuition fee if they are compelled to withdraw
      for academic/disciplinary/personal reasons or have been accepted/transferred by another
      institute of higher education.
      Failure to meet the academic/disciplinary requirements includes suspension, dismissal or
      absences from lectures or practices for more than 25% of a subject’s number of hours
      per semester.
   b. Students are entitled to a refund only on a pro rata basis if studies are interrupted due to
      a sound reason (eg. the death of parents/guardians or due to a requirement to fulfill a
      military service obligation). The refund is applicable from the first day of the month
      following report of the above mentioned conditions with accompanying official certificates.
      No other claims are acceptable.

STUDENT SERVICES CENTER
College International
Mail: H-1406 Budapest 76,
P.O. Box 51, Hungary
Address: H-1071 Budapest, VII.
Bethlen Gábor tér 2., Hungary
Phone: (36-1) 413-3015
Fax: (36-1) 413-3030
E-mail: info@studyhungary.hu
Home Page: http://www.studyhungary.hu

RESIDENCE VISA, RESIDENCE PERMIT,
ENTRY FOR A LONG STAY

For citizens of the European Economic Area countries
(EU + Norway, Iceland, Lichtenstein)

Citizens of the above states are not required to obtain a residence visa in order to enter Hungary
for the purpose of studies. They will, however, be required to apply for a residence permit at least
fifteen days prior to the expiry of the first 90-day period. Students coming from the above
states are not obliged to report the address of their place of residence on arrival. It will have to be
done when they apply for the registration certificate.
List of the necessary documents that are needed:
- school certificate in Hungarian
- form for issuing Registration Certificate and Reporting Accommodation
- lease contract of the apartment - bérleti szerzodés (original, written in Hungarian and signed by two witnesses)
- bank account statement about approx. 700-800 EUR or receipts about changing Hungarian Forints
- official bill stamps for 1000 Forints (‘okmánybélyeg’ 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 Sztregova street)
From Móricz Zsigmond tér, bus No.33 or No.33/A 5th bus stop-Hengermalom utca.

OPENING HOURS OF THE IMMIGRATION OFFICE
(residence permit application)
MONDAY: 830 – 1300
TUESDAY: 1300 – 1800
WEDNESDAY: 830 – 1200
THURSDAY: 830 – 1300
FRIDAY: 830 – 1200

Entry for Long Stay (exceeding 90 days)

Foreign nationals wishing to pursue studies in Hungary are required to apply for entry for a long stay (exceeding 90 days) for the purpose of studies in their home countries and enter the country on the entry permit issued by the Hungarian Embassy or Consulate (you can find the list of Hungarian embassies and consulates at the following web-site: http://www.mfa.gov.hu).

The entry permit is valid for a single entry and up to 30 days of stay in Hungary. Within ONE MONTH upon arrival, you will have to register your address and submit your application for the residence permit to the Immigration Office in Budapest.

The following documents are required for the application for the entry permit:
- A wholly and legibly completed Application for residence permit for the purpose of studies (you can obtain an application form from the Hungarian embassy in your country or download it from the internet at http://www.mfa.gov.hu)
• a valid passport (valid for at least eighteen months at the time of submitting the application)
• two passport size color photos (not older than six months)
• Letter of Acceptance from the University
• proof of payment of the tuition fee
• proof of financial means ensuring livelihood in Hungary (bank statement about the balance of your credit card, cash, or a declaration by the parents that they will provide the funds for all your expenses in Hungary)
• an application fee of EUR 60
• the Hungarian Embassy may ask for your flight reservation and air ticket
• the address of your residence in Hungary (you should write the address of Hotel Római, Budapest 1039, Szent János u. 16.) 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

1. Students may apply for a reduction after completing the first academic year if, from the end of the second semester, all their semester average (the average of the grades) results were continuously above 4.51. The reduction is 10% of the tuition fee with average results above 4.51 and 15% with average result of 5.00.

Students may apply for a reduction after completing each semester on condition they meet the above requirements, and in case they have completed all the obligatory semester subjects.

No reduction is given in case of exemption from one or more subjects.
No reduction is given during retaken semesters on account of subjects already completed.

Students eligible for the tuition fee reduction pay with 10-15% reduced tuition fee in the next semester.

Application deadlines: October 15th – first semester
March 1st – second semester

2. Students taking either one normal/“FM” course or one exam (“CV” exam) in a semester pay 50% of their semester tuition fee.

3. Tuition fee for the 6th year:
   a. In case the student completes more than the compulsory 6 weeks of clinical rotations at Semmelweis University, he/she has to pay 100% of the tuition fee valid in that academic year.
   b. In case the student completes the 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, 2010. Otherwise the student is not entitled for the reduction!
   Please write a letter of request addressed to the Academic Program Director when applying for the 20% reduction!

No requests in any of the above matters will be accepted after graduation!
THE WORDS OF THE SOLEMN VOW AT REGISTRATION

"I, .................................. promise solemnly that I will respect the Constitution and laws of the Hungarian Republic. I promise that I shall abide by the regulations of SEMMELWEIS University. I promise solemnly that I will respect the professors and teachers of the University and that my conduct will be in keeping with the honor of my profession. I will keep the secrets of the patients that I learn about in the course of my studies. I will pursue my studies with full sense of responsibility to prepare myself to the best of my abilities for all my duties and obligations in my profession so as to be able to serve with my knowledge, the progress of mankind."

THE WORDS OF OATH AT GRADUATION

Faculty of Medicine and Dentistry

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


THE WORDS OF OATH AT GRADUATION

Faculty of Pharmacy

I, .................................................. swear that in virtue of my acquired knowledge of pharmaceutical sciences, I shall do my professional duty with the utmost diligence, and I shall always behave worthy of my profession. I shall place before all things the care for and the healing of my patients. I shall not reveal any data concerning the health status or the medication of my patients. I shall maintain my theoretical and practical knowledge at a high level. I shall never use my knowledge for activities that are contrary to the ethical code of pharmacists. As a participant in the activity of healing, I shall use my knowledge only for the defense and restitution of health to my fellow humans. I shall do my best to promote the science of pharmacy and keep the good name of the Semmelweis University.
HOW TO GET A CERTIFICATE WHICH PROVES THAT THE DIPLOMA ISSUED BY SEMMELWEIS UNIVERSITY IS IN CONFORMITY WITH THE EU REQUIREMENTS, AND A CERTIFICATE OF GOOD STANDING

Applicants have to write a letter of request to one of the following email addresses:

- ekh.titk@eekh.hu (secretariat)
- kutasi.annamaria@eekh.hu (Dr. Kutasi Annamária)
- rikker.nandor@eekh.hu (Dr. Rikker Nándor)

Mail address:
Egészségügyi Engedélyezési és Közigazgatási Hivatal
Dr. András Zsigmond
Zrínyi u. 3
second floor, room no. 205
H-1051 Budapest, Hungary

Telephone: 36-1-235-7922 (Dr. Kutasi Annamária)
36-1-235-7927 (Dr. Rikker Nándor)
Fax: 36-1-269-3794

In person:
Egészségügyi Engedélyezési és Közigazgatási Hivatal
Budapest, district 5, Zrínyi u. 3
second floor, room no. 205
Office hours: Tuesday, Thursday 9-11 a.m. and 1-3 p.m.

