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GOVERNMENT SEMMELWEIS UNIVERSITY

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

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- Prof. Dr. Márk Kollai M. D., Ph.D, D. Sc.
  General Affairs
- Prof. Dr. Veronika Ádám M. D., Ph.D., D. Sc.
  Scientific Affairs
- Prof. Dr. Pál Fejérdy D. M. D., Ph. D.
  Educational Affairs

DEANS:
- Prof. Dr. István Karádi M. D., Ph.D., D. Sc.
  Faculty of Medicine
- Prof. Dr. István Gera 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 Sports Sciences
  Dr. Judít Mészáros Ph.D.
  College of Health Sciences

PRESIDENT OF THE DOCTORAL COUNCIL: Prof. Dr. Ágoston Szél 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

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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 Mandi 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.
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NOTE: The new address of the Foreign Students’ Secretariat and the English Secretariat from October, 2008 is: Educational Center, Budapest IX, corner of Tűzoltó and Thaly Kálmán str.

Head of Secretariat: Mrs. Olga Ványi B. A. (459-1500 ext 5372; engsec@rekhiv.sote.hu)
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  Mrs. Márti Reményi (459-1500 ext 5382; remart@rekhiv.sote.hu)
  Mrs. Zsuzsa Galambos (459-1500 ext 5376 galzs@rekhiv.sote.hu)
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  Ms. Edit Kovács (459-1500 / ext 5291; kovacse@rekhiv.sote.hu)

Office hours: Monday: 1 p.m. – 3.30 p.m.
      Tuesday: 1 p.m. – 3.30 p.m.
     Wednesday: CLOSED
   Thursday: 10 a.m. – 3 p.m.
    Friday: 9 a.m. – 12 p.m.
Lunch time: 12 p.m. – 1 p.m.
# SCHEDULE FOR THE 2008/2009 ACADEMIC YEAR

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

<table>
<thead>
<tr>
<th>Opening Ceremony</th>
<th>September 7, 2008</th>
</tr>
</thead>
</table>

## First Semester

<table>
<thead>
<tr>
<th>Date of registration</th>
<th>September 1–5, 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place of registration</td>
<td>Department of Dermatology</td>
</tr>
</tbody>
</table>

**First day of the semester**
- Faculty of Medicine (1st–5th years) September 8, 2008
- Faculty of Dentistry September 8, 2008
- Faculty of Pharmacy (1st–4th years) September 8, 2008

**Last day of the semester**
- Faculty of Medicine (1st–5th years) December 12, 2008
- Faculty of Dentistry December 12, 2008
- Faculty of Pharmacy (1st–4th years) December 12, 2008

**5th year Pharmacy:**
- Practical training August 1, 2008–September 26, 2008
- The semester lasts for 5th year Pharmacy (12 weeks) September 29 – December 19, 2008

**Examination period**
- Faculty of Medicine (1st–5th years) December 15, 2008–January 23, 2009
- Faculty of Dentistry December 15, 2008 – January 23, 2009
- Faculty of Pharmacy (1st–4th years) December 15, 2008 – January 23, 2009
- Examination period for 5th year Pharmacy December 22, 2008 – January 30, 2009

**Extension period**
- Medicine, Dentistry, Pharmacy (1st–5th years) January 26, 2009 – January 30, 2009

## Second Semester

<table>
<thead>
<tr>
<th>Date of registration</th>
<th>January 26, 2009 – January 30, 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place of registration</td>
<td>English Secretariat</td>
</tr>
</tbody>
</table>

**First day of the semester for 1st–5th years**
- Medicine and Dentistry February 2, 2009

**Last day of the semester**
- Medicine and Dentistry February 2, 2009
- 1st–4th years Dentistry May 15, 2009
- Faculty of Pharmacy April 30, 2009

**First day of the semester**
- 1st–5th years February 2, 2009
- 1st–4th years May 15, 2009

**Last day of the semester (practice) for 5th year**
- May 22, 2009
<table>
<thead>
<tr>
<th>Examination period for Faculty of Medicine, Faculty of Dentistry</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1st – 5th year Medicine</td>
<td>May 18 – June 30, 2009</td>
</tr>
<tr>
<td>1st – 4th year Dentistry</td>
<td>May 18 – June 26, 2009</td>
</tr>
<tr>
<td>5th year Dentistry</td>
<td>May 4 – June 12, 2009</td>
</tr>
<tr>
<td><strong>Faculty of Pharmacy</strong></td>
<td></td>
</tr>
<tr>
<td>1st – 3rd year</td>
<td>May 18 – June 26, 2009</td>
</tr>
<tr>
<td>4th year</td>
<td>May 18 – July 10, 2009</td>
</tr>
<tr>
<td><strong>Autumn examination period for</strong></td>
<td></td>
</tr>
<tr>
<td>1st – 4th year Medicine</td>
<td>August 17 – August 28, 2009</td>
</tr>
<tr>
<td>5th year Medicine</td>
<td>July 1 – July 10, 2009</td>
</tr>
<tr>
<td>1st – 4th year Dentistry</td>
<td>August 17 – August 28, 2009</td>
</tr>
<tr>
<td>1st – 3rd year Pharmacy</td>
<td>August 17 – August 28, 2009</td>
</tr>
<tr>
<td><strong>Please note that during the autumn examination period and in the extension periods only a limited number of dates will be given and in the extension periods students may sit for repeated examinations only!</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Extension period</strong></td>
<td>August 31–September 4, 2009</td>
</tr>
<tr>
<td><strong>Schedule for 6th year Medicine</strong></td>
<td>July 14, 2008 – May 8, 2009</td>
</tr>
<tr>
<td><strong>General Board Examination Period</strong></td>
<td></td>
</tr>
<tr>
<td>Faculty of Medicine</td>
<td>June 8 – June 19, 2009</td>
</tr>
<tr>
<td></td>
<td>August 31 – September 4, 2009</td>
</tr>
<tr>
<td>Faculty of Dentistry</td>
<td>June 15 – June 18, 2009</td>
</tr>
<tr>
<td>Faculty of Pharmacy</td>
<td>May 25 – June 12, 2009</td>
</tr>
<tr>
<td><strong>Holidays</strong></td>
<td></td>
</tr>
<tr>
<td>Spring (including Eastern) holidays</td>
<td>April 6 – April 13, 2009</td>
</tr>
<tr>
<td>No lectures or seminars</td>
<td></td>
</tr>
<tr>
<td>National/Public holidays:</td>
<td>October 23, 2008 (Thursday)</td>
</tr>
<tr>
<td></td>
<td>May 1, 2009 (Friday)</td>
</tr>
<tr>
<td>Research Students’ Conference:</td>
<td>February 11-12, 2009</td>
</tr>
<tr>
<td>for the 2nd-6th year students</td>
<td></td>
</tr>
<tr>
<td>On February 13 due to the Conference no lectures or seminars will be held in the NET building!</td>
<td></td>
</tr>
</tbody>
</table>
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 mandatory subjects, electives, optional 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. In a program financed by the state the student may receive a degree in a maximum of 2 more semesters for basic or masters programs each and in case of an undivided degree program, in a maximum of 4 semesters in addition, in compliance with the provisions specified in Article 55 Section 3 of the Act on Higher Education (AHE).
Article 3

The curriculum

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

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

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

Article 5

The periods of studies

1. During regular term students attend classes and complete tasks related to the subject. The length of the regular term is 14 weeks.

2. The exam period is for taking exams; the period designated for which is six weeks long, and, in case of the spring term, 6+2 weeks are provided – 6 weeks in May and June of each year and 2 weeks in the summer break. During the exam period the meeting of requirements related to the regular term 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.

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 markbook is required in the Dean’s Office.

   The markbook must include:
   a) the subjects specified as mandatory in the order specified by the Dean’s Office,
   b) the electives,
   c) the optional courses,
   d) the name of the instructor,
   e) the codes and credits of the subjects.

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.

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 Students’ Scholarly Circles,
   e) use a student card that certifies his/her status as a student,

Article 8

Suspension of studies

1. The student is obliged to report in the period designated for this purpose through the student information system in case he/she does not intend to perform his/her obligations as a student in the next period of studies.

2. When the legal relationship of the student and the University is suspended,
   a) 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)
   c. following the entire period of studies (as of the day of the first final exam period)
   d. 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 mandatory and 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 next semester 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 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 benefit before re-admittance that is only available for a student on one occasion, he or she will not be entitled to use this benefit 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 theoretical 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 markbook, 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 theoretical 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 markbook, the curriculum of the university, and in case of foreign studies and the authentic translation of these if they have not been written in a language that is used for education at this university.

   To the Faculty of Pharmacy transfer is only allowed for students of Pharmacy from other universities, following the completion of the theoretical or pre-clinical module, 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 closed original markbook, 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.

   Requests may be filed for transfer between faculties and majors and levels of education within Semmelweis University. The minimum requirement for this is 30 credit points obtained in subjects of the curriculum sample in the first four semesters prior to the request and a weighted average of at least 3.51 of these courses. The previous institution must provide a statement that the student transferred is cancelled in the register.

   For any transfer to the Faculty of Pharmacy a transfer is only 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 university as provided by law.

   The new faculty’s Credit Committee must decide on the acceptance of courses and on the recognizing of credits obtained.
3. A condition of transfer is that the adjusted credit index of the applicant student in the two years before the request must be at least 3.51-4.00.

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

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

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

Article 12

Simultaneous (parallel) studies

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

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

Article 13

Guest students

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

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

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

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

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

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

1. The sample curriculum lists the mandatory 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 mandatory, elective and optional for the semester in the student information system by no later than the last week of the regular period of the previous week.

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 mandatory, elective and optional 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 another semester in compliance with regard to the pre-studies regulations and Section 17/17 of the Examination and Studies Regulations. If the instructor of the subject verifies with his or her signature that the student has completed the mid-term 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 electives and optional 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, evaluation of homework,
   b. seminar grades,
   c. exams,
   d. comprehensive exams,
   e. final exams.

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

5. In case the mid-term grade is established through classroom tests, an opportunity 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 a mid-term signature.

6. The mid-term completion of the course that requires an exam is verified by a signature in the markbook. 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-term 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 markbook. In case the instructor refuses to sign, the student may not take the exam.

9. A seminar grade 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 seminar grade primarily in the regular period of the semester. If the seminar performance is evaluated through a five-scale grade, a “fail”, and in case of a three-scale grade, a “fail”, results in a retake of the course.

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

12. For an exam with a seminar connected to the lectures or for seminar-only 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 (a good or an excellent grade). 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 “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-term signature,
b. obtains the signature, but does not show up at the exam and does not attempt to pass the exam in the exam period,
c. fails to meet the exam requirements (fails the exam) within the framework of the available retakes within the exam period.

16. In case of a course dropped, the credits may not be obtained later than in the next semester 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 to take the next semester of the subject if the student has obtained the end-term 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 comprehensive exams; the exam period

1. Exams are to be taken in the exam period. The length of the spring exam period is 6+2 weeks long, 6 weeks in May and June of each year and 2 weeks in the summer break before the beginning of the autumn regular term. In the latter period the departments will provide a limited number of exam dates.

2. The number of exam places provided must be at least twice of the number of students. In the exam 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.

3. 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).

4. In case of a comprehensive 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 comprehensive examination must be taken before an exam committee consisting of at least two members if the comprehensive examination is a retake (except if the retake is for improving a grade and not for a fail) or if the comprehensive exam includes several subjects. The head of the committee may only be a leading instructor.

5. The student may not take the exam without a markbook.

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

7. 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.

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

9. 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 markbook of the student.

10. The student may attempt to retake the exam twice in the exam 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.

11. 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.

12. The student may attempt retakes in the first two weeks of the regular period following the exam period 3 times in the first three years of studies and twice altogether in the fourth and fifth year. The student must hold the permit of the Dean's Office.

13. The student may improve the grade of a successful exam until the end of the exam period. 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.

14. 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 markbook and the students' information system. The markbook is a public document. The data recorded in the students' information system are authentic copies of the markbook information. Any unauthorized recording in the student information system is deemed as forgery of a public document.

2. The results of a course must be considered when calculating the weighted average of the student, except when the student takes a course that is not part of professional studies within the framework allowed for optional courses.

3. At the closing of each semester the number of credits and the weighted average of the student must be recorded in the markbook.

4. The student must submit the required certificates at the English Secretariat in accordance with Article 25 Section 2 of the AHE.

**Article 21**

**Accepting substitute and optional courses**

1. The acceptance of courses announced at another faculty or institution means deciding whether the given courses are 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.

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 multiple courses, 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 “failed to complete”. The latter has a suspending effect, the student may not continue the studies as long as the professional training program is not completed.

Article 23

Final (pre-degree) certificate

Article 60 of the AHE

(4) The obtaining of the final certificate is a prerequisite of the final examination. The final 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 final examination may be taken in the exam period following the obtaining of the final 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 final examination after seven years have passed from issuing the final certificate.
1. Until the final 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 final certificate is signed by the dean or director of the faculty. The final certificate certifies no professional knowledge.