The following documents are required:
1. a letter of request addressed to Dr. András Zsigmond, signed by the applicant; this letter should contain the personal data (name, date and place of birth, mother’s name) and the permanent address where the applicant would like the certificate to be sent
2. to the letter the applicant has to attach a copy of the diploma
3. and a copy of the passport

The price is 18.375,- HUF per each certificate. (This fee is subject to change.)

Transfer of the payment from Hungary to the bank account number of the office:
10032000-00285788

Transfer of the payment from abroad:
Egészségügyi Engedélyezési és Közigazgatási Hivatal
Swift code: MANEHUHB
IBAN number: HU28 1003 2000 0028 5788 0000 0000
Bank: Magyar Nemzeti Bank

Important note: Applicants who have graduated at the Faculties of Medicine, Dentistry and Pharmacy since September 1, 1986 may apply for the certificate!
EXTRA CURRICULAR FEES

1. First retake of a semi-final or final examination free
   second and third retakes 2,000 HUF
2. Retake of an examination to improve the mark at the
   student’s request 1,500 HUF
3. Retake of the General Board Examination (each part of the GBE)
   (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 under the next title “Important”
   b) failing to apply for a diploma work thesis until the deadline 800 HUF
   c) failing to report the compulsory elective subject 800 HUF
5. Failing to fulfill the obligations listed under point 4.b and 4.c after the first notice 2,000 HUF
6. Failing to sign up for subjects/courses in the Neptun System until the beginning of the semester 2,000 HUF/subject
7. Failing to report any change in data registered in the Neptun System 5,000 HUF
8. Copy of the diploma (per number of copies and languages) 4,000 HUF/each
9. Copy of the lecture book (index) 10,000 HUF
10. Official transcript 2,000 HUF/each (the old type: 500 HUF/page)
11. Failing to keep any deadlines: 5,000 HUF
Important

Registration requirements

Please note that the date of registration for the first semester is between **August 30 - September 3, 2010** and for the second semester is between **24–28 January, 2011**. 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 **10 September, 2010 and 4 February, 2011** 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 **3 September, 2010 and 28 January, 2011**, 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)**
   - 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

2. **Diploma supplement**
   - first copy: 4,000 HUF/each

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 (FAQ-s)

Registration requirements: completed index, summer practice certificate, payment certificate (when paying in cash at College International)

Tuition fee: Students who drop a semester keep their original tuition fee. Transfer students pay the highest tuition fee in force in the actual academic year. Students taking only one course or exam in a semester pay 50% of their semester tuition fee.

Reduction of tuition fee:
– Note: the average of grades is calculated (cumulated average does not count)
– average continuously above 4.51 from the end of the second semester of the first year
– students may apply for it after completing the first academic year
– students who complete all the obligatory subjects and have no exemptions from them (except Physical Education) may apply for the reduction.

Application deadlines: October 15th (1st semester), March 1st (2nd semester)

Transfer is only allowed to the 3rd or 4th year of Semmelweis University from the same faculty of another university following the accomplishment of the theoretical (basic) or the pre-clinical module respectively. The request must be submitted by 15 July in each year to the Dean’s Office of the Faculty (English Secretariat).

Exemption from a subject may be granted on the basis of the student’s previous documented studies. The student shall submit all required documents at the department concerned. Please note that the student has to pass the exam made up from the concerned subject material before getting the exemption. The exemption is granted by the director of the Foreign Language Program on the basis of the department’s opinion.

Application deadlines: October 1st (1st semester), March 1st (2nd semester)

Obligation to register: prior to the start of the semester the student is obliged to register for continuing his/her studies through the Neptun System. The student is entitled to cancel his/ her registration (made under Article 40 Section 3 of the Act on Higher Education) during the month, following the beginning of the term. In case the student doesn’t request the suspension of his/her studies by this deadline, his/her semester is considered active, even if he/she fails to participate in any class or fulfill any requirements.

Please be careful because not having min. the 50% of the credits possible after the 4th active semester causes dismissal from the University. (Article 9/1)
Frequently Asked Questions (FAQ-s)

The student must be fully aware of the Examination and Studies Regulations of Semmelweis University.

Article 1, point 3: Knowledge of the content of the Regulations and compliance with them is obligatory for all educators, researchers, students and administrators participating in education directly or indirectly.

Article 7, point 3: By registering the student declares that he or she is aware of the relevant rules of the University and Faculty and will comply with these.

- How do I calculate my average?
  The semester’s cumulated average is calculated from the grades and the credit points belonging to each subject. The number of credits (to which the grade belongs) is multiplied by the grade, in every subject, then, the amount derived so is divided by the sum of the credits and the grades of the given subject. The cumulated average of the grades and credits give the result of the academic year. When applying for a tuition reduction, the average is calculated only from the grades, without taking into account the credits. The normal average of grades shows whether there is a possibility to request a tuition reduction. The students’ average must be above 4,51 to get 10% tuition reduction, and excellent (5) to get 15% tuition reduction.

- What is the process of submitting the medical certificate?
  Medical certificates: must be submitted to the competent department no later than by the end of the 3rd working day, following the date of the missed exam. The medical certificate must be filled out in English or Hungarian, bear the doctor’s signature and an official stamp. No medical certificate will be accepted, if written in other languages and/or without an official stamp.
  The department shall decide whether the medical certificate is acceptable. If the department rejects the medical certificate, or the student doesn’t appear personally to justify his/her absence, the note: „didn’t attend” = “nem jelent meg” will be entered into the student’s lecture book and the Neptun system as well. This also applies in case the student fails to submit the medical certificate during the 3 working days following the missed exam.
  Registering for, but failing to attend an exam shall result in forfeiting 1 exam opportunity, just like the student would have failed the exam (in this case without the opportunity to retake the exam).
  The only difference is that in case the student does not attend the exam, he/she is not allowed to try to take his/her first exam in the extension period, since this period is exclusively upheld for retaking failed exams.

- Should I go to the department when applying for an exemption?
  Yes, except in case of Physical Education. Physical Education medical certificates must be submitted to the English Secretariat by October 1, (1st semester), March 1 (2nd semester) in each year, along with a letter in which you describe your problem in a few words and apply for a permission to be exempted from the subject. The request letter must be addressed to the English Secretariat.
  In other subjects, first, you have to see the English Secretariat, where you’ll get a blank exemption form, which must be filled out and stamped by the competent department. Then, you must see the competent department with the form and the certificate of your previous
studies, which will be reconsidered when granting an exemption from the subject. At the department you need to get your exemption form signed and stamped. Important: the teacher must indicate the offered grade on the form. After having the form filled and stamped, you have to return it to the English Secretariat, where it will be processed. In case it is ok, the registrar will enter the given grade into the Neptun and will indicate it in your lecture book too. Having completed the above, you have no further obligations relevant to the particular subject. Transfer students admitted from another Hungarian Medical University must note that the credits for a subject they have completed at the other university, and Semmelweis University grants exemption with a grade for that, the credits can be acknowledged just once: either the credits from the other university or the credits granted by SU.