Article 24

The thesis

1. In all kinds of programs the student is required to prepare a thesis for the diploma. The aim of the thesis 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 thesis 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 thesis 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 thesis:
   The length of the thesis 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 thesis 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 thesis and the name/workplace of the consultant. The student may write the thesis 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 thesis so prepared will be submitted at the department by 15 January in 2 copies.

7. The thesis 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 thesis (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 thesis 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 thesis may only be corrected once.

9. The head of the unit hands over a copy of the thesis after the defense and the other copy along with minutes of the defense will be kept by the unit. The thesis 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 thesis may be waived by the dean or the director upon the recommendation of the unit for the following students:
– For students that prepared a rector paper as one of a maximum of two authors and receive a first or second prize,
– 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 thesis 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 form 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

The Final Examination (General Board Examination)

AHE Article 60

(2) The student concludes the studies in by a final examination in basic, masters and further specialized education programs.

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 markbook 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.

**Article 26**

*The diploma (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.

2. A condition of issuing the diploma is a Hungarian basic level state language exam type C (or an equivalent exam).

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

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

7. The Appendix of the diploma is the obligation of the relevant Dean's Office.

8. The basis of the grade is the general cumulated and weighted average of grades rounded to the hundredth.

In case of a five-scale evaluation:

- 4.51-5.00: excellent
- 3.51-4.50: good
- 2.51-3.50: fair
- 2.00-2.50: pass
In case of a three-scale evaluation:
4.51-5.00: summa cum laude
3.51-4.50: cum laude
2.00-3.50: rite
The relevant Faculty’s curriculum defines the list of subjects not ending with a comprehensive exam to be taken into consideration when grading the diploma.

9. The method of calculation:

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

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.

Article 27

Equity

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.
THE DEPARTMENTS OF SEMMELWEIS UNIVERSITY

Semmelweis University, Faculty of Medicine

NOTE: The new address of the Departments indicated with dark grey color is going to be: Educational Center, Budapest IX., corer of Tűzoltó and Thaly Kálmán str.

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Head of the Department: Prof. Dr. Ágoston Szél

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Phone: 210-2940 / ext 6236 Dr. Fülöp, 6326 Dr. László
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                 Dr. Béla Csákyán, Dr. Attila Nagymihály, Dr. András Papp,
                 Dr. András Serecs, 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: Dr. János Rigó M.D., Ph.D
Full professor: Prof. Dr. Zoltán Papp
Professor emeritus: Prof. Dr. Sándor Csömör
### II. Department of Obstetrics and Gynecology

1082 Budapest, VIII. Úllői út 78/a.

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

Associate professor: Dr. Nándor Ács (tutor)

### Department of Traumatology

1076 Budapest, VII. Péterfy Sándor u. 14.

Head of the Department: **Prof. Dr. András Sárváry** M.D., Ph.D., D.Sc.

Full professor: Prof. Dr. Tibor Mózes

Assistant professor: Dr. Miklós Szébeny (tutor), Dr. István Baráth
Department of Urology
1082 Budapest, VIII. Ullói 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 Hamvas, Dr. József Pánovics
Assistant professor: Dr. Sándor Lovász, Dr. Miklós Szűcs, Dr. Attila Keszthelyi,
Dr. Krisztina Szabó, Dr. Péter Nyirády (tutor), Dr. Lajos Joós
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.
☎: 318-0011

Head of the Department: Prof. Dr. Pál Fejérdy D. M. D., Ph.D.
Full professor: Prof. Dr. Miklós Kaán
Professor emeritus: Prof. Dr. Tibor Fábián
Associate professor: Dr. Péter Kivovics, Dr. Csaba Dobó Nagy,
Dr. András Kóbó, Dr. Melinda Madlénna, Dr. Péter Hermann,
Dr. Péter Károly Fábián
Assistant professor: Dr. János Gerle, Dr. László Kádár, Dr. Endre Somogyi
Assistant lecturer: Dr. Péter Faluhelyi, Dr. Marianna Jählen, Dr. Katalin Kalocsai,
Dr. Katalin Károlyházy, Dr. Mercédesz Linninger,
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.
☎: 459-1500 ext 9128

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

Department of Pedodontics and Orthodontics
1088 Budapest, VIII. Szentkirályi u. 47.
☎: 318-0011

Head of the Department: Prof. Dr. Ildikó Tarján D. M. D., Ph.D.
Associate professor: Dr. Katalin Gábris
Assistant professor: Dr. Gábor Fábián, 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 Deseõ
Department of Conservative Dentistry

1088 Budapest, VIII. Szentkirályi u. 47.
Tel.: 318-0011

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 Győrfi, Dr. Zsuzsanna Tóth
Assistant professor: Dr. Mártta Bernáth, Dr. Júlia Nemes (tutor), Dr. János Vág
Assistant lecturer: Dr. Anna Hertczegegh, Dr. Zsuzsanna Csabai, Dr. Mária Csillág, Dr. Ágnes Grigár, Dr. Ádám Gombos, Dr. Milán Gyurkovics, Dr. Eszter Veszprémi

Department of Oral Biology

1089 Budapest, VIII. Nagyvárad tér 4.
Tel.: 210-4415 ext. 6420 Dr. Nagy

Head of the Department: Prof. Dr. Gábor Varga Ph.D., D.Sc.
Full professor: Prof. Dr. Ildikó Boros, Prof. Dr. György Simon
Professor emeritus: Prof. Dr. Jolán Bánóczy, Prof. Dr. Tivadar Zelles
Assistant professor: Dr. József Blazsek, Dr. Ákos Nagy (tutor)

Section of Oral Diagnostics

1088 Budapest, VIII. Szentkirályi u. 47.
Tel.: 459-1500/9161, 317-1044, fax: 459-1500/9165
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.
Tel.: 266-0457

Head of the Department: Prof. Dr. József Barabás D. M. D., D.Sc.
Full professor: Prof. Dr. György Szabó, Prof. Dr. Tamás Divinyi
Prof. Dr. Zsuzsanna Suba
Associate professor: Dr. Zsolt Németh (tutor for Medicine)
Assistant professor: Dr. Judit Jancsó, Dr. Gábor B. Simon, Dr. Katalin Martonffy, Dr. Emese Fülöp, Dr. Levente Pataky, Dr. Attila Fodor, Dr. Attila Szücs (tutor for Dentistry), Dr. Tamás Vízkelety, Dr. Szabolcs Gyulai-Gaál, Dr. Mártta Ujpáli, Dr. Árpád Joób Fancsaly
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
Assistant professor: Dr. Ferenc Dóri, Dr. Tibor Keglevich

Faculty of Pharmacy

University Pharmacy, Department of Pharmacy Administration
1092 Budapest, IX. Hőgyes Endre u. 9.
☎ 476-3600

Head of the Department: Dr. Romána Zelkó
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: Prof. Dr. Éva Szőke Ph.D.
Full professor: 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, /x: 217-0914

Head of the Department: Prof. Dr. Imre Klebovich D. Sc.
Full professor: Prof. Dr. Sylvia Marton (tutor of the 5th year), Dr. István Antal (tutor of the 4th year), Dr. János Plachy
Associate professor: Dr. Veronika Benedek-Vajda, Dr. Gabriella Csóka, Dr. Judit Dredán, Dr. Mária Hajdú (tutor of the 3rd year), Dr. Edit Farkas
Assistant professor: Dr. Emese Balogh, Dr. Miléna Lengyel
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 Talács-Novák (tutor)
Associate professor: Dr. Miklós Józsa (tutor), Dr. András Gergely,
Dr. Péter Horváth, Dr. László Örfi
Assistant lecturer: Dr. Károly Mazák, Dr. Márta Mazák-Krasznai, Ákos Rácz

Department of Pharmacodynamics

1089 Budapest, VIII. Nagyvárad tér 4.
☎: 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)
Professor emeritus: Prof. Dr. Kálmán Magyar (member of the Academy)
Associate professor: Dr. Éva Szökö (course director), Dr. László Tóthfalusi (tutor)
Assistant lecturer: Dr. Tamás Tábi (tutor)

Institute of Organic Chemistry

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

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

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

1082 Budapest, VIII. Üllői út 78/b.
☎: 210-0328

Director: Dr. András Jávor
Dr. Mariann Szabó Dinya (tutor), Zoltán Sára, Zoltán Ádám Tamus
Centre of Physical Education and Sport Sciences
1094 Budapest, IX. Ferenc tér 15.
☎: 215-9337, 459-1500/3823, 3822

Director and tutor: Kálmán Kiss

Sport establishments:
Sports Ground and Gymnastic Hall
Phone/fax: 262-5529, 264-1408
Népliget Tennis-court
Budapest, X. Vajda Péter u. 38.
☎: 262-9570
Fencing Hall
Budapest, V. Semmelweis u. 2.
☎: 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
☎: 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 about the language courses for the 1-3 year students of Medicine, Dentistry and Pharmacy

1. Since the 2006/2007 academic year Hungarian has been a compulsory subject only in the 1st semester of the 1st year (4 hours a week) and the requirement is a practical course grade. Students can decide if they would like to continue studying Hungarian at the University or at a language school in the following semesters. As the knowledge of Hungarian is essential in the clinical years (4th, 5th and 6th), according to the new regulations a Hungarian "A" type Basic Language Examination will be required by the end of the 3rd year. Without this qualification no student will be allowed to start the 4th year.

2. For students of Medicine and Pharmacy who will be in their 3rd year in the 2008/09 academic year Hungarian will be only an optional (elective) subject. If a student would like to continue studying Hungarian, all facilities will be provided for that by the University. The requirement will be a practical course grade. There will be no consequences if a student decides not to study Hungarian in the 3rd year in the 2007/2008 academic year, although it is strongly advised that students learn the language for the sake of the better understanding during the ward practices. At the Faculty of Dentistry, Hungarian is a compulsory subject for 3rd year students.

3. Latin has been taken out of the curriculum as in the international practice, Latin terminology is no longer a must in the medical profession. Instead of Latin, a new subject was introduced in the 2006/2007 academic year called Medical Terminology, which is compulsory in the 1st semester of the 1st year.

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
<table>
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<tr>
<th>Subject code</th>
<th>Medical Physics and Statistics I.</th>
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<th>2.5</th>
<th>5</th>
<th>semi-final –</th>
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<td>AOANTANA2_1A</td>
<td>Hungarian Medical Terminology I.</td>
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</table>

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

#### 2nd semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
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<td>Medical Physics and Statistics II.</td>
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<td>2.5</td>
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<td>ADOMSELS_1A</td>
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#### Obligatory elective / Elective subjects:

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<th>Subject code</th>
<th>Elective Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
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<tr>
<td>AOINFINF_1A</td>
<td>Introduction to Medical Informatics</td>
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<td>1</td>
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<td>AOCSAHI_1A</td>
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<td>3</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

Note: From the 2nd semester on, Hungarian Medical Terminology is an elective subject.

Students can decide to continue studying Hungarian as an elective subject at the University or at a language school. For elective subjects see the table after the 3rd year.
LIST OF TEXTBOOKS

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

Recommended textbooks:

ANATOMY, HISTOLOGY AND EMBRYOLOGY

First Semester

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

English Language Course

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

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

Detailed weekly curriculum

<table>
<thead>
<tr>
<th>LECTURE</th>
<th>ANATOMY</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomical nomenclature, body axes, terms of orientation. Bones of the upper limb.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microscope. Simple epithelia I.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bones of the upper limb. Joints of the upper limb</td>
<td></td>
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</tr>
<tr>
<td>Simple epithelia II. Stratified epithelia.</td>
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<td></td>
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<tr>
<td>Joints of the upper limb. Muscles of the ventral surface of the upper limb.</td>
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<td></td>
</tr>
<tr>
<td>Glandular epithelia I.</td>
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<td></td>
</tr>
<tr>
<td>Muscles of the ventral and dorsal surface of the upper limb. Joints of the upper limb.</td>
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<td></td>
</tr>
<tr>
<td>Glandular epithelia II.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muscles on the ventral and dorsal surface of the upper limb. Cross sections of the upper limb. (except for vessels and nerves).</td>
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<td>Connective tissue I.</td>
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<tr>
<td>Topic</td>
<td>LECTURE</td>
<td>LAB</td>
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<tr>
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<tr>
<td>16. Bone tissue.</td>
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<td>MID-TERM TEST.</td>
</tr>
<tr>
<td>18. Axes of the body, right-left asymmetry.</td>
<td></td>
<td>Bones and joints of the trunk and lower limb, Atlanto-occipital and atlanto-axial joints.</td>
</tr>
<tr>
<td>23. Diaphragm.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Formation of primary tissues.</td>
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<td></td>
</tr>
<tr>
<td>29. Granulopoiesis.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31. Pelvic diaphragm.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. Development of the limbs and muscles.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34. Lymphatic tissue. Thymus. Mucosal lymphatic tissue, tonsils.</td>
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<tr>
<td>35. MID-TERM TEST.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36. Development of the vertebral column and the trunk.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38. Abdominal wall, inguinal canal.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39. Anatomy and development of the skull.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41. Pelvis. Statics of the pelvis.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42. Structure of the foot. Mechanism of walking.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>43. Clinical anatomy.</td>
<td></td>
<td>Joints and muscles of the head.</td>
</tr>
<tr>
<td>44. Clinical anatomy.</td>
<td></td>
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<tr>
<td>45. Clinical anatomy.</td>
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</tbody>
</table>
## Second Semester

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

**Subject:** Muscles of the neck. Gross anatomy and development of the heart. Development of the great arteries and veins. Congenital anomalies of the heart and great vessels. Fetal circulation. Blood vessels of the thoracic and abdominal cavity. Lymphatic drainage of these regions. Gross anatomy, histology, development and congenital anomalies of the digestive, the respiratory, the urinary, and the reproductive system. Histology of the placenta and umbilical cord. Histology of the skin and the mammary gland.