• **Should I go to the teacher to get my index book signed, if I got exemption in the subject?**
  No, but you must submit the filled out exemption form to the English Secretariat. (In some subjects the departments send to the Secretariat the list of students who got exemption in the subject, but it is your responsibility to make sure whether you are supposed to submit the document or the list is sent to the Secretariat by the department.)

• **How shall I register for the next semester?**
  Please see Article 7, Point 5

• **What shall I do if I failed my first retake attempt?**
  First, please read 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 trail in other subjects and cannot be granted a “special permission” for a 5th opportunity.
Please count carefully your remaining exam opportunities! For example if you use 2 exam opportunities in Chemistry in the 1st semester (1 exam and 1 retake), you will only have 1 remaining opportunity for a retake in the following semester (plus the one extra 4th chance, in case you hadn’t used it up in the same year in another subject.

- **How do I order a check for my 3 or 4 exam in the given semester?**
  First please read page 416. in the Calendar, where you’ll find the different extracurricular fees. Log on your Neptun, go to „Finances”, choose „Payment”, then „Transcribe item”. Choose „Retake exam”, choose „Semester” then the relevant subject from the list and finally click on „Create item”. Please visit the English Secretariat to pick up your check. The check must be paid at the Post Office, the retained part of the check is to be shown prior to the exam on site.

- **Where can I get blank forms for my summer practice?**
  Please visit www.sote.hu/ Semmelweis English Language Program/ Downloads

- **What should I do when applying for summer practice at a Semmelweis department?**
  Students wishing to complete their summer practice at a Semmelweis institution or clinic should make preparations for the practice during the 2nd semester at the chosen Semmelweis department.
  A signed, stamped acceptance letter must be procured from the department, which ensures the place of the student for the 4 weeks of the practice. The current cost of the practice - if spent at Semmelweis University - is USD 330, the HUF equivalent of which has to be transferred to the bank account of the relevant department (in case the department does not have a separate bank account, the sum must be wired to the main account of Semmelweis University.) The institution or clinic may request that the student submit a certificate of school attendance, which the student must obtain from the English Secretariat.

- **How can I log on to www.sote.hu and www.isas.hu?**
  In both cases you have to use your Neptun code, as login name and as your password!

- **What sum should I transfer (wire) in order to avoid tuition deficiency?**
  During the past academic years we faced difficulties, because some students have compiled deficiencies in the amount of tuition transferred.
  Please note that the tuition transfer must be made in the name of the student! (The College International cannot identify someone’s grandmother’s name, if the sum has been transferred by her. In such cases our records will indicate that the student has tuition deficiency, which can cause various problems upon starting the semester)
  Please also take into consideration that a transfer fee is usually applied if sending money by bank transfer. When transferring the exact amount of the tuition fee, the transfer fee might be deducted from that amount, rendering your tuition fee deficient. Accordingly, please contact your home bank prior to transferring the tuition fee to find out whether the bank deducts a transfer fee from the transferred amount. If yes, please pay the transfer fee apart from the tuition fee, because it is the student’s liability.
  **Note:** In case you transfer your tuition fee mistakenly to the old bank account number, you are obliged to ask the bank (MKB) in writing to transfer it to the right actual one.
ERASMUS Program
The aim of Erasmus student exchange program is to encourage and support academic mobility of higher education students within the European Union.
Contact information at Semmelweis University:
Mr. András Deák
Erasmus Institutional Coordinator
1085 Budapest, VIII., Üllői út 26. (2nd floor, room no. 202)
Tel: 459-1491, 459-1500 (55826, 55828 university extensions)
Fax: 459-1588; 55829
E-mail: semerasmus@yahoo.com

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 13 departments, with about 200 highly-qualified lecturers and more than 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 six years ago. Until then, teaching had been done in three different places, but from the beginning of 2004 on, all educational and organizational units of the Faculty can be found in one place, in the building of the former Pajor Sanatorium at 17 Vas street.

Our latest development was the introduction of courses in English (Physiotherapy and Nursing).
Government, Dean’s Office, Staff

Address: H-1088 Budapest, 17 Vas Street
Phone: +36-1 486-5910
Fax: +36-1 486-5913
E-mail: student@se-etk.hu
Home Page: http://www.se-etk.hu

Dean of the Faculty: Prof. Judit Mészáros, Ph.D.
Vice Deans:
- Prof. István Vingender Ph.D. – Educational Affairs
- Prof. István Szabolcs, M.D., Ph.D., D.Sc. – Scientific Affairs

Directors of the Programmes in English
- Assoc. Prof. Margit Opricsné Orbán
- Prof. István Vingender Ph.D.

Dean’s Office
Head of the Office: Ms. Marianna Kakuk
phone: +36-1 486-5912 e-mail: kakuk.m@se-etk.hu

Mr. Péter Diószegi, principal contributor – Educational Affairs
phone: +36-1 486-5829 dioszegip@se-etk.hu

Dr. Eszter, Takács, secretary
phone: +36-1 486-5910 takacse@se-etk.hu

Ms. Éva Heberling, marketing assistant – Publications
phone: +36-1 486-5822 heberlinge@se-etk.hu

Foreign Students Secretariat
Ms. Mónika Becskei – Coordinator of the English Programme
phone: +36-1 486-5916 becskei.monika@se-etk.hu

Ms. Edit Kármán, registrar, substitute English Programme coordinator
phone: +36-1 486-5909 karmane@se-etk.hu

DEPARTMENTS

INSTITUTE OF APPLIED HEALTH SCIENCES

Department of Nursing
Head of Department: Assoc. Prof. Zoltán Balogh, Ph.D.
Phone: +36-1 486-5930, Fax: +36-1 486-5931
Dr. Zoltán Balogh
Phone: +36-1 486-5929 baloghz@se-etk.hu

Division of Midwifery
Phone: +36-1 486-5930, Fax: +36-1 486-5931
Dr. Zoltán Balogh
Phone: +36-1 486-5929 baloghz@se-etk.hu
Division of Clinical Simulation
Dr. Zoltán Balogh
Phone: +36-1 486-5930, Fax: +36-1 486-5931
baloghz@se-etk.hu

Department of Physiotherapy
Head of Department: Assoc. Prof. Mónika Horváth, Ph.D.
Zsuzsanna Gerencsér
Phone: +36-1 486-5980, Fax: +36-1 486-5981
gerencserzs@se-etk.hu

Division of Physical Education
Head of Division: Assoc. Prof. Gábor Soós
Virág Labanné Csík
Phone: +36-1 486-5850, Fax: +36-1 486-5851
csikv@se-etk.hu

Department of Dietetics and Nutrition Sciences
Head of Department: Prof. István Szabolcs, M.D., Ph.D., D.Sc.
Timea Tóth
Phone: +36-1 486-4820, Fax: +36-1 486-4830
tothtimea@se-etk.hu

Department of Oxiology and Emergency Care
Head of Department: Prof. Tibor Gondos, M.D.
Dr. István Hornyák
Phone: +36-1 486-5840, Fax: +36-1 486-5841
hornyaki@se-etk.hu

INSTITUTE FOR HEALTH PROMOTION AND CLINICAL METHODOLOGY
Head of Institute: Prof. Gyula Domján, M.D., Ph.D.

Department of Family Care Methodology
Head of Department: Prof. Antal Czinner M.D., Ph.D.
Prof. Antal Czinner
Phone: +36-1 486-4840, Fax: +36-1 486-4845
czinner@se-etk.hu

Department of Epidemiology
Head of Department: Prof. Gyula Domján, M.D., Ph.D.
Dr. István Barcs
Phone: +36-1 486-4853, Fax: +36-1 486-4860
i.barcs@se-etk.hu

Department of Clinical Studies
Head of Department: Prof. Sándor Hollós, M.D., Ph.D.
Gabriella Vargáné Mincza
Phone: +36-1 486-5970, Fax: +36-1 486-5971
minczag@se-etk.hu

INSTITUTE OF HEALTH CARE DIAGNOSTICS
Department of Clinical Ophthalmology
Head of Department: Prof. Zoltán Zsolt Nagy M.D., Ph.D., D.Sc.
Kata Réz
Phone: +36-1 486-5855, Fax: +36-1 486-5858
kata_rez@se-etk.hu
Department of Medical Instrumentation and Imaging
Head of Department: Dr. Zsolt Öreg
Phone: +36-1 486-5963, Fax: +36-1 486-5963 oregzs@se-etk.hu

INSTITUTE FOR BASIC HEALTH SCIENCES

Department of Applied Psychology
Head of Department: Assoc. Prof. Mária Hoyer PhD.
Phone: +36-1 486-5935, Fax: +36-1 486-5931
Melinda Homok Rados Phone: +36-1 486-5933 homokrm@se-etk.hu

Division of Applied Pedagogy
Dr. Timea Tóth Phone: +36-1 486-5929 totht@se-etk.hu

Department of Addictology
Head of Department: Prof. József Rácz M.D., Ph.D., D.Sc.
Phone: +36-1 486-5820, Fax: +36-1 486-5820
Éva Nagy Phone: +36-30 370-0039 nagyeva@se-etk.hu

Department of Morphology and Physiology
Head of Department: Assoc. Prof. Veronika Polgár, M.D.
Phone: +36-1 486-4870, Fax: +36-1 486-4885
Kiss Judit Phone: +36-1 486-4874 kissj@se-etk.hu

Department of Social Sciences
Head of Department: Prof. István Vingender, Ph.D.
Phone: +36-1 486-5810, Fax: +36-1 486-5812
Attila Dobos Phone: +36-1 486-5813 dobosa@se-etk.hu

Department of Foreign Languages and Communication
Head of Department: Assoc. Prof. Margit Öpücsné Orbán
Phone: +36-1 486-4890, Fax: +36-1 486-4895
Annamária Marthy Phone: +36-1 486-4892 marthya@se-etk.hu
## SCHEDULE FOR THE ACADEMIC YEAR 2010/2011

### Autumn semester

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration for the 1st year students</td>
<td>August 30, 2010</td>
</tr>
<tr>
<td>Registration for 2nd, 3rd and 4th year students</td>
<td>September 1, 2010</td>
</tr>
<tr>
<td>Opening Ceremony</td>
<td>September 5, 2010</td>
</tr>
<tr>
<td>First day of the term</td>
<td>September 6, 2010</td>
</tr>
<tr>
<td>Last day of the term</td>
<td>December 10, 2010</td>
</tr>
<tr>
<td>Examination period</td>
<td>December 13, 2010 – January 21, 2011</td>
</tr>
<tr>
<td>Extension period (only for re-examination)</td>
<td>January 24 – January 28, 2011</td>
</tr>
<tr>
<td>Announcement of continuing studies in the next semester</td>
<td>January 28, 2011</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final examination period</td>
<td></td>
</tr>
<tr>
<td>Practical and Written parts</td>
<td>October 11 – 15, 2010</td>
</tr>
<tr>
<td>Oral part</td>
<td>October 18 – 29, 2010</td>
</tr>
<tr>
<td>National/Public holidays</td>
<td>November 1, 2010</td>
</tr>
</tbody>
</table>

### Spring semester

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>January 28, 2011</td>
</tr>
<tr>
<td>First day of the term</td>
<td>February 7, 2011</td>
</tr>
<tr>
<td>Last day of the term</td>
<td>May 20, 2011</td>
</tr>
<tr>
<td>Spring holiday</td>
<td>April 18 – April 22, 2011</td>
</tr>
<tr>
<td>Examination period</td>
<td>March 28 – May 6, 2011</td>
</tr>
<tr>
<td>Examination period (only for re-examination)</td>
<td>May 9 – May 13, 2011</td>
</tr>
<tr>
<td>Final examination period (June)</td>
<td>May 16 – 27, 2011</td>
</tr>
<tr>
<td>Practical and Written parts</td>
<td>May 30 – June 10, 2011</td>
</tr>
<tr>
<td>Oral part</td>
<td></td>
</tr>
<tr>
<td>National/Public holidays</td>
<td>March 15, 2011</td>
</tr>
<tr>
<td></td>
<td>April 25, 2011 (Easter Monday)</td>
</tr>
<tr>
<td></td>
<td>June 13, 2011 (Whit Monday)</td>
</tr>
</tbody>
</table>
Most important deadlines for students

Giving back the index book at the Foreign Students Secretariat
- Autumn semester: Jan 28, 2011
- Spring semester: Jul 8, 2011

Announcement of continuing studies
- Autumn semester: Jul 9, 2010
- Spring semester: Jan 28, 2011

Announcement of continuing studies after deadline with paying a default charge
- Autumn semester: Sept 3, 2010
- Spring semester: Feb 4, 2011

Withdrawal of announcement of continuing studies
- within a month after the beginning of the term
  - Autumn semester: Oct 6, 2010
  - Spring semester: Mar 4, 2011

Signing up for courses/subjects
- until the end of the exam period of the previous semester
  - Autumn semester: Jul 9, 2010
  - Spring semester: Jan 28, 2011

Changing of courses/subjects
- till the end of the zero week
  - Autumn semester: Sept 3, 2010
  - Spring semester: Feb 4, 2011

Taking the index book for the examination period from the Foreign Students Secretariat
- earliest
  - Autumn semester: Dec 8, 2010
  - Spring semester: May 18, 2011

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 22 - Dec 10, 2010
  - Spring semester: May 2 - May 20, 2011

Getting a signature in the index after term time
- till the end of the 2nd week of the exam period
  - Autumn semester: Dec 23, 2010
  - Spring semester: Jun 3, 2011

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 in October Aug 12, 2010
Handing in requests to the Credit Committee for subjects in the autumn semester of 2010/11 Jul 9, 2010
for subjects in the spring semester of 2010/11 Jan 14, 2011
Handing in requests about paying the tuition fee for the autumn semester of 2010/11 Jul 9, 2010
for the spring semester of 2010/11 Jan 21, 2011
Handing in requests about passive semester posteriorly to the Study Committee Autumn semester: Dec 10, 2010
Spring semester: May 20, 2011
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 the payment of the tuition fee (for 2010/2011/1: August 30 for first year students; September 01, 2010 for everyone else / for 2010/2011/2: January 28, 2011) have to pay a default charge, which is the counter value of USD 100 in HUF.