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

### Detailed weekly curriculum

<table>
<thead>
<tr>
<th>LECTURE</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic</strong></td>
<td><strong>Anatomy</strong></td>
</tr>
<tr>
<td>3.</td>
<td>Development of the face.</td>
</tr>
<tr>
<td>7.</td>
<td>Histology of the respiratory tract and lung.</td>
</tr>
<tr>
<td>13.</td>
<td>Conducting system, innervation and blood supply of the heart.</td>
</tr>
<tr>
<td>14.</td>
<td>Pericardium, surface projection of the heart.</td>
</tr>
<tr>
<td>15.</td>
<td>Development of great veins. Early development of the heart.</td>
</tr>
<tr>
<td>17.</td>
<td>Histology of the stomach.</td>
</tr>
<tr>
<td>18.</td>
<td>Development of the heart, partitioning of cardiac chambers.</td>
</tr>
</tbody>
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### LECTURE LAB

<table>
<thead>
<tr>
<th>Topic</th>
<th>Anatomy</th>
<th>Histology</th>
</tr>
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<tbody>
<tr>
<td>23. Histology of the liver.</td>
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<tr>
<td>24. Fetal circulation, perinatal changes in circulation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Gross anatomy of the kidney (capsules, blood supply, renal hilus) and the ureter.</td>
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<tr>
<td>27. Division of the embryonic body cavity. Septum transversum.</td>
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<tr>
<td>29. Histology of the testis and the epididymis.</td>
<td></td>
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<tr>
<td>30. Development of the digestive tract, development of the foregut, hindgut, the liver and the pancreas.</td>
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</tr>
<tr>
<td>32. Female reproductive tract - overview, histology of the ovary.</td>
<td></td>
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</tr>
<tr>
<td>33. Development of the peritoneum.</td>
<td></td>
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<tr>
<td>34. Uterus - parts, topography, blood supply.</td>
<td></td>
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<tr>
<td>35. Histology of the uterus, uterine cycle.</td>
<td></td>
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<tr>
<td>36. Pronephros, mesonephros, and metanephros.</td>
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<tr>
<td>38. Lymphatic drainage of the abdomen and pelvis. MID-TERM TEST.</td>
<td></td>
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<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>Pelvic organs. Pelvic and urogenital diaphragm, external genitalia. Review.</td>
<td></td>
</tr>
<tr>
<td>43. Development of the reproductive organs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44. Congenital anomalies of the reproductive system.</td>
<td></td>
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<tr>
<td>45. Pregnancy, delivery.</td>
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</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>2. Structure of the limbs (bony skeleton, joints, muscles, groups of muscles, fasciae, fascial compartments, arteries, superficial and deep veins, nerves, innervation of the muscles and the skin</td>
<td>Bones of the shoulder girdle and the upper extremity. Rules of the dissection. Dissection of the shoulder and elbow joints.</td>
<td>SIMPLE EPITHELS: Simple squamous (mesothel, pleura); simple cuboidal (kidney); simple columnar (gallbladder); pseudostratified (trachea)</td>
</tr>
<tr>
<td>3. Animal tissues, epithelial cells, simple epithets</td>
<td>Features of the skeletal musculature (general myology)</td>
<td>STRATIFIED EPITHELIA: squamous, non-keratinizing (esophagus); squamous keratinizing (skin); columnar male urethra; transitional epithelium (urinary bladder)</td>
</tr>
<tr>
<td>4. Stratified epithelium</td>
<td>Shoulders joint and the muscles acting upon it</td>
<td>GLANDULAR EPITHEL. Goblet cells (colon); merocrine gland (salivary gland); apocrine gland (prostate); holocrine gland (sebaceous gland).</td>
</tr>
<tr>
<td>5. Types and composition of joints general anatomy)</td>
<td>Bones and joints of the hand</td>
<td>PIGMENT EPITHEL (retina) CONNECTIVE TISSUE, FIBERS, Collagen fibers (tendon); elastic fibers (vessel wall); reticular fibers (liver); differential staining of the fibers (skin); ground substance (umbilical cord)</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>CONNECTIVE TISSUE, CELLS. Various types of cells (scar tissue); mast cells peri-or (onereum); fat cells (tongue, skin).</td>
</tr>
<tr>
<td>7. Shoulder joint and the muscles acting upon it</td>
<td>Palmar aponeurosis.</td>
<td>TYPES. Mesenchyme umbilical cord; dense connective tissue (tendon); reticular tissue (lymph node); cell rich tissue (uterus).</td>
</tr>
<tr>
<td>8. Bones and joints of the hand</td>
<td>Dissection of the joints of the upper extremity: removal of the skin, fascia brachii</td>
<td></td>
</tr>
<tr>
<td>9. Glandular epithelum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Muscles of the hand</td>
<td>Muscles of the shoulder region, flexor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles.</td>
<td></td>
</tr>
<tr>
<td>11. Connective tissue, cells</td>
<td>Palmar aponeurosis.</td>
<td></td>
</tr>
<tr>
<td>12. Connective tissue: fibers; types of the connective tissue</td>
<td></td>
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</tr>
<tr>
<td>13. Blood, hematopoiesis</td>
<td></td>
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<tr>
<td>14. Supporting tissue</td>
<td></td>
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<tr>
<td>15. Bone formation</td>
<td></td>
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<tr>
<td>16. Vertebræ, sacrum, vertebral column</td>
<td>TEST. Upper extremity</td>
<td></td>
</tr>
<tr>
<td>17. Superficial and deep muscles of the back</td>
<td>Vertebræ, ribs, sternum</td>
<td></td>
</tr>
<tr>
<td>18. Thorax, pectoral and intercostal muscles</td>
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</tr>
<tr>
<td>Lectures</td>
<td>Dissecting room</td>
<td>Histology lab</td>
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<td>----------</td>
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</tr>
<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>TEST. Epithelial, connective and caff. Peroneal muscles and supporting tissues.</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></td>
</tr>
<tr>
<td>27. Foot</td>
<td>Extensor muscles of the thigh</td>
<td></td>
</tr>
<tr>
<td>28. Neurolulation. Folding of the embryo. Fetal membranes</td>
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<tr>
<td>29. Early embryonic and placental circulation. Structure of the placenta</td>
<td>Completion of the dissection</td>
<td>PLACENTA, UMBILICAL CORD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MUSCLE TISSUE. Smooth muscles (gut); striated muscle (skeletal muscle); cardiac muscle (heart)</td>
</tr>
<tr>
<td>31. Muscle tissue I.</td>
<td>Neuronal tissue: synapses, effectors, receptors</td>
<td></td>
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<tr>
<td>32. Muscle tissue II.</td>
<td></td>
<td>NEURAL TISSUE. CELLS,</td>
</tr>
<tr>
<td>33. Herniae</td>
<td>Neuronal tissue: synapses, effectors, receptors</td>
<td>Multipolar neurons (spinal cord, autonomous ganglion, cerebral cortex, cerebellar cortex); pseudounipolar neurons (spinal ganglion)</td>
</tr>
<tr>
<td>34. Neuronal tissue: neurons and supporting cells derived from the neural tube</td>
<td></td>
<td>NERVE FIBERS.</td>
</tr>
<tr>
<td>35. Neuronal tissue: neurons and supporting cells derived from the neural crest</td>
<td></td>
<td>GLIAL CELLS.</td>
</tr>
<tr>
<td>36. Neuronal tissue: synapses, effectors, receptors</td>
<td></td>
<td>Peripheral nerve, glial cells (spinal cord, cerebral cortex)</td>
</tr>
<tr>
<td>37. Sphenoid and ethmoid bones</td>
<td>Skull</td>
<td>EFFECTORS, RECEPTORS, Motor end plate, sensory nerve ending.</td>
</tr>
<tr>
<td>38. Temporal bone</td>
<td></td>
<td>Review</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></td>
</tr>
<tr>
<td>41. Nasal cavity, paranasal sinuses</td>
<td></td>
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<tr>
<td>42. Oral cavity, pterygopalatine and infratemporal fossae</td>
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<tr>
<td>43. Mandible, temporomandibular joint</td>
<td>Skull</td>
<td></td>
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<tr>
<td>44. Atlantooccipital and atlantoaxial joints. Suboccipital muscles</td>
<td></td>
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<tr>
<td>45. Development of the skull. Fontanelles</td>
<td>TEST. Skull</td>
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</tr>
</tbody>
</table>

SEMMELWEIS UNIVERSITY / FACULTY OF MEDICINE
ANATOMY, HISTOLOGY AND EMBRYOLOGY

Second Semester

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>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>4. Lymphatic organs: thymus, tonsils</td>
<td>Muscles of the face (demonstration)</td>
<td>Salivary glands (parotid, submandibular, sublingual)</td>
</tr>
<tr>
<td>5. Surface structures of the heart, anulus fibrosus, myocard</td>
<td>Tongue, cervical organs on the visceral complex (demonstration)</td>
<td>DIGESTIVE SYSTEM. Liver, gallbladder, pancreas</td>
</tr>
<tr>
<td>6. Chambers of the heart, valves</td>
<td>Esophagus, aorta</td>
<td>DIGESTIVE SYSTEM. Tooth development, esophagus</td>
</tr>
<tr>
<td>7. Vessels of the heart, conducting system, topography, Pericard</td>
<td></td>
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<tr>
<td>8. Development of the heart and the pericard I.</td>
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<tr>
<td>9. Development of the heart and the pericard II. Malformations.</td>
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<tr>
<td>10. Viscera, introduction. Histological structure of the solid and hollow viscera</td>
<td>TEST. Heart, anatomy and embryology</td>
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<tr>
<td>12. Muscles of mastication. Tongue</td>
<td>Tongue, cervical organs on the visceral complex</td>
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<tr>
<td>14. Development and histology of the tongue</td>
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<tr>
<td>15. Development of the face, malformations</td>
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<tr>
<td>16. Pharynx, structure of the wall, soft palate</td>
<td></td>
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<tr>
<td>17. Infrahyoid muscles, cervical fascia, para- and retropharyngeal space</td>
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<tr>
<td>18. Esophagus, stomach: anatomy and histology</td>
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<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, jejenum, ileum, colon, appendix</td>
</tr>
<tr>
<td>22. Liver and biliary apparatus: anatomy</td>
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<tr>
<td>23. Liver and biliary apparatus: histology</td>
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<tr>
<td>24. Pancreas: anatomy and histology,</td>
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<tr>
<td>25. Development of the middle and hindgut</td>
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<tr>
<td>26. Peritoneum</td>
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<tr>
<td>27. Cartilages, joints and muscles of the larynx</td>
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<tr>
<td>28. Skeleton of the larynx, laryngeal inlet, rima glottidis</td>
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<tr>
<td>29. Trachea, lung: anatomy. Pleura</td>
<td>TEST. Lymphatic organs, vessels, heart, digestive system</td>
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</tr>
<tr>
<td>30. Histology of the lung, Development of the respiratory system</td>
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<tr>
<td>31. Kidney, ureter: anatomy</td>
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<tr>
<td>32. Histology and vascular structure of the kidney</td>
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<tr>
<td>33. Urinary bladder: anatomy and histology. Female urethra</td>
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<tr>
<td>34. Development of the uropoietic system, malformations</td>
<td>TEST. Anatomy and embryology of the digestive and respiratory systems. Capsules of the kidney, components of the renal hilum. Aorta, inferior vena cava, ureter; pelvic organs.</td>
<td>RESPIRATORY SYSTEM. Larynx, trachea, lung. Demonstration: embryonal lung</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UROPOETIC SYSTEM. Kidney, urinary bladder.</td>
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</tbody>
</table>
### MEDICAL BIOLOGY I.