No payment which arrives after September 08, 2010 / February 4, 2011 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>Service</th>
<th>Fee in HUF</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 charge 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 (in English), Physiotherapist  
   (in English), 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 will be able to participate with full  
responsibility, at all levels of social care, in the work related to prevention, medication, nursing  
care and rehabilitation – 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 (Bachelor of Science)

**NURSE**

**Graduates in the specialist Nursing Programme** acquire theoretical and practical knowledge  
which enables them to  
– discover the special needs of patients (persons taken care of),  
– set up nursing diagnoses and to fulfill tasks on the basis of priority,  
– cooperate in planning, developing and arranging healthcare and social services,  
– select and apply nursing models,  
– find and use information and resources needed for completing the nursing process.  
They use their knowledge and skills as required by the nursing protocol.  
In their nursing and patient-care work they pay considerable attention to different cultural features  
of patients, their human dignity and rights and make decisions and act accordingly.

**Length and features of field practice, credit value**  
Candidates take part in a total of 137.3 hours of practice during their training (in the  
demonstration rooms of the university and extramurally in special fields of practice), the value of  
which is 62 credits.
Theoretical material in the various special subjects is complemented by several weeks’ guided clinical nursing practice in each semester. Students use their acquired theoretical knowledge in clinics and hospitals with the guidance of physicians, specialists, graduates with BSc and MSc degrees in nursing, instructors, health educators and practice leaders. At the end of the practice their performance is evaluated.

Qualification
Nurse

Job opportunities
primary care
- out-patient clinic network
- in-patient care
- visitor of surgeries, chemists and hospitals
- transplantation coordinator
- clinics
- hospitals

PHYSIOTHERAPIST

Graduates in the specialist Physiotherapist Programme acquire theoretical and practical knowledge which enables them to perform physiotherapy activities independently on the basis of medical diagnosis in the field of prevention, medical treatment and rehabilitation: register and document the musculoskeletal status; make plans for physiotherapy and rehabilitation, implement rehabilitation programmes in various clinical areas; apply therapeutic procedures in the treatment of musculoskeletal diseases (rheumatology, orthopedics, traumatology); apply curative and preventive procedures in the treatment of cardiorespiratory diseases; apply curative procedures in the treatment of neurological diseases; apply physiotherapy in other clinical areas such as paediatrics oncology, psychiatry, obstetrics, gynaecology and general surgery.

Length and features of field practice, credit value
Candidates take part in 3030 hours of practice in the training rooms of the university, as well as 1140 hours of extramural demonstration and continuous field practice, the value of which is 139 credits altogether.

The theoretical material of the various special subjects (orthopaedy, rheumatology, traumatology, paediatrics, neurology, cardiorespiratory physiotherapy) is complemented by several weeks’ guided demonstration practice in each semester, and by continuous field practice in semester 8. Students practice their acquired theoretical knowledge in clinics and hospitals under the guidance of physicians, specialists and physiotherapists as practice leaders. At the end of the practice their performance is evaluated.

Qualification
Physiotherapist

Job opportunities
hospitals, clinics (intensive care, acute and subacute units)
- out-patient clinics
- rehabilitation centres
- nursing and social institutions
- primary and home care
MIDWIFE

Graduates in the specialist Midwife Programme acquire theoretical and practical knowledge which enables them to:
- conduct the delivery on their own, to look after the newborn child after the delivery,
- monitor and care for mother and newborn child in childbed,
- perform tasks of prenatal care,
- care, nurse and inform female patients,
- consult them on contraception and family planning,
- perform health educational tasks in accordance with their area of expertise,
- organise work and to work independently and also in experts’ teams,
- create and maintain interpersonal relationships.

They use their knowledge and skills as required by the obstetric and gynaecological protocol. In their nursing and patient-care work they pay considerable attention to different cultural features of patients and human dignity and rights and make decisions and act accordingly.

Length and features of field practice, credit value

Candidates take part in a total of 2280 hours of practice during their training (in the demonstration rooms of the university and in extramural field practice), the value of which is 76 credits.

Theoretical material in the different special subjects is complemented by several weeks’ guided practice in clinical nursing, obstetrics and gynaecology in each semester.

Students use their acquired theoretical knowledge in clinics and hospitals under the guidance of physicians, obstetricians and gynaecologists and midwives as practice leaders. At the end of the practice their performance is evaluated.

Qualification

Midwife

Job opportunities

- obstetric-gynaecological clinics
- obstetric-gynaecological wards in hospitals
- gynaecological specialist in out-patient clinics
- specialised out-patient clinics
- antenatal clinics
- private gynaecological clinics

DIETICIAN

Graduates in the specialist Dietician Programme acquire theoretical and practical knowledge which enables them to perform medical and preventive work as clinical dieticians in primary and special care in different healthcare and social institutions: as catering managers in different areas of public catering /children’s catering, elderly people’s homes, healthcare institutions etc./ and also in the field of prevention.
Clinical dieticians are capable of defining and planning patients’ diets in order to restore their health, conducting patients’ education, and controlling and assessing therapeutic catering and dietetic provision.

Catering managers are capable of taking responsibility for providing food with adequate nutritional value and quality for healthy individuals or groups of patients.

Dieticians working in the field of prevention are capable of decreasing the risk of illnesses related to nourishment.

**Length and features of field practice, credit value**

Candidates take part in a total of 1171 hours of practice during their training (in the demonstration rooms of the university and extramural field practice), the value of which is 74 credits.

Theoretical material in the different special subjects is complemented by practice in class, training kitchens, laboratories, and in extramural clinics and catering plants during the semesters.

Students take part in guided field practice at the end of the semesters.

In the course of their field practice dietician students practice their theoretical knowledge in catering plants, Central Agricultural Office, hospitals, clinics, elderly nursing homes under the guidance of catering managers with BSc. degree, public health and epidemiology professionals, physicians and dieticians. At the end of the practice their performance is evaluated.

**Qualification**

Dietician

---

**Medical laboratory and diagnostic imaging analyst programme**

**Aim of the training**

To train health care professionals who give high priority to their knowledge of natural sciences, technology and information technology to be able to practise their profession. Specialists trained in this programme are able to perform and organise diagnostic imaging analytical or optometrist activity, direct the analytical work of image-based, radiological diagnostic units or optometrist laboratories and shops. They are skilled in using up-to-date methods of data processing and are experienced in dealing with issues of economy. They have the necessary skills in the use of modern equipment and measurement technology, informatics and information technology in optometrist laboratories and in diagnostic imaging. Also they have the required skills to continue their studies in the master cycle.

**Length of study**

8 terms, 240 credits

**Qualification**

BSc (Bachelor of Science)

---

**OPTOMETRIST**

Graduates in the specialist Optometrist Programme are able to:

- provide patients with corrective eyewear in accordance with their individual needs and priorities to maintain and improve their health status.
- independently perform, organise and control optometrist activity.
- use modern equipment and measurement technology, informatics and information technology in the field of optometry.
– detect and diagnose disorders of the eye, vision related somatic and psychic problems, provide primary care, first aid, and in cases outside their area of competence refer patients to ophthalmologists.
– work as members of eye and vision care teams.

**Length and features of field practice, credit value**
Candidates take part in a total of 1200 hours of practice during their training (in the demonstrations rooms of the university and extramurial field practice), the value of which is 40 credits.
After successfully completing their practice in the demonstrations rooms (vision testing, prescription of glasses, contactology) students work in inpatient and outpatient clinics, contactology laboratories, optician’s shops and sight-testing salons. They perform their work guided, controlled and supervised by professional practice leaders in accordance with their academic progress.

**Qualification**
Clinical Laboratory and Diagnostic Imaging Analyst in the Optometrist specialist programme

**Job opportunities**
Those who complete this course can find employment in business as practicing optometrists. They are capable of starting an enterprise or running it. They can also find employment as optometrists working independently or working as eye specialist assistants or may be employed in eye diagnostic laboratories. They can successfully work in these positions relying on their knowledge of health science and clinical practice. As project and product managers, they can be engaged in trade and research in their field of specialisation.

**M.Sc. Programme**
Nutrition and food sciences programme

**Preparatory course (in English or in Hungarian)**

Duration: **1 year**

The aim of the course is to enable the participants to start their studies at our faculty relying on their knowledge of English or Hungarian. This programme is basically geared towards raising the students’ level of language proficiency by providing intensive courses for them to reach the required level. In addition, the course includes professional preparatory programmes.

The programme of the preparatory course:
– intensive language course (English or Hungarian): 2 x 15 weeks, 20 lessons a week (600 lessons in all)
– professional preparation (anatomy, chemistry, medical terminology, learning methodology, library user training): 3 weeks, 20 lessons a week (60 lessons in all)

Students who successfully complete the course can continue their studies in the bachelor training (B.Sc.) in the language of their choice (English/Hungarian).
SCHOOL OF PH.D. STUDIES

School of Ph.D. Studies
History and basic information

A decade ago The Act of Higher Education, 1993, charged universities with preparing students for their academic degree as well as awarding them doctoral (Ph.D.) degrees. This decision galvanized the scientific communities and schools of doctoral studies were founded one after the other in all Hungarian universities.

At that time professor Péter Sótonyi laid down the basic foundations of the SOTE Doctoral School. His successor, Professor László Kopper carefully structuring the study programs, reorganized it, creating and amending detailed regulations and working out new rules of the institution. The next chairman, professor Agoston Szél has continued these efforts to build a well-organized institution devoted for education and training of graduate students in several fields of medicine, biology and health sciences. The School Ph.D. Studies of Semmelweis University is currently one of our most successful divisions with around hundred students obtaining Ph.D. diplomas every year. The School of Ph.D. Studies is in fact a “virtual” organisation of the university, in importance comparable to that of a Faculty. The virtuality of this “Faculty” is due to the fact that teachers and tutors are all employees or co-workers of the five regular Faculties, they perform their scientific activities in different laboratories and institutes of this (and other) university. However, with their collaboration and organization they create new research centres that function like spiritual “melting pots”. The concentration and focus of this scientific potential has a great impact on the young candidates’ research work. The motivation of the students is multiplied by the presence and interaction of experienced tutors.

The basic unit of this complex teaching-learning team is one student - one tutor. Together they enjoy a high level of freedom and autonomy in running their research, that is within the limits set by the Rules and Regulations.

The first doctoral programs in 1993 were formed sporadically around the greatest personalities of the university. Each program was comprised of five to ten subprograms, the majority of which consisted of various topics or themes. It was the leader of the program who was responsible for the advance of each tutor and student. The number of the study programs was already around 25 when the Ministry of Education decided to restructure the doctoral training. A small number of branches of science were nominated and now all programs must be grouped under the umbrella of larger organizations called Doctoral Schools (the Hungarian abbreviation is TDI). The programs have retained their independence, however, the councils of the doctoral schools became the real administrative centres of the doctoral training.

Currently the School of Ph.D. Studies at Semmelweis University has eight Doctoral Schools. Basic Medicine, Clinical Medicine, Pharmaceutical Sciences, Mental Health Sciences, Sport Sciences, Neurosciences, Molecular Medicine and Pathological Sciences. Each School comprises of 2 to 14 study programs, the total number of which is above 40 (see detailed information on programs and Doctoral Schools).

By involving the greatest authorities from within, as well as from outside the university, the School of Ph.D. Studies has from the beginning been able to preserve the quality and prestige of the degree. By the end of December 2009, altogether 1125 Ph.D. theses had been defended at the School of Ph.D. Studies. The number of enrolled students at that time was 336 and 300 were about to defend their dissertation.

The largest faculty, the Faculty of Medicine is represented in almost all Doctoral Schools, the Faculty of Dentistry has its own study program, the Faculty of Pharmacy as well as the Faculty of Physical Education and Sport Sciences is represented by individual Doctoral Schools. The Faculty of Health Care as a Higher Education Institute of college level does not issue doctoral diplomas degrees, its teachers however are taking part in the study programs organized by the other faculties.
The activity of the School of Ph.D. is divided into two parts:

- Part I: educational phase - program courses and research activity
- Part II: qualification phase - examination, writing and defending dissertations

Although the educational and qualification phases can be continuous, each contains features that provide greater flexibility in obtaining a degree. Basically, anybody holding a university diploma degree (not necessarily a medical one) can join either Phase I or II.

The aim of Phase I is to train students to become scientists by providing them courses. Credit points can be accumulated upon completion of a course. The selected scientific topic will become the core of the thesis. A qualified tutor supervises each student.

Phase II provides an opportunity to evaluate the results of the experiments and to publish them in acknowledged scientific journals. Obviously, this is, or can be an on-going activity in Phase I as well. The student is required to pass a comprehensive examination and to write and defend a dissertation.

Phase II follows Phase I, but one may join Phase II without completing Phase I, providing the necessary prerequisites have been fulfilled. However, if one joins the School of Ph.D. Studies directly in Phase II it is necessary to be accepted by a tutor within a program.

The School of Ph.D. Studies offers three forms of education:

- Full-time for scholarship holders (scholarship obtained from state, agency, foundation etc.) entering Phase I as students
- Part-time students, entering Phase I as students
- Individual studies, entering Phase II as candidates

Both full-time and part-time students must meet the same requirements. The main difference between those with and without scholarship is that the latter have jobs and are combining studies and work. Individuals who join only Phase II will not be students with record-book and student identity card, but they will be candidates for the doctoral degree.

The total number of candidates at present is about 700.

Certain costs of education, scientific training and official procedures are covered for students and candidates. Most of the fees are equal to or close to what is ordinarily paid by undergraduate students.