**Tutor:** Dr. Valéria László  

#### First Semester

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

Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Meiosis</td>
<td>Typical and atypical mitosis</td>
</tr>
<tr>
<td>2.</td>
<td>No lecture (Research Students’ Conference)</td>
<td>Meiosis and gametogenesis</td>
</tr>
<tr>
<td>3.</td>
<td>Introduction to human genetics; human genom</td>
<td>Cytogenetics I</td>
</tr>
<tr>
<td>4.</td>
<td>Mutations and polymorphisms.</td>
<td>Cytogenetics II</td>
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<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>
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<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

Second Semester

Lectures (2 hours/week)

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

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

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

**First Semester**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture (2.5 hours per week)</th>
<th>Laboratory (2.5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Radiations (basic concepts)</td>
<td>Laboratory safety rules</td>
</tr>
<tr>
<td>2</td>
<td>Properties of electromagnetic radiations; wave and corpuscular nature</td>
<td>Statistics I. (Data processing)</td>
</tr>
<tr>
<td>3</td>
<td>Attenuation of radiation</td>
<td>Emission spectroscopy. Light sources</td>
</tr>
<tr>
<td>4</td>
<td>Luminescence and its applications</td>
<td>Spectrophotometry</td>
</tr>
<tr>
<td>5</td>
<td>Lasers and their medical applications</td>
<td>Optical lenses; light microscope</td>
</tr>
<tr>
<td>6</td>
<td>Thermal radiation, thermography. Biological effects of light</td>
<td>Detection of nuclear radiations</td>
</tr>
<tr>
<td>7</td>
<td>Production and spectrum of X-radiation 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</td>
<td>Couter counter</td>
</tr>
<tr>
<td>12</td>
<td>Beta-radiation, beta-decay</td>
<td>Determination of skin-impedance</td>
</tr>
<tr>
<td>13</td>
<td>Alpha-radiation, alpha-decay Interaction with matter</td>
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<tr>
<td>14</td>
<td>Dosimetry</td>
<td>Concentration determination with refractometer</td>
</tr>
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<td></td>
<td>Radiation protection; estimation of risk</td>
<td>Densitography (CT)</td>
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</tbody>
</table>
MEDICAL PHYSICS AND STATISTICS

Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
<th>Laboratory</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</td>
<td>Gamma energy determination</td>
</tr>
<tr>
<td>5</td>
<td>Most important distribution functions</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Statistics II. Hypothesis testing</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Ultrasound properties, generation of ultrasound</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Ultrasonography, Doppler methods</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Magnetic resonance imaging</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Summary of medical imaging methods (CT, SPECT, PET, endoscopy, thermography)</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Basic concepts of Thermodynamics, First law</td>
<td>Flow of fluids. Electric model of vascular circulation</td>
</tr>
<tr>
<td>12</td>
<td>General description of transport phenomena, Onsager’s equation, examples</td>
<td>Electrocardiography</td>
</tr>
<tr>
<td>13</td>
<td>Diffusion; transport across membrane, resting potential</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Action potential, properties, interpretation</td>
<td>Sensory function</td>
</tr>
<tr>
<td></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</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–4</td>
<td>Chemical equilibrium (electrolytes, acids and bases, ionization equilibrium of water, buffers, solubility product)</td>
<td>Introduction to Medical Chemistry</td>
</tr>
<tr>
<td>4–5</td>
<td>Solutions, osmosis, gases dissolved in water</td>
<td>(Mortimer, pp 302–328)</td>
</tr>
<tr>
<td>5–7</td>
<td>Thermochemistry, chemical thermodynamics, chemical kinetics</td>
<td>(Mortimer pp 87–114, pp 364–412, pp 517–542)</td>
</tr>
<tr>
<td>7</td>
<td>Complexes</td>
<td>(Mortimer 723–730)</td>
</tr>
<tr>
<td>8</td>
<td>Inorganic chemistry, nomenclature</td>
<td></td>
</tr>
<tr>
<td>8–9</td>
<td>Electrochemistry</td>
<td>(Mortimer pp 542–584)</td>
</tr>
<tr>
<td>10–14</td>
<td>Organic chemistry</td>
<td>(Erdős: manuscript)</td>
</tr>
</tbody>
</table>
Week | Practice
--- | ---
1 | Introduction, safety rules
2 | Acid-base titrations I.
3 | Acid-base titrations II.
4 | Acid-base titrations III.
5 | Conductometric determination of NaCl concentration.
6 | 1\(^{st}\) Midterm exam.
7 | Titration based on complex formation. Double and complex salts.
8 | Conductometry. *
9 | Spectrophotometry. *
10 | Electrochemistry. *
11 | Discussion. *
12 | 2\(^{nd}\) Midterm exam.
13 | Permanganometric titration.
14 | Iodometric titration.

*according to a schedule issued later.

MEDICAL CHEMISTRY

(Biochemistry)

Second Semester

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

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

Exemption: Students who have certificates of their previous studies at other Universities in Chemistry and/or Biochemistry may apply for exemptions under the following conditions:
1. They have to present their certificates regarding the courses to the responsible tutor of the course during the first two weeks of the semester. (Dr. A. Hrabák, Department of Medical Chemistry.)
2. Exemptions are given only after a "checking" exam during the first month of the semester. At this exam one of the lecturers will check whether the student’s knowledge is sufficient to complete the semester without attending lectures and laboratory programs. This exam is based on the question list of the semifinal or final examination, and can be obtained from the tutor of the course. In after a successful exam students are exempted from the semifinal or final exam at the end of the semester, including attending both lectures and laboratory programs. If students fail they must attend both lectures and laboratory programs and they have to sit for the semifinal or final exam at the end of the semester. The exemption is valid only for one semester unless the student successfully completes the final exam for both semesters' material.
3. Partial exemption (i.e. only from laboratory programs or lectures) is not permitted.
Medical Profession
Lecturer: Prof. Dr. László Kalabay
Institute: Department of Family Medicine
Duration: One semester, lectures: 6x2 hours, practices: 6x3 hours/semester
Exam: Practical mark (written exam)
Credit value: 2 credit points
Minimum/maximum class size: 55/180

Thematic:

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

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

Antibiotic therapy-infectology obligatory elective subject

Facultative 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
The time of course: every Monday 4.30-6.00 p.m. Programme: (15 weeks. 1 x 2 hours)
Antibiotic treatment-infectology

2008-2009. 1st semester

Basic principles of antimicrobial therapy. Microbiological diagnosis, as the basis of antimicrobial therapy. The concept of "drug of choice"  
E. Ludwig

Diagnosis of infectious diseases: clinical relevance of the various diagnostic tests  
S. Meszner

Optimisation of antimicrobial therapy. The pk/pd approach, correlation of dosage and clinical efficacy.  
E. Ludwig

Infectious diseases with exanthemas  
S. Meszner

Upper respiratory tract infections (common cold, acute and chronic rhinosinusitis, acute otitis, tonsillitis, pharyngitis). Epidemiology, the influence of age. Theoretical considerations and practice.  
S. Meszner

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  
E. Ludwig

E. Ludwig

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

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

J. Sinkó

Tropical diseases. HIV and AIDS.  
D. Bánhegyi

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

GENERAL INFORMATION:

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

AIMS:

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

REQUIREMENTS:

– Practical course grade is obtained if the student has demonstrated the solution of the problem selected at the first lecture to the practice lecturer. Demonstration is associated 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.
<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WEB DESIGN</strong></td>
<td></td>
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<tr>
<td>2. (3 hours)</td>
<td></td>
<td>Web based publication using HTML</td>
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<tr>
<td></td>
<td></td>
<td>Creation of a html page (about the medical topic), definition of the structure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>of the page, adding some HTML objects (hyperlinks, images).</td>
</tr>
<tr>
<td>3. (3 hours)</td>
<td></td>
<td>Web based publication using HTML and CSS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Finalizing the content, personalizing the page appearance with CSS style</td>
</tr>
<tr>
<td></td>
<td></td>
<td>definitions.</td>
</tr>
<tr>
<td>4. (3 hours)</td>
<td></td>
<td>Presentation</td>
</tr>
<tr>
<td>5. (3 hours)</td>
<td></td>
<td>Preparation of the final presentation.</td>
</tr>
<tr>
<td>5. (3 hours)</td>
<td></td>
<td>Delivering the presentation.</td>
</tr>
<tr>
<td><strong>STATISTICS course</strong></td>
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<tr>
<td>1. (3 hours)</td>
<td></td>
<td>Statistical concepts, introduction to the built-in functions of Excel and</td>
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<tr>
<td></td>
<td></td>
<td>Statistical Module (program installation, usage of Stat Menu)</td>
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<tr>
<td></td>
<td></td>
<td>Descriptive statistics by built-in functions (means, indicators of dispersion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>moments, normality, confidence interval), graphical representations</td>
</tr>
<tr>
<td>2. (3 hours)</td>
<td></td>
<td>Parametrical methods by Excel (Student’s tests, F-test)</td>
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<td></td>
<td></td>
<td>ANOVA methods (clinical trials, Fisher’s dissociation, one way and two-way</td>
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<tr>
<td></td>
<td></td>
<td>ANOVA without replication and replication)</td>
</tr>
<tr>
<td>3. (3 hours)</td>
<td></td>
<td>Correlation and regression analysis (correlation coefficient and its limits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>tions, one and more variable linear regressions by Excel)</td>
</tr>
<tr>
<td>4. (3 hours)</td>
<td></td>
<td>Usage of SPSS statistical program package I.</td>
</tr>
<tr>
<td>5. (3 hours)</td>
<td></td>
<td>Usage of SPSS statistical program package II.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Final test: clinical data processing by Excel program</td>
</tr>
<tr>
<td><strong>DATABASES course</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. (3 hours)</td>
<td></td>
<td>Theory: Introduction to database theory (the application, logical, and physical</td>
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<tr>
<td></td>
<td></td>
<td>models, basic concepts and objects). Planning a relational database (</td>
</tr>
<tr>
<td></td>
<td></td>
<td>calendar and phone register example).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access: Student Database (tables: Students, Exams, Grades) - software</td>
</tr>
<tr>
<td></td>
<td></td>
<td>introduction, managing tables</td>
</tr>
<tr>
<td>2. (3 hours)</td>
<td></td>
<td>Access: Student Database - importing table data from an Excel file,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>definition of relations, creation of queries (simple and crosstab) and forms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(lecture book and exam attendance)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Nutrient Database - exploration of tables and structure</td>
</tr>
<tr>
<td>3. (3 hours)</td>
<td></td>
<td>Theory: SQL basics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access: -Nutrient Database (tables: FoodGroups, FoodDescr., NutrientDef.,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NutrientData, MeasureDescr., GramWeight) - creation of basic SQL queries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Theory: Database powered websites. Basic concepts of HTML, PHP, SQL servers</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>EM project portal</em>: Creation of an example PHP file (using basic HTML</td>
</tr>
<tr>
<td></td>
<td></td>
<td>markups, input form to pass variables to php)</td>
</tr>
<tr>
<td>4. (3 hours)</td>
<td></td>
<td><em>EM project portal</em>: Creation of a user friendly, php based user interface</td>
</tr>
<tr>
<td></td>
<td></td>
<td>to search in the Nutrient Database on the MySQL server of the project.</td>
</tr>
<tr>
<td>5. (3 hours)</td>
<td></td>
<td><em>EM project portal</em>: Finalizing the user interface to be able to find the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>detailed nutrient content of a certain food in the selected amount.</td>
</tr>
</tbody>
</table>
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)**


Fractures, dislocation, sprain. Slings.


Poisoning. Drugs. Drunkenness.

**BLS**

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

HUNGARIAN LANGUAGE, TERMINOLOGY – See information before the Study Programs

COMPULSORY SUMMER PRACTICE
Nursing Course

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
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.
Faculty of Medicine
2nd year
## STUDY PROGRAMME
### Second 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>AOANTANA13A1</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>AOHUMANA23A2</td>
<td>Anatomy, Histology, Embryology II.</td>
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<td></td>
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</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>Medical Physiology I.</td>
</tr>
<tr>
<td></td>
<td>Medical Physics and Statistics II.</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medical Chemistry II.</td>
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</tr>
<tr>
<td>AOOBIBKM_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>AOMAGSZO_1A</td>
<td>Medical Sociology*</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>–</td>
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<tr>
<td>AOTSITSN_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**: 27

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Obligatory elective / Elective subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOCSABKO_1A</td>
<td>Introduction to Clinical Medicine</td>
</tr>
<tr>
<td></td>
<td>–</td>
</tr>
</tbody>
</table>

4 credit points must be collected each semester. See the table after the third year.

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

---

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

### 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>A0ANTANA14A1</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>A0HUMANA24A2</td>
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</tr>
<tr>
<td>A0KIKELT_2A</td>
<td>Medical Physiology II.</td>
<td>6</td>
<td>4.5</td>
<td>10</td>
<td>final#</td>
<td>Anatomy, Histology, Embryology III.</td>
</tr>
<tr>
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</tr>
<tr>
<td>A0OBIBKM_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>
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</tr>
<tr>
<td>A0TSITSN_4A</td>
<td>Physical Education IV.</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>signature</td>
<td>Physical Education III.</td>
</tr>
</tbody>
</table>

**Total Number of Credit Points from Compulsory Subjects** 21

**Obligatory elective / Elective subjects**

4 credit points must be collected each semester. See the table after the third year.