The actual decision-making body of the School of Ph.D. Studies is the Doctoral Council. Its work is supported by the Education Committee and Quality Assurance Committee. The former is responsible for organizing the study courses and all matters related to the training. The latter evaluates topic accreditation applications, dissertations prior to submitting them to opponents. Recently another Committee has been established to run disciplinary procedures.

Dr. Károly Rácz
President of the Doctoral Council
President of the Doctoral Council
Dr. Károly Rácz
II. Department of Internal Medicine
1088 Budapest VIII., Szentkirályi u. 46.
Phone: 266-0926, 55570
E-mail: racz@bel2.sote.hu

Vice President of the Doctoral Council
Dr. József Timár
II. Department of Pathology
1091 Budapest IX., Üllői út 93.
Phone: 215-7300 /53400
E-mail: jtimar@gmail.com

President of the Doctoral Student’s Union
Ákos Márton Lőrincz
Institute of Physiology
1094 Budapest IX., Tűzoltó u. 37-47
Phone: 459-1500/60458
E-mail: akos.lorincz@eok.sote.hu

Doctoral Secretariat
Phone: (36-1) 266-2343, (36-1) 266-7483
Fax: (36-1) 317-4888

Emőke Márton Head marton@phd.sote.hu (36-1) 459-1500/55286
Anna Marádi (Pintérné) Financial adviser zola@phd.sote.hu (36-1) 459-1500/55162
Anita Lengyel Adviser ancsa@phd.sote.hu (36-1) 459-1500/55387
Timea Rab Adviser timea@phd.sote.hu (36-1) 459-1500/55242
Károly Altdorfer Webmaster altdorf@ana.sote.hu (36-1) 459-1500/53639

Office hours:
Monday: Closed
Tuesday, 8.30 a.m. - 12.00 a.m.
Thursday, 13.00 p.m. - 16.00 p.m.
Friday:
Wednesday:
**Members of the Doctoral Council**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Károly Rácz</td>
<td>President</td>
</tr>
<tr>
<td>Dr. Ágoston Szél</td>
<td>Former-President</td>
</tr>
<tr>
<td>Dr. József Timár</td>
<td>Vice-President</td>
</tr>
<tr>
<td>Dr. Miklós Tóth</td>
<td>Vice-Rector of Scientific and International Affairs</td>
</tr>
<tr>
<td>Dr. László Rosivall</td>
<td>Ph.D. School of Basic Medical Sciences</td>
</tr>
<tr>
<td>Dr. Zsolt Tulassay</td>
<td>Ph.D. School for Clinical Science in Medicine</td>
</tr>
<tr>
<td>Dr. Éva Szöke</td>
<td>Ph.D. School of Pharmaceutical and Pharmacological Sciences</td>
</tr>
<tr>
<td>Dr. István Bitter</td>
<td>Ph.D. School Mental Health Sciences</td>
</tr>
<tr>
<td>Dr. József Tihanyi</td>
<td>Ph.D. School of Sport Sciences</td>
</tr>
<tr>
<td>Dr. Bereczki Dánel</td>
<td>János Szentágothai Neurosciences Ph.D. School</td>
</tr>
<tr>
<td>Dr. József Mandl</td>
<td>Ph.D. School of Molecular Medical Sciences</td>
</tr>
<tr>
<td>Dr. László Kopper</td>
<td>Ph.D. School of Pathology</td>
</tr>
<tr>
<td>Dr. György Losonczy</td>
<td>Representative of Faculty of Medicine</td>
</tr>
<tr>
<td>Dr. Gábor Varga</td>
<td>Representative of Faculty of Dentistry</td>
</tr>
<tr>
<td>Dr. Kálmán Magyar</td>
<td>Representative of Faculty of Pharmacy</td>
</tr>
<tr>
<td>Dr. Zsolt Radák</td>
<td>Representative of Sport Sciences</td>
</tr>
<tr>
<td>Dr. Gábor Makara</td>
<td>President of the Educational Board</td>
</tr>
<tr>
<td>Dr. János Rigó</td>
<td>President of the Quality Control and Evaluation Board</td>
</tr>
<tr>
<td>Dr. György Nagy</td>
<td>János Szentágothai Neurosciences Ph.D. School</td>
</tr>
<tr>
<td>Dr. Iván Forgács</td>
<td>College of Health Care</td>
</tr>
<tr>
<td>Dr. Péter Sótonyi</td>
<td>Szent István University, Faculty of Veterinary Science</td>
</tr>
<tr>
<td>Márton Ákos Lórinicz</td>
<td>President of the Doctoral Students’ Union</td>
</tr>
</tbody>
</table>

**Permanent Committees of the Doctoral Council**

**Educational Board**

*President: Dr. Gábor Makara*

Institute of Experimental Medicine of the Hungarian Academy of Sciences
H-1083 Budapest, Szigony u. 43.
Tel: +(36-1) 210-9950
E-mail: makara@koki.hu

**Quality Control and Evaluation Board**

*President : Dr. János Rigó*

1st Dept. of Obstetrics and Gynaecology
H-1088 Budapest, Baross u. 27.
Tel: +(36-1) 266-0473/54216
E-mail: rigo@noi1.sote.hu
Committee of Foreign Affairs
Committee of International Affairs

**President:** Dr. László Rosivall  
Dept. of Pathophysiology  
H-1089 Budapest, Nagyvárad tér 4.  
Tel:+(361) 210-2956/6121  
E-mail: roslasz@net.sote.hu

Sótonyi Péter Tamás

Committee of Disciplinary Procedures

**President:** Dr. György Nagy  
Dept. of Human Morphology and Developmental Biology  
H-1094 Budapest, Tûzoltó u. 58.  
Tel: 215-6920/53612  
E-mail: nagy-gm@ana2.sote.hu

University School of Ph. D. Studies

**President:** Prof. Károly Rácz MD, PhD, DSc

**BRANCHES:**

I. BASIC MEDICINE

*Chairman:* **Prof. László Rosivall** MD, PhD, DSc  
*E-mail:* rosivall@net.sote.hu

<table>
<thead>
<tr>
<th>Programs</th>
<th>Co-ordinators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological Effects of Ionizing and Non-Ionizing Radiations</td>
<td>Dr. Miklós Kellermayer MD, PhD</td>
</tr>
<tr>
<td>Cardiovascular Disorders: Physiology and Clinic of Ischaemic Circulatory Diseases</td>
<td>Prof. Béla Merkely MD, PhD, DSc</td>
</tr>
<tr>
<td>Clinical and Experimental Cardiology/Atherosclerosis</td>
<td>Dr. Zoltán Prohászka MD, PhD</td>
</tr>
<tr>
<td>The Mechanisms of Normal and Pathologic Functions of the Circulatory System Physiology and Pathophysiology of the Regulation of Fluids and Electrolyte Homeostasis</td>
<td>Prof. Emil Monos MD, PhD, DSc</td>
</tr>
<tr>
<td>Functions of the Circulatory System</td>
<td>Prof. László Rosivall MD, PhD, DSc</td>
</tr>
</tbody>
</table>
II. CLINICAL MEDICINE