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


Recommended textbooks:

2. Ganong: Review of Medical Physiology. Lange
# ANATOMY, HISTOLOGY AND EMBRYOLOGY

Department of Anatomy, Histology & Embryology  
Tutor: Prof. Dr. Miklós Réthelyi

## First Semester

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

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
</table>
| 1. The significance of the nervous system in the medical curriculum and practice.  
2. Development of the telencephalon, Meninges anatomy of the hemispheres, lateral ventricles  
5. Blood supply of the brain. Cerebrospinal fluid  
6. Differentiation of the neural tube, development of the spinal cord  
7. Anatomy of the spinal cord, spinal segment  
8. Neuronal architecture of the spinal cord: proprioceptive and withdrawal reflex arches  
9. Neuronal architecture of the spinal cord: mesencephalon, autonomous reflex arch, spinal pathways  
10. Nuclei and pathways in the brain stem I.  
11. Nuclei and pathways in the brain stem II.  
12. Nuclei and pathways in the brain stem III.  
13. Microscopic structure and connections of the thalamic nuclei  
14. Sensory pathways  
15. Neural correlates of the pain sensation  
16. Cerebellar cortex  
17. Cerebellar pathways  
18. Structure and connections of the basal nuclei (extrapyramidal system) r. supraclavicularis, r. Aiiarlis  
19. Motor pathways  
20. Patient demonstration  
21. Cerebral cortex  
22. Trigeminal nerve  
23. Facial nerve  
24. Glossopharyngeal, vagus, accessory and hypoglossal nerves  
25. Olfactory and gustatory systems  
26. Outer and middle coats of the eyeball  
27. Lens, chambers of the eye, vitreous body, accommodation  
28. Inner coat of the eyeball, retina  
29. Outer eye muscles, movement of the eye  | Divisions of the brain meninges, – arteries and veins of the brain, surface structure of the hemispheres basis cerebris.  
Demonstration: dura mater, Sinuses  
Lateral ventricles, third ventricle  
Fourth ventricle  
Spinal cord, brain stem, fourth ventricle, cerebellum  
Spinal cord, spinal ganglion, medulla oblongata,  
Spinal cord, brain stem.  
Brain stem, fourth ventricle, cerebellum  
Cerebrospinal fluid  
Mechanical differentiation of the neural tube, development of the spinal cord  
Anatomy of the spinal cord, spinal segment  
Neuronal architecture of the spinal cord: proprioceptive and withdrawal reflex arches  
Neuronal architecture of the spinal cord: mesencephalon, autonomous reflex arch, spinal pathways  | Cross sections of the brain stem.  
Demonstration: spinal cord  
Coronal and horizontal sections  
Cerebellum, cerebral cortex  
Test. Anatomy of the brain and the spinal cord; nuclei, pathways (tracts), embryology, Regio (r.) frontalis, r. infraorbitalis et buccalis, r. supraclavicularis, r. Aiiarlis  
R. frontalis, r. infraorbitalis et buccalis, r. Supraclavicularis, r. Aiiarlis  
R. parotidomasseterica, r. mediana colli, r. infraclavicularis, r. Dettoida  
R. submandibularis, trigorum caroticum, fossa scalenotrachealis. Demonstration: middle and inner ear |
ANATOMY, HISTOLOGY AND EMBRYOLOGY

Second Semester

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

Third Semester

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


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

<table>
<thead>
<tr>
<th>LECTURE</th>
<th>Anatomy</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nervous system - Introduction.</td>
<td>Spinal cord, its blood supply, Meninges, sinuses, cisternae.</td>
<td></td>
</tr>
<tr>
<td>2. Meninges, ventricles, liquor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Interneuronal synapses, chemical neurotransmission.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Peripheral sensory receptors and peripheral effector nerve endings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Structural organization of the spinal cord. Gray matter.</td>
<td>Lateral ventricle, 3rd ventricle, oblique section of the brain, coronal sections of the brain.</td>
<td></td>
</tr>
<tr>
<td>8. White matter of the spinal cord. Pathways of the spinal cord.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Nuclei of cranial nerves.</td>
<td></td>
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</tr>
<tr>
<td>12. Diencephalon.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Hypothalamus, hypothalamo-hypophyseal system.</td>
<td></td>
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</tr>
<tr>
<td>17. The dorsomedial (medial lemniscus) sensory system. Somatosensory cortex.</td>
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<tr>
<td>18. The ventrolateral (spinothalamic) sensory system.</td>
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<td></td>
</tr>
<tr>
<td>20. Limbic system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Motor unit, lower and upper motoneuron, somatomotor cortex.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Pyramidal tract.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Histology of cerebellar cortex.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Reticular formation and its neural connections.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. Craniosacral parasympathetic system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. Development of the nervous system, I. Early stage of development, differentiation of the neural tube.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LECTURE</td>
<td>LAB</td>
<td></td>
</tr>
<tr>
<td>----------</td>
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<td></td>
</tr>
<tr>
<td>31. Development of the nervous system, II. Histogenesis, craniocaudal and dorsoventral differentiation.</td>
<td>MID-TERM TEST</td>
<td></td>
</tr>
<tr>
<td>32. Development of the nervous system, III. Development of the brain stem and cerebellum.</td>
<td>Eye, orbit dissection.</td>
<td></td>
</tr>
<tr>
<td>33. Development of the nervous system, IV. Development of the telencephalon, basal ganglia, choroid plexus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34. Development of the nervous system, V. Neural crest and its derivatives.</td>
<td>Eye, orbit dissection.</td>
<td></td>
</tr>
<tr>
<td>36. Development of the eye.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40. Clinical anatomy.</td>
<td>Inner ear.</td>
<td></td>
</tr>
<tr>
<td>42. Auditory apparatus, outer ear, middle ear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45. Development of the auditory apparatus.</td>
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<td></td>
</tr>
</tbody>
</table>

**Fourth Semester**

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

**Subject:** Regional anatomy of the head, neck, trunk, and body cavities. Gross anatomy of the pharynx, larynx, and peritoneum. Section anatomy.  
**Credits:** 5  
**Lecture:** 1 hour/week  
**Laboratory:** 4 hours anatomy or 2 hours anatomy plus 2 hours histology
<table>
<thead>
<tr>
<th>Topic</th>
<th>Anatomy</th>
<th>Histology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Regional and sectional anatomy of the upper limb.</td>
<td>Dorsal regions of the head, neck, chest wall and limbs. Cross section of the arm and forearm. Bones and joints of the upper limb. Topography of radial nerve injury. Dorsal veins of the hand.</td>
<td></td>
</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.</td>
<td>Digestive tract II.</td>
</tr>
</tbody>
</table>
LAB

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

MEDICAL PHYSIOLOGY

Institute of Human Physiology and Clinical Experimental Research

Tutor: Dr. Tamás Ivanics

First Semester

Week Lecture (6 hours per week)


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

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


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


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 (5 hours weekly)

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

MEDICAL PHYSIOLOGY

Second Semester

Week Lecture (6 hours per week)
1 Formation and excretion of urine. Physiological functions, their significance in the maintenance of the internal milieu and in healthy functioning of the organism. Renal circulation. Glomerular filtration.
Clinical correlates. Endocrine functions of the pancreas and the regulation of carbohydrate metabolism. Hormonal control of intermediary metabolism.


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

Practice (4,5 hours weekly)

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

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>
</tbody>
</table>
Second Semester Schedule of the lectures

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Structure of the genome: an overview. Replication of DNA in prokaryotes (principles of the replication process) Special properties of DNA replication in eukaryotes. Repair of DNA and its significance.</td>
</tr>
<tr>
<td>2</td>
<td>Mutations and their consequences. Transcription in prokaryotes, the transcription unit in prokaryotes Transcription in eukaryotes: the structure of the genes, regulatory elements on the DNA, maturation of the primary transcript.</td>
</tr>
<tr>
<td>5</td>
<td>Control of cell cycle</td>
</tr>
<tr>
<td>6</td>
<td>Basic methods in recombinant DNA technology. PCR as a new tool in medical diagnosis</td>
</tr>
<tr>
<td>7</td>
<td>Human genome project</td>
</tr>
<tr>
<td>9</td>
<td>Enzyme linked plasma membrane surface receptors, protein tyrosine kinase receptors, cGMP in signaling. Nuclear receptors, bHLH transcription factors: HIF, Ah receptor Membrane transport processes, an overview. Sodium, potassium homeostasis. Na⁺–K⁺-ATPase. The molecular anatomy of synapses. The cholinergic and adrenergic nerve terminal.</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 ß-galactosidase in E. coli
11. Midterm examination II.
13. Recombinant DNA techniques I.
14. Practice/Seminar:: Recombinant DNA techniques II.
# Medical Sociology

**Syllabus.**
(Faculty of Medicine)

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Introduction: ideas about health and social behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical</td>
<td>Epidemiological measures</td>
</tr>
<tr>
<td>Practical</td>
<td>The social demography of health: age, gender, race, socioeconomic status</td>
</tr>
<tr>
<td>Practical</td>
<td>Social factors of stress</td>
</tr>
<tr>
<td>Lecture</td>
<td>Health behavior: health lifestyles, preventive care</td>
</tr>
<tr>
<td>Lecture</td>
<td>Illness behavior</td>
</tr>
<tr>
<td>Practical</td>
<td>The sick role: illness as deviance</td>
</tr>
<tr>
<td>Lecture</td>
<td>The doctor-patient interaction; patient compliance; doctor-patient relations and technology</td>
</tr>
<tr>
<td>Practical</td>
<td>The profession of medicine; the socialization of the physician. Nurses, assistants, midwives</td>
</tr>
<tr>
<td>Practical</td>
<td>The hospital</td>
</tr>
<tr>
<td>Practical</td>
<td>The social control of medical practice</td>
</tr>
<tr>
<td>Lecture</td>
<td>Health care delivery and social policy</td>
</tr>
<tr>
<td>Lecture</td>
<td>Health care in developed countries</td>
</tr>
<tr>
<td>Lecture</td>
<td>Health care in developing and former socialist countries</td>
</tr>
<tr>
<td>Practical</td>
<td>Course summary: the physician in a changing society</td>
</tr>
</tbody>
</table>

Developmental Biology: from gene to newborn. I. -
Obligatory elective subject

"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 placodes
Origin of neural crest and placodes, 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 birdsand mammals
Symmetry breaking, left-right asymmetry formation.
Organogenesis

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

Department of Human Morphology and Developmental Biology

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

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

Intermediate mesoderm I.
Development of kidney, clinical correlations

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

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

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

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

Branchiogenic arches and their derivatives
Clinical correlations

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

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

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

Neurogenesis
Anterior-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
Faculty of Medicine
3rd year
# STUDY PROGRAMME

## Third 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>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>basic module</td>
</tr>
<tr>
<td>AOMIKMIK_1A</td>
<td>Medical Microbiology I.</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>semi-final</td>
<td>basic module</td>
</tr>
<tr>
<td>AOPKPKAT11A²</td>
<td>Pathology and Histopathology I.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>semi-final</td>
<td>basic module</td>
</tr>
<tr>
<td>AOBEL1BEL11A²</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>AOBEL2BE21A²</td>
<td>Medical Psychology I.</td>
<td>10/sem</td>
<td>20/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

At least 4 credit points must be collected each semester. See the table after the 3rd year.

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

---

¹1st Department of Pathology and Experimental Cancer Research
²2nd Department of Pathology
³1st Department of Internal Medicine
⁴2nd Department of Internal Medicine
⁵3rd Department of Internal Medicine
# The grade influences the qualification of the Diploma
### Third 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>
</tr>
</thead>
<tbody>
<tr>
<td>AOKORKO_2A</td>
<td>Pathophysiology and Clinical Lab. Diagnostics II.</td>
<td>2.5</td>
<td>2.5</td>
<td>5</td>
<td>final #</td>
</tr>
<tr>
<td>AOMIMMIX_2A</td>
<td>Medical Microbiology II.</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>final #</td>
</tr>
<tr>
<td>AOPKYPAT12A²</td>
<td>Pathology and Histopathology II.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>final #</td>
</tr>
<tr>
<td>AOB1BE12A³</td>
<td>Internal Medicine II.</td>
<td>3</td>
<td>4</td>
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<td>20/sem</td>
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<td>1</td>
<td>2</td>
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<tr>
<td>AOFNFNRM_1A</td>
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<td>1.5</td>
<td>0.5</td>
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**Total Number of Credit Points from Compulsory Subjects:** 30

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

At least 4 credit points must be collected each semester. See the table after the 3rd year.

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

---

³1st Department of Pathology and Experimental Cancer Research
²2nd Department of Pathology
²²1st Department of Internal Medicine
²²²2nd Department of Internal Medicine
³³3rd Department of Internal Medicine
# The grade influences the qualification of the Diploma
# LIST OF TEXTBOOKS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>12</td>
<td>Cotran-Kumar-Robbins: Robbins Pathologic Basis of Disease (W.B. Saunders, 1999), ISBN: 0-7216-7335-x</td>
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**Recommended textbooks:**

<p>| | |</p>
<table>
<thead>
<tr>
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</table>
17 CP.L. Wheater, H.G. Burkitt, Stevens J.S. Lowe: Basic Histopathology, a Colour Atlas and Text. (Chur-
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
963-7306-307.
ISBN 0-07-100729-6
### First Semester

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

Second Semester

Lecture

IX. Pathophysiology of Hematologic Disorders
  Anemias
  Myeloproliferative Diseases
  Disturbances in Hemostasis

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

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

XII. Pathophysiology of Endocrine Disorders
  Disturbances in Thyroid Function
  Disturbances in Adrenal Gland and Sexual Function
  Metabolic Bone Diseases

XIII. Pathophysiology of the Nervous System
  Motor and Sensory Disturbances
  Disturbances in "Higher" CNS Function

Pathophysiology of Pain

Lab

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

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

Practice, Examples, Exam
Laboratory Evaluation of Plasma Proteins and Enzymes
Laboratory Evaluation of Lipid and Lipoprotein Disorders
Hypothalamic-Pituitary Tests
Thyroid Function Tests
Laboratory Evaluation of Ca++ and Phosphate
Metabolism
Practice, Examples, Exam
# MEDICAL MICROBIOLOGY

Institute of Medical Microbiology

Program Director: Prof. Dr. Károly Nagy
Tutor: Dr. Zsuzsanna Berek (#6225; email: berzsu@net.sote.hu)

## 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>
</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>
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<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, Chlamydiaceae and Mycoplasmatales</td>
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</tbody>
</table>

MEDICAL MICROBIOLOGY

Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (2 hours per week)</th>
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<tbody>
<tr>
<td>1.</td>
<td>Medical Mycology</td>
</tr>
<tr>
<td>2.</td>
<td>Medical Parasitology - 1</td>
</tr>
<tr>
<td>3.</td>
<td>Medical Parasitology - 2</td>
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<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>
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<tr>
<td>Week</td>
<td>Practicals (3 hours per week)</td>
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</tr>
<tr>
<td>1.</td>
<td>Medical Mycology</td>
</tr>
<tr>
<td>2.</td>
<td>Medical Parasitology - 1</td>
</tr>
<tr>
<td>3.</td>
<td>Medical Parasitology - 2</td>
</tr>
<tr>
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<td>Medical Parasitology - 3</td>
</tr>
<tr>
<td>5.</td>
<td>Midterm exam I.</td>
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<td>General Virology</td>
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<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>
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<tr>
<td>9.</td>
<td>Midterm exam II.</td>
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<tr>
<td></td>
<td>* Clinical Bacteriological Diagnosis – 1: Skin, wound and eye infections</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>
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<tr>
<td>13.</td>
<td>Summary and review</td>
</tr>
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<td>14.</td>
<td>Practical exam</td>
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PATHOLOGY
1st Dept. of Pathology and Experimental Cancer Research
Tutor: Dr. Gergely Rácz

First Semester

Lectures (14 weeks): (all lectures for the whole class are held at the 2nd Dept. of Pathology), Mo 10:50-12:00, We 8:00-9:10.

Autopsy and histology practice (14 weeks): We 9:30-12:50, absence: more than 3 absences invalidate semester. Missing any half (either histology or autopsy) of the practice is considered an absence.

Lectures (3 hours per week)

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

2. Cell injury
   - Haemosiderin in alveolar macrophages H&E (8)
   - Thromboembolism H&E (3)
   - Hemorrhagic infarction of the lung H&E (4)
   - Anemic infarction of the kidney H&E (5)
   - Emolliion of the brain H&E (6)
   - Fatty degeneration of the liver H&E (12)

3. Cell injury
   - Haemosiderin in alveolar macrophages H&E (8)
   - Thromboembolism H&E (3)
   - Hemorrhagic infarction of the lung H&E (4)
   - Anemic infarction of the kidney H&E (5)
   - Emolliion of the brain H&E (6)
   - Fatty degeneration of the liver H&E (12)

4. Inflammation
   - Phlegmone H&E (13)

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

6. Wound healing, regeneration and fibrosis
   - Actinomycesis 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)
   - Chronic abscess (3)
   - Granulation tissue H&E (19)
   - Foreign-body granuloma H&E (20)

9. Neoplasia
   - Metaplasia (slide demonstration)
   - Dysplasia of the cervical epithelium (CIN) H&E (24)
   - In-situ carcinoma of the cervix H&E (25)
   - Invasive squamous cell carcinoma of the cervix H&E (26)

10. Neoplasia
    - Squamous cell papilloma H&E (23)
    - Squamous cell carcinoma of the larynx H&E (10)
    - Tubulovillous adenoma of the colon H&E (30)
    - Adenocarcinoma of the colon H&E (31)
    - Metastasis in lymph node H&E (36)
    - Metastatic carcinoma in the lung (slide demonstration)

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

12. Haemodynamic disorders
    - Leimyoma H&E (37)
    - Leiomyosarcoma (slide demonstration)
    - Lipoma H&E (11)
    - Liposarcoma (slide demonstration)
    - Malignant fibrous histiocytoma H&E (38)
    - Immunohistochemistry (slide demonstration)
### Lectures (3 hours per week)

#### Histopathology practices

14. Environmental and nutritional pathology
   - Atherosclerosis of the aorta H&E (45)
   - Benign nephrosclerosis H&E (46)
   - Coronary-sclerosis H&E (47)
   - Polyarteritis nodosa H&E (48)
   - Giant cell arteritis H&E (49)
   - Cystic medinecrosis of the aorta H&E (66)

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 (56)

17. Heart
   - IRDS H&E (50)

18. Heart
   - Lobar pneumonia H&E (51)
   - Bronchopneumonia H&E (52)
   - Pneumococcosis H&E (54)
   - Pleural fibrinosis H&E (97)

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

20. Respiratory system
   - Tuberculous lymphadenitis H&E (56)
   - Oat cell carcinoma of the lung H&E (58)
   - Mesothelioma H&E (59)
   - Nasopharyngeal carcinoma (slide demonstration)
   - Warthin-tumor (slide demonstration)
   - Mucoepidermoid carcinoma (slide demonstration)
   - Adenoid cystic carcinoma (slide demonstration)
   - Chronic gastritis H&E (61), Giemsa (62)
   - Signet ring cell carcinoma of the stomach H&E (63), PAS (64)
   - Ventricular-lymphoma (slide demonstration)

21. Respiratory system
   - Mixed tumor of the parotid gland H&E (32)

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

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

24. Infectious diseases
   - Crohn’s disease H&E (69)
   - Carcinoid H&E (53)
   - Peritoneal carcinosis H&E (99)

25. Gastrointestinal tract
   - Organ demonstration

26. Gastrointestinal tract

27. Gastrointestinal tract

28. Pancreas

### PATHOLOGY

#### Second Semester

<table>
<thead>
<tr>
<th>Lectures (3 hours per week)</th>
<th>Histopathology practices</th>
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</thead>
<tbody>
<tr>
<td>29. Liver and biliary system</td>
<td>Alcoholic hepatitis H&amp;E (70)</td>
</tr>
<tr>
<td>30. Liver and biliary system</td>
<td>Chronic hepatitis H&amp;E (71)</td>
</tr>
<tr>
<td>31. Liver and biliary system</td>
<td>Liver cirrhosis H&amp;E (72)</td>
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<tr>
<td>32. Kidney</td>
<td>Hepatocellular carcinoma H&amp;E (73)</td>
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<tr>
<td></td>
<td>Cavernous haemangiomata of liver H&amp;E (35)</td>
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<tr>
<td></td>
<td>Chronic cholecystitis H&amp;E (74)</td>
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<tr>
<td>Lectures (3 hours per week)</td>
<td>Histopathology practices</td>
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<tr>
<td>-----------------------------</td>
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<tr>
<td><strong>33. Kidney</strong></td>
<td>Chronic pancreatitis H&amp;E(75)</td>
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<tr>
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<td>Acute hemorrhagic necrotising pancreatitis H&amp;E(76)</td>
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<tr>
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<td>Pancreatic pseudocyst (slide demonstration)</td>
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<tr>
<td></td>
<td>Adenocarcinoma of pancreas H&amp;E (77)</td>
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<tr>
<td><strong>34. Urinary tract</strong></td>
<td>Islet cell tumor of pancreas (slide demonstration)</td>
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<tr>
<td></td>
<td>Diabetic nodular glomerulosclerosis</td>
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<tr>
<td><strong>35. Male genital syste</strong></td>
<td>Glomerulonephritis H&amp;E (79)</td>
</tr>
<tr>
<td><strong>36. Gynecologic pathology</strong></td>
<td>End stage kidney H&amp;E (80)</td>
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<td></td>
<td>Acute rejection in transplanted kidney H&amp;E (22)</td>
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<tr>
<td><strong>37. Gynecologic pathology</strong></td>
<td>Normal adrenal cortex (slide demonstration)</td>
</tr>
<tr>
<td><strong>38. Neonatology</strong></td>
<td>Wilm’s tumor H&amp;E(84)</td>
</tr>
<tr>
<td><strong>39. Breast</strong></td>
<td>Transitional cell carcinoma H&amp;E (28)</td>
</tr>
<tr>
<td><strong>40. Blood and lymphoid organs</strong></td>
<td>Nodular hyperplasia of the prostate H&amp;E(85)</td>
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<tr>
<td><strong>41. Blood and lymphoid organs</strong></td>
<td>Adenocarcinoma of prostate H&amp;E(87)</td>
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<tr>
<td></td>
<td>Seminoma H&amp;E (88)</td>
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<tr>
<td></td>
<td>Embryonal carcinoma (slide demonstration)</td>
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<tr>
<td><strong>42. Blood and lymphoid organs</strong></td>
<td>Teratoma H&amp;E(89)</td>
</tr>
<tr>
<td><strong>43. Blood and lymphoid organs</strong></td>
<td>Placenta retention H&amp;E (90)</td>
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<tr>
<td></td>
<td>Extrauterine gravidity H&amp;E (91)</td>
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<tr>
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<td>Arias-Stella phenomenon (slide demonstration)</td>
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<td>Hydatiform mole H&amp;E (92)</td>
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<td>Choriocarcinoma H&amp;E (93)</td>
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<tr>
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<td>Endometrial hyperplasia H&amp;E (94)</td>
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<tr>
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<td>Endometriosis (slide demonstration)</td>
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<tr>
<td><strong>44. Endocrinology</strong></td>
<td>Endometrium carcinoma H&amp;E (95)</td>
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<tr>
<td><strong>45. Endocrinology</strong></td>
<td>Chronic cervicitis H&amp;E (123)</td>
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<tr>
<td></td>
<td>HPV infection in cervix H&amp;E (124)</td>
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<tr>
<td><strong>46. Skin</strong></td>
<td>In situ hybridisation (slide demonstration)</td>
</tr>
<tr>
<td><strong>47. Skin</strong></td>
<td>Condyloma acuminatum (slide demonstration)</td>
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<tr>
<td></td>
<td>Follicular cyst of the ovary H&amp;E (125)</td>
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<tr>
<td></td>
<td>Mucinous cystadenoma of the ovary H&amp;E(29)</td>
</tr>
<tr>
<td></td>
<td>Mucinous cystadenocarcinoma (slide demonstration)</td>
</tr>
<tr>
<td></td>
<td>Borderline serous papillary cystadenoma of the ovary H&amp;E (126)</td>
</tr>
<tr>
<td></td>
<td>Serous papillary cystadenocarcinoma of the ovary (slide demo)</td>
</tr>
<tr>
<td></td>
<td>Fibrocystic disease of the breast H&amp;E(101)</td>
</tr>
<tr>
<td><strong>48. Skin</strong></td>
<td>Granulosa cell tumor (slide demonstration)</td>
</tr>
<tr>
<td><strong>49. Skin</strong></td>
<td>Peri- and intracanalicular fibroadenoma of the breast H&amp;E (33)</td>
</tr>
<tr>
<td></td>
<td>Phyllid tumor (slide demonstration)</td>
</tr>
<tr>
<td></td>
<td>Intraductal carcinoma H&amp;E(102)</td>
</tr>
<tr>
<td><strong>50. Skin</strong></td>
<td>Invasive ductal carcinoma H&amp;E(103)</td>
</tr>
<tr>
<td><strong>51. Skin</strong></td>
<td>Invasive lobular carcinoma H&amp;E (104)</td>
</tr>
<tr>
<td><strong>52. Skin</strong></td>
<td>FNAB of the breast (cytol. smear demonstration)</td>
</tr>
<tr>
<td><strong>53. Skin</strong></td>
<td>Normal bone marrow H&amp;E (127)</td>
</tr>
<tr>
<td><strong>54. Skin</strong></td>
<td>Leukemic bone marrow H&amp;E(128)</td>
</tr>
<tr>
<td><strong>55. Skin</strong></td>
<td>Leukemic infiltration of parenchymal organs (slide demonstration)</td>
</tr>
<tr>
<td><strong>56. Skin</strong></td>
<td>Multiple myeloma H&amp;E (106)</td>
</tr>
<tr>
<td><strong>57. Skin</strong></td>
<td>Amyloidosis Congo (21)</td>
</tr>
</tbody>
</table>
Lectures (3 hours per week)

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

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

50. Bones and joints
- Graves disease H&E (111)
- Follicular adenoma of the thyroid gland H&E (112)
- Papillary carcinoma of the thyroid gland H&E (113)

51. Bones and joints
- Osteosarcoma H&E (114)
- Rhabdomyosarcoma H&E (115)

52. Eye
- Basal cell carcinoma H&E (27)

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

54. Nervous system
- Encephalitis H&E (118)

55. Nervous system
- Meningioma H&E (119)
- Glioblastoma multiforme H&E (120)

56. Nervous system
- Neuroblastoma H&E (121)

57. Clinicopathologic conference
- Review

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

#### 1st Semester - 2008

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture</th>
<th>Topic</th>
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<tbody>
<tr>
<td>09.08.</td>
<td>M. 1.</td>
<td><strong>Introduction</strong> - History of pathology, its significance in medicine, Health and sickness. - Cliniopathology – Demonstration of establishing diagnosis from biopsy specimen to the pathological report and therapeutic suggestion.</td>
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<tr>
<td>09.24.</td>
<td>M. 6.</td>
<td><strong>Immunopathology</strong> - Autoimmune diseases. Etiology. Monosystemic diseases (e.g. chr. Athrophic gastritis, myasthenia gravis Basedow dis., Hashimoto thyreoiditis, Addison dis., insulin dependent diabetes mellitus, sclerosis multiple) and Oligo- polysystemic diseases (e.g. SLE, Sjögren sy, RA, scleroderma, dermato(myositis)</td>
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<tr>
<td>09.29.</td>
<td>M. 7.</td>
<td><strong>Infectious diseases I.</strong> Diseases caused by viruses (tick-borne viruses, polio, variola, herpes, CMV, EBV, rubella, varicella, mumps, influenza), Rickettsiae, Spirochetes,</td>
</tr>
<tr>
<td>10.01.</td>
<td>W. 8.</td>
<td><strong>Infectious diseases II.</strong> Bacteria (tularaemia, pertussis, legionella, brucellosis, listeriosis, clostridial infections (tetanus, botulism), Streptococci) Actinomycosis. Mycobacteria (tbc, leprosy), Protozoa (malaria, toxoplasmosis, amebiasis)</td>
</tr>
</tbody>
</table>
10.06. M. 9. lecture  
Dr. Tímár  
**Inflammation I.**  

10.08. W.10. lecture  
Dr. Schaff  
**Inflammation II:**  
Chronic inflammation. Fibrosis, scarring. Granulomatous inflammations (tuberculosis, syphilis, etc.)

10.13. M. 11. lecture  
Dr. Tímár  
**Neoplasia I.**  

10.15. W. 12. Lecture  
Dr. Tímár  
**Neoplasia II.**  

10.20. M. 13. Lecture  
Dr. Schaff  
**Neoplasia III.**  
Carcinogenesis (physical, chemical, biological). Epidemiology of tumors.

10.22. W. 14. lecture  
Dr. Schaff  
**Neoplasia IV.**  

10.27. Sat. 15. lecture  
Dr. Küká  
**Clinical Pathology – Molecular pathology:**  
Diagnostic parameters, requirements, which guide the clinical protocols. Molecular diagnostics of tumors. Targeted therapy.

10.30. W. 16. lecture  
Dr. Kiss  
**Genetic diseases, developmental disorders, storage diseases**  

11.03. M. 17. lecture  
Dr. Kiss  
**Blood vessels I.**  

11.10. M. 19. lecture  
Dr. Küká  
**Blood vessels II.**  

11.12. W. 20. lecture  
Dr. Glasz  
**The heart I.**  

11.17. M. 21. lecture  
Dr. Glas  
**The heart II.**  
Rheumatic heart disease. Inflammatory diseases of the endocardium and myocardium. Cardiomyopathies. Systemic diseases involving the heart.

11.19. W. 22. lecture  
Dr. Karénfy  
**Respiratory system I.**  

11.24. M. 23. lecture  
Dr. Tímár  
**Respiratory system II.**  
<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture</th>
<th>Topic</th>
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<tr>
<td>Dr. Tímár</td>
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<td>Dr. Tímár</td>
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<td>12.03. W</td>
<td>26. lecture</td>
<td><strong>Gastrointestinal tract I.</strong> Esophagus (anatomy and developmental disorders, inflammation, trauma, tumors). Stomach (congenital abnormalities, inflammations, peptic ulcer, neoplasms)</td>
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<td>Dr. Schaff</td>
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<td>12.08. M</td>
<td>27. lecture</td>
<td><strong>Gastrointestinal tract II.</strong> Small intestine (congenital disorders, infections, vascular disease, Crohn-disease, malabsorption, Whipple's disease, neoplasms, pneumatoasis cystoides).</td>
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<tr>
<td>02.09. M</td>
<td>33. lecture</td>
<td><strong>Liver and biliary system III.</strong> Gallbladder and bile ducts (congenital anomalies, cholecystitis, cholelithiasis, cholangitis, neoplasms).</td>
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<td>Dr. Schaff</td>
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<td>02.16. W</td>
<td>34. lecture</td>
<td><strong>Endocrinology I.</strong> Pathology of the endocrine pancreas: Diabetes mellitus.</td>
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<tr>
<td>Dr. Járai/ Dr. Székely</td>
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<tr>
<td>Dr. Székely</td>
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<td>Dr. Székely</td>
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<td>Dr. Kardos</td>
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<tr>
<td>Dr. Székely</td>
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<tr>
<td>03.09. W</td>
<td>39. lecture</td>
<td><strong>Urinary tract II. / Male genital system</strong> Diseases of the epididymis, testis, prostate, penis and scrotum.</td>
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<tr>
<td>Dr. Tímár</td>
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<tr>
<td>Dr. Székely</td>
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<tr>
<td>Dr. Schaff</td>
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</tbody>
</table>
Gynecologic pathology II.

Neonatology - Pediatric tumors.

Breast I

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.

Bones and joints

Nervous system I.

Nervous system II.

Nervous system III.

Skin Basic notions in skin pathology.

Childhood Tumors
List of textbooks


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-II. (Semmelweis Univ. of Medicine)- video

Histopathology practices

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

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
   - Phlegmone H&E (7)
   - Acute appendicitis H&E (8)
   - Fibrinous pericarditis H&E (9)
   - Pseudomembranous colitis (10)
   - Fistule – Chronic abscess (11)
   - Granulation tissue H&E (12)
   - Foreign-body granuloma H&E (13)

4. practice
   - Actinomycosis H&E – slide demonstration (9B)
   - Candidiasis PAS (14)
   - Aspergillosis (slide demonstration)
   - Oxyuris in appendix H&E (slide demonstration)

5. practice
   - Metaplasia (slide demonstration)
   - Dysplasia of the cervical epithelium (CIN) H&E (15)
   - In-situ carcinoma of the cervix H&E (16)
   - 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 of the colon H&E (20)  
Adenocarcinoma of the colon H&E (21)  
Metastasis in lymph node H&E (22)  
Peritoneal carcinosis (23)

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

8. practice  
Benign nephrosclerosis H&E (28)  
Polyarteritis nodosa H&E (29)  
Giant cell arteritis H&E (30)

9. practice  
Coronary-sclerosis H&E (31)  
Myocardial infarction, early H&E (32)  
Myocardial infarction, old H&E (33)  
Endocarditis H&E (34)

10. practice  
IRDS H&E (35)  
Bronchopneumonia H&E (36)  
Lobar pneumonia H&E (slide demonstration)  
Miliary tuberculosis in lung H&E (37)  
Tuberculotic lymphadenitis H&E (38)  
Boeck sarcoidosis H&E (slide demonstration)

11. practice  
Oat cell carcinoma of the lung H&E (39)  
Squamous cell carcinoma of the lung (40)  
Mesothelioma H&E (41)  
Pneumoconiosis H&E (42)

12. practice  
Nasopharyngeal carcinoma (slide demonstration)  
Mixed tumor of the parotid gland H&E (43)  
Warthin-tumor (slide demonstration)  
Chronic peptic ulcer H&E (44)  
Chronic gastritis H&E (45), Giemsa (45/G)  
Signet ring cell carcinoma of the stomach H&E (46), PAS (46/P)
<table>
<thead>
<tr>
<th>Practice</th>
<th>Tissues/Conditions</th>
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</thead>
</table>
| 13. practice | Villous atrophy in small intestine (47)  
Ulcereative colitis H&E (48)  
Crohn's disease H&E (49) |
| 14. practice | Organ demonstration                                       |
| 15. practice | Alcoholic hepatitis H&E (50)  
Chronic hepatitis H&E (51)  
Liver cirhosis H&E (52)  
Hepatocellular carcinoma H&E (53)  
Cavernous haemangioma of liver H&E (54) |
| 16. practice | Chronic cholecystitis H&E (slide demonstration)  
Chronic pancreatitis H&E (55)  
Acute hemorrhagic necrotising pancreatitis H&E (56)  
Adenocarcinoma of pancreas H&E (57) |
| 17. practice | Carcinoid H&E (58)  
Islet cell tumor of pancreas H&E (slide demonstration)  
Adrenal cortical adenoma (normal) H&E (59)  
Normal adrenal cortex (slide demonstration)  
Medullary carcinoma H&E (slide demonstration)  
Parathyroid adenoma H&E (slide demonstration)  
Amyloidosis Congo-red (slide demonstration)  
Diabetic nodular glomerulosclerosis H&E (Kimmelstiel-Wilson) H&E (61)  
Glomerulonephritis H&E (slide demonstration) |
| 18. practice | Acute purulent pyelonephritis H&E (62)  
Chronic pyelonephritis H&E (63)  
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)  
Choriocarcinoma H&E (slide demonstration)  
Teratoma H&E (70) |
| 20. practice | Extrauterine gravidity H&E (71)  
Arias-Stella phenomenon (slide demonstration)  
Endometrial hyperplasia H&E (72)  
Endometriosis (slide demonstration)  
Hydatidiform mole H&E (slide demonstration)  
Endometrium carcinoma H&E (73) |
21. practice
HPV infection in cervix H&E (74)
Methods of HPV Typing (slide presentation)
Condyloma acuminatum (slide demonstration)
Mucinous cystadenoma of the ovary H&E (75)
Mucinous cystadenocarcinoma (slide demonstration)
Serous papillary cystadenoma of the ovary H&E (76)
Serous papillary cystadenocarcinoma of the ovary (slide demonstration)

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

23. practice
Normal bone marrow H&E (slide demonstration)
Leukemic bone marrow H&E (82)
Leukemic infiltration of parenchymal organs (slide demonstration)
Hodgkin lymphoma H&E (83)
Non Hodgkin lymphoma (high grade) H&E (84)
Follicular lymphoma (slide demonstration)
MALT lymphoma (slide demonstration)
Multiple myeloma H&E (85)

24. practice
Colloid goiter H&E (86)
Graves disease H&E (87)
Hashimoto thyreoiditis (slide demonstration)
Follicular adenoma of the thyroid gland H&E (88)
Follicular carcinoma (slide demonstration)
Papillary carcinoma of the thyroid gland H&E (89)

25. practice
Purulent meningitis H&E (90)
Cerebral abscess H&E (91)
Meningeoma H&E (92)
Glioblastoma multiforme H&E (93)
Alzheimer Disease, Creutzfeldt-Jacob disease (CJD) (slide demonstration)

26. practice
Basocellular carcinoma H&E (94)
Verruca vulgaris H&E (95)
Naevus pigmentosus H&E (96)
Malignant melanoma H&E (97)
Metastatic melanoma (slide demonstration)
27. practice
Childhood tumors (slide demonstration)
Osteosarcoma H&E (98)
Neuroblastoma H&E (99)
Ganglioneuroblastoma (slide demonstration)
Wilms tumor H&E (100)
Medulloblastoma (slide demonstration)
AML (slide demonstration)
Rhabdomyosarcoma (101)

28. practice
Repetition – Optional practical exam in Histology

Slides for the final histopathology exam

Fatty degeneration of the liver H&E (1*)
Pulmonary edema H&E (2)
Haemosiderin in alveolar macrophages H&E (3)
Thromboembolism – organising thrombus (H&E (4)
Hemorrhagic infarction of the lung H&E (5)
Anemic infarction of the kidney H&E (6)
Plelegone H&E (7)
Acute appendicitis H&E (8)
Fibrinous pericarditis H&E (9)
Pseudomembranous colitis (10)
Fistule - Chronic abscess (11)
Granulation tissue H&E (12)
Foreign-body granuloma H&E (13)
Candidiasis PAS (14)
Dysplasia of the cervical epithelium (CIN) H&E (15)
In-situ carcinoma of the cervix H&E (16)
Invasive squamous cell carcinoma of the cervix H&E (17)
Squamous cell papilloma H&E (18)
Squamous cell carcinoma of the larynx H&E (19)
Tubulovillous adenoma of the colon H&E (20)
Adenocarcinoma of the colon H&E (21)
Metastasis in lymph node H&E (22)
Peritoneal carcinosis (23)
Leiomyoma H&E (24)
Lipoma H&E (25)
Rhabdomyosarcoma H&E (26)
Capillary haemangioma of the skin H&E (27)
Benign nephrosclerosis H&E (28)
Polyarteritis nodosa H&E (29)
Giant cell arteritis H&E (30)
Coronary-sclerosis H&E(31)
Myocardial infarction, early H&E (32)
Myocardial infarction, old H&E (33)
Endocarditis H&E (34)
IRDS H&E (35)
Bronchopneumonia H&E (36)
Miliary tuberculosis in lung H&E (37)
Tuberculous lymphadenitis H&E (38)
Oat cell carcinoma of the lung H&E (39)
Squamous cell carcinoma of the lung (40)
Mesothelioma H&E (41)
Pneumoconiosis H&E (42)
Mixed tumor of the parotid gland H&E (43)
Warthin-tumor (slide demonstration)
Chronic peptic ulcer H&E (44)
Chronic gastritis H&E (45), (45/G)
Signet ring cell carcinoma of the stomach H&E (46), (46/P)
Villous atrophy in small intestine (47)
Ulcerative colitis H&E (48)
Crohn’s disease H&E (49)
Organ demonstration
Alcoholic hepatitis H&E (50)
Chronic hepatitis H&E (51)
Liver cirrhosis H&E (52)
Hepatocellular carcinoma H&E (53)
Cavernous haemangioma of liver H&E (54)
Chronic pancreatitis H&E (55)
Acute hemorrhagic necrotising pancreatitis H&E (56)
Adenocarcinoma of pancreas H&E (57)
Carcinoid H&E (58)
Adrenal cortical adenoma (normal) H&E (59)
Diabetic nodular glomerulosclerosis H&E (Kimmelstiel-Wilson) H&E (61)
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Adenocarcinoma of prostate H&E (68)
Seminoma H&E (69)
Teratoma H&E (70)
Extrauterine gravidity H&E (71)
Endometrial hyperplasia H&E (72)
Endometrium carcinoma H&E (73)
HPV infection in cervix H&E (74)
Mucinous cystadenoma of the ovary H&E (75)
Serous papillary cystadenoma of the ovary H&E (76)
Fibrocystic disease of the breast H&E (77)
Peri- and intracanalicular fibroadenoma of the breast H&E (78)
Intraductal carcinoma H&E (79)
Invasive ductal carcinoma H&E (80)
Invasive lobular carcinoma H&E (81)
Leukemic bone marrow H&E (82)
Hodgkin lymphoma H&E (83)
Non-Hodgkin lymphoma (high grade) H&E (84)
Multiple myeloma H&E (85)
Colloid goiter H&E (86)
Graves disease H&E (87)
Follicular adenoma of the thyroid gland H&E (88)
Papillary carcinoma of the thyroid gland H&E (89)
Purulent meningitis H&E (90)
Cerebral abscess H&E (91)
Meningeoma H&E (92)
Glioblastoma multiforme H&E (93)
Basocellular carcinoma H&E (94)
Verruca vulgans H&E (95)
Naevus pigmentosus H&E (96)
Malignant melanoma H&E (97)
Osteosarcoma H&E (98)
Neuroblastoma H&E (99)
Wilms tumor H&E (100)
Rhabdomyosarcoma (101)

List of oral questions

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

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 the 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 epidermis.
54. Inflammatory diseases of the skin and diseases of dermal connective tissue.
55. Pathology of the oral cavity.
56. Disorders of growth and maturation of the skeleton.
57. Infectious diseases of the bones.
58. Metabolic bone disease.
59. Non tumorous lesions of the joints.
60. Noninflammatory lesions of skeletal muscles.
61. Circulatory disorders of the central nervous system.
62. Inflammatory diseases of the central nervous system.

B
1. Classification of neoplasms.
2. Cytological and histological characteristics of malignancy.
4. Invasion and metastasis.
5. Grading and staging of cancer.
6. Physical and chemical carcinogenesis.
7. Viral carcinogenesis.
11. Heredity and cancer.
12. Epidemiology of cancer.
15. Tumors of blood vessels and heart.
16. Pathology of larynx and trachea.
17. Primary lung cancer.
22. Neoplasms of colon.
23. Viral diseases.
24. Diseases caused by mycoplasma, chlamidia, rickettsiae and spirochetes.
26. Diseases caused by bacteria (cholera, shigellosis, E.coli infection, yersiniosis, campylobacter, brucellosis, listeriosis).
27. Diseases caused by bacteria (clostridial diseases, diphtheria, rhinoscleroma, Klebsiella, granuloma inguinale, phagedenic ulcer, noma).
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, cholesterolosis and cholangitis.
39. Noninflammatory lesions of the kidneys associated with nephrotic syndrome.
40. Renal diseases associated with systemic disorders.
41. Tubulointerstitial diseases of the kidneys.
42. Pathology of the fallopian tube and the ovaries.
43. Benign disorders of the lymphoid cells.
44. Pathology of the adrenal cortex.
45. Diabetes.
46. Amyloidosis.
47. Diseases affecting the basement membrane zone of the skin.
48. Pathology of the nose and paranasal sinuses.
49. Pathology of the nasopharynx.
51. Inflammatory and metabolic diseases of skeletal muscles.
52. Pathology of trauma in the central nervous system.
53. Congenital malformations of the central nervous system.
54. Metabolic and degenerative diseases of the central nervous system.
55. Pathology of the peripheral nervous system.
56. Pathology of the eye (except manifestations of systemic diseases)
57. Manifestations of systemic diseases in the eye. Pathology of the ear.

General information

Lectures

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

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

It is highly recommended to visit the lectures, since the semifinal and final exams are partly based on them.

Practices

There are 15 four-hour practices in both semesters, which are divided into autopsy and histopathology. Missing either part of the practices means an absence. The students must not have more than 3 absences per semester. In case of more absences the practices have to be retaken otherwise 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 on a practice, an organ demonstration will take place.
Mid-term exams: There are two midterm exams in each semester (October 15-19, November 19-23; March 25-28 and April 21–25. The participation on the mid-term exam is compulsory, however, the result will not count into the semifinal or final. 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, plus 25 test questions will have to be answered. The students with the best results (up to 10 people) will participate in the second turn, where a complete autopsy report should be written, and 2 histological slides recognized. Both turns are passworded. The results will be announced in one week after the competition. Those who pass into the second round will be exempted from test writing, those who recognize the histology slide in the second round are exempted form histology in the final. The first three ranked students – the winners - will be awarded.

Consultation

Upon request there is a possibility for a consultation with the tutor. The students are welcome to autopsy practices of other student groups. 3 weeks before and during the exam period there are histopathology consultations. The exact schedule will be displayed at the histopathology laboratory.

Examinations

SEMMIFINAL:

MATERIAL FOR SEMIFINAL: The material of the lectures of the I. Semester 2006/2007 is ending with the lectures of the Respiratory Tract. The remaining lectures of the I. Semester will constitute the material for the final exam.

1. Prerequisites:
Not more than 3 practice absences (histology practice and autopsy hall practice counts separately) during the semester and participation on 2 midterm exams. If one misses more than 3 occasions practices should be repeated and verified by the signature of the tutor of another group.

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 (1-5: as many points as the mark of the organ demonstration was)

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 pts:</td>
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</tr>
<tr>
<td>61–70 pts:</td>
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<tr>
<td>70–80 pts:</td>
<td>3</td>
</tr>
<tr>
<td>81–90 pts:</td>
<td>4</td>
</tr>
<tr>
<td>91 × pts:</td>
<td>5</td>
</tr>
</tbody>
</table>

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

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

4. The exam for EM 1-6 begins at 8.30 a.m. sharp at the 1st Department of Pathology, meeting at the lecture hall. The indexes are collected by the supervisor before starting the exam. Students having no index are not allowed to take examination.

5. Exam dates: You will be notified about the dates offered by the Department before the exam period and they will be finalized at the Staff/Student meeting. Then these fixed days will be posted on the billboards. Additional dates will not be available. Important! Taking examinations before the exam period is not permitted! (University Policy). In exceptional cases (such as near-delivery, etc.), you must have a written permission from the Dean's Office.

6. Registration The internet based sign up system (NEPTUN) regarding pathology has been established for the 3rd year students as well. The sign up procedure is controlled and regulated by the software and the institute can not interfere with the system. The officially signed up students will be scheduled for examination. In case the internet based sign up system would not be introduced you must sign up in advance into the SIGN UP BOOK which is located on the 1st floor at the main entrance in front of the...
doorman’s office. Only the registered students are entitled to take examination on the given day. Your name should be appeared in printed form to avoid the unintentional misspelling. The registration should also include your group (e.g. EM/1, EM/4 etc.).

7. Rescheduling: The exam date: The list of examinees is completed 2 days before the examination date (deadline: 9.00 a.m.), the NEPTUN system automatically closes the sign up list by expiration of the deadline. Example: if the exam is on Thursday the data sheet for Thursday will be taken in and finalized on Tuesday at 9 a.m. You may remove your name prior to this period. After that changes are not permitted. If you do not show up on the given exam date, you should justify it within 3 days at the head of the Institute or at the tutor responsible for the English program. Otherwise, “not appeared” note is written in your index, and the next trial is not allowed without having a retake ticket! The skipped exam is deducted from the number of possible retake exams.

8. Retake exam: In case of failure or for those who are unsatisfied with the result of the first exam a retake exam should be taken to improve the mark. For that a retake ticket is required from the 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?

A: 28
B: 18
C: 23
D: 30
E: 35

(Mark: D)

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

(Mark: B)

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

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

(Mark: B,D,E)

g/ Relations: You should match the corresponding numbers and letters
For example:
1. wind A: snow
2. light B: fluid
3. white C: air
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 8.00 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.

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

<table>
<thead>
<tr>
<th>Points Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–36 pts</td>
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<tr>
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<tr>
<td>43–48 pts</td>
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<tr>
<td>49–54 pts</td>
<td>4</td>
</tr>
<tr>
<td>55–60 pts</td>
<td>5</td>
</tr>
</tbody>
</table>

After the test writing examinees are required to take the histology part of the final. Two slides from the exam pool are given to the student and the examinee should describe the organ (if the slides shows that) and the histological findings. Finally, correct diagnosis should be given.

OPTIONAL PRACTICAL EXAM of HISTOLOGY preceding the final exam:
The practical exam of HISTOLOGY (described previously) which is part of the final exam can be absolved on the last week of the 2nd semester. The Histology part can not be examined by the tutor of the student. In case the level of knowledge is not sufficient to pass the HISTOLOGY part or the student is not satisfied with the result the student will be examined on the final exam. When the student passes the Histology part and accepts the mark given the mark of Histology will be automatically registered for the final exam.

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. You should be able to orientate 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 working after the first trial (exam days are not inculded). Example: In case the failure was on Tuesday the earliest next exam can be taken the following week on Tuesday. The first retake exam consists the same parts as the first one. The test should not be retaken if the mark was better then 2, the histology part should not be retaken if the mark was better then 3. The autopsy demonstration and the oral questions must be repeated in any case. The second retake exam will be conducted in front of an exam board and does not include the written test, however, I consists of histology (in case the result of the previous exam was not better then 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>Day</th>
<th>I. semester</th>
<th>II. semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>9:30–10:40</td>
<td>10:50–12:00 **</td>
</tr>
<tr>
<td>Wednesday</td>
<td>8:00–9.10</td>
<td>8:00–9.10 **</td>
</tr>
</tbody>
</table>

Practices

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

** preliminary data

Tutors

Group 1 Dr. Illyés / Dr. Kovács A.
Group 2 Dr. Kiss / Dr. Szénás
Group 3 Dr. Kovács M. / Dr. Jackel
Group 4 Dr. Kulka / Dr. Győrffy
Group 5 (EM6) Dr. Székely / Dr. Kardos

Responsible tutor: Dr. András Kiss
Schedule for the academic year of 2008/2009

**1st semester:** September 08. - December 12, 2008
Official holidays: October 23. – National Holiday
October 24. - rest-day
November 1. (Saturday – All Saints), 2008

Examination period: December 15, 2008- January 23., 2009

**2nd semester:** February 02. - May 15., 2009
Official holidays: February 11-12. (Semmelweis Student Research Competition), 2009
March 15. National Holiday (Saturday) 2009
April 06. – 12. (spring vacation) 2009
April 13. (Monday) - Easter Monday 2009
May 01. (Friday) - Labor Day 2009
June 01. (Monday) Whit Monday 2009

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 18. - June 30., 2009
August 17. – August 28., 2009

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 Keltai, Dr. Margit Abonyi

First Semester

Lectures with case presentation (3 hours per week)
Introduction to internal medicine. The sick man, The medical interview. The doctor’s conductance and attitude towards the patient. Basic rules of the medical interview. Details of history taking. Questions related to the respiratory, circulatory and gastrointestinal systems.
The physical examination. Inspection. Palpation.
Percussion. Auscultation.
Fever. Taking the temperature. The types of fever curves.
The main symptoms of pulmonary disease. Cough, sputum production, hemoptysis, dyspnea, wheezing, cyanosis and chest 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)


Practice Ward rounds (4 hours per week)

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

AOMAGPSZ-1A

1st Semester

The lectures are held in the first five weeks (Tuesday, 10 o’clock) at the 1st Ophthalmology Clinic at the Tomó utca 25-29 and the seminars will be held in the venues indicated on the course information sheet.

Course Syllabus:

<table>
<thead>
<tr>
<th>Week</th>
<th>Type</th>
<th>Title</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</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>2</td>
<td>LECTURE</td>
<td>Learning theory and human behavior</td>
<td>Dr. György Purebl</td>
</tr>
<tr>
<td>3</td>
<td>LECTURE</td>
<td>Psychodynamic formulations of human behavior - development</td>
<td>Dr. Adrienne Stauder</td>
</tr>
<tr>
<td>4</td>
<td>LECTURE</td>
<td>Psychosocial factors