Chairman: **Prof. Zsolt Tulassay** MD, PhD, DSc  
E-mail: tulassay@bet2.sote.hu

<table>
<thead>
<tr>
<th>Programs</th>
<th>Co-ordinators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Haematology</td>
<td>Prof. Lídia Sréter MD, PhD, DSc</td>
</tr>
<tr>
<td>Dental Research</td>
<td>Prof. Gábor Varga MD, PhD, DSc</td>
</tr>
<tr>
<td>Fetal and Neonatal Medicine</td>
<td>Prof. Zoltán Papp MD, PhD, DSc</td>
</tr>
<tr>
<td>Gastroenterology</td>
<td>Prof. Zsolt Tulassay MD, PhD, DSc</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>Prof. Ildikó Süveges MD, PhD, DSc</td>
</tr>
<tr>
<td>Oxidative Stress and Immunological Reaction in Liver Diseases</td>
<td>Prof. János Fehér MD, PhD, DSc</td>
</tr>
<tr>
<td>Physiology and Pathology of the Musculoskeletal System</td>
<td>Prof. Miklós Szendrői MD, PhD, DSc</td>
</tr>
<tr>
<td>Prevention of Chronic Diseases in Childhood</td>
<td>Prof. Tivadar Tulassay MD, PhD, DSc</td>
</tr>
<tr>
<td>Pulmonology</td>
<td>Prof. György Losonczy MD, PhD, DSc</td>
</tr>
<tr>
<td>Hormonal regulations</td>
<td>Prof. Károly Rácz MD, PhD, DSc</td>
</tr>
<tr>
<td>Urology</td>
<td>Prof. Imre Romics MD, PhD, DSc</td>
</tr>
<tr>
<td>Clinical and Experimental Research in Angiology</td>
<td>Prof. György Acsády MD, PhD, DSc</td>
</tr>
<tr>
<td>Dermatology and Venereology</td>
<td>Prof. Sarolta Kárpáti MD, PhD, DSc</td>
</tr>
<tr>
<td>Molecular Genetics, Pathomechanism and Clinical Aspects of Metabolic Disorders</td>
<td>Prof. Péter Lakatos MD, PhD, DSc</td>
</tr>
</tbody>
</table>

III. PHARMACEUTICAL SCIENCES

Chairwoman: Prof. Éva Szőke MSc, PhD  
E-mail: szokee@drog.sote.hu

<table>
<thead>
<tr>
<th>Programs</th>
<th>Co-ordinators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental and Clinical Pharmacology</td>
<td>Prof. Kálmán Magyar MD, PhD, DSc</td>
</tr>
<tr>
<td>Modern Trends in Pharmaceutical Scientific Research</td>
<td>Dr. István Antal MSc, PhD</td>
</tr>
</tbody>
</table>
IV. MENTAL HEALTH SCIENCES

Chairman: Prof. István Bitter MD, PhD, DSc
E-mail: bitter@psych.sote.hu

<table>
<thead>
<tr>
<th>Programs</th>
<th>Co-ordinators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Psychology and Psychiatry</td>
<td>Prof. László Tringer MD, PhD, DSc</td>
</tr>
<tr>
<td>Behavioral Sciences</td>
<td>Prof. Mária Kopp MD, PhD, DSc</td>
</tr>
</tbody>
</table>

V. SPORT SCIENCES

Chairman: Prof. Zsolt Radák MD, DSc, PhD
E-mail: tihanyi@mail.hupe.hu

<table>
<thead>
<tr>
<th>Programs</th>
<th>Co-ordinators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training and Adaptation</td>
<td>Prof. Gábor Pavlik MD, PhD, DSc</td>
</tr>
<tr>
<td>Physical Training, Regulation, Metabolism</td>
<td>Prof. Zsolt Radák MD, PhD, DSc</td>
</tr>
<tr>
<td>Sport and Social Sciences</td>
<td>Prof. Gyöngyi Szabó MD, PhD, DSc</td>
</tr>
</tbody>
</table>

VI. NEUROSCIENCES

Chairman: Prof. Dániel Bereczki MD, PhD, DSc
E-mail: bereczki@neur.sote.hu

<table>
<thead>
<tr>
<th>Programs</th>
<th>Co-ordinators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neumorphology and Cell Biology</td>
<td>Prof. Miklós Palkovits MD, PhD, DSc</td>
</tr>
<tr>
<td>Neuroendocrinology</td>
<td>Prof. Zsolt Liposits MD, PhD, DSc</td>
</tr>
<tr>
<td>Functional Neurosciences</td>
<td>Prof. E. Szilveszter Vizi MD, PhD, DSc</td>
</tr>
<tr>
<td>Clinical Neurosciences</td>
<td>Prof. Zoltán Nagy MD, PhD, DSc</td>
</tr>
<tr>
<td>Clinical Neurological Research</td>
<td>Prof. Imre Szmrai MD, PhD, DSc</td>
</tr>
<tr>
<td>Biological Psychiatry</td>
<td>Prof. Gábor Faludi MD, PhD, DSc</td>
</tr>
</tbody>
</table>
### VII. MOLECULAR MEDICINE

**Chairman:** Prof. **József Mandl** MD, PhD, DSc  
E-mail: mandl@puskin.sote.hu

<table>
<thead>
<tr>
<th>Programs</th>
<th>Co-ordinators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basis of Human Molecular Genetics and Gene Diagnostics</td>
<td>Prof. András Falus MD, PhD, DSc</td>
</tr>
<tr>
<td>Cellular and Molecular Physiology</td>
<td>Prof. Erzsébet Ligeti MD, PhD, DSc</td>
</tr>
<tr>
<td>Embryology, Theoretical, Experimental and Clinical Developmental Biology</td>
<td>Prof. Imre Oláh MD, PhD, DSc</td>
</tr>
<tr>
<td>Immunology</td>
<td>Prof. Péter Gergely MD, PhD, DSc</td>
</tr>
<tr>
<td>Pathobiochemistry</td>
<td>Prof. József Mandl MD, PhD, DSc</td>
</tr>
</tbody>
</table>

### VIII. PATHOLOGICAL SCIENCES

**Chairman:** Prof. **László Kopper** MD, PhD, DSc  
E-mail: kopper@korb1.sote.hu

<table>
<thead>
<tr>
<th>Programs</th>
<th>Co-ordinators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alterations of Cells, Fibres and Extracellular and Diagnostic Pathomorphological Studies Matrix in the Course of Heart and Vascular Diseases and in Certain Tumours Experimental and Diagnostic Pathomorphological Studies</td>
<td>Prof. Zsuzsanna Schaff MD, PhD, DSc</td>
</tr>
<tr>
<td>Experimental Oncology</td>
<td>Prof. László Kopper MD, PhD, DSc</td>
</tr>
<tr>
<td>Public Health Science</td>
<td>Prof. Péter Sótónyi MD, PhD, DSc</td>
</tr>
<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>
</tr>
<tr>
<td>Clinical and experimental transplantation Health Sciences</td>
<td>Prof. Róbert Langer MD, PhD, Prof. István Szabolcs MD, PhD, DSc</td>
</tr>
</tbody>
</table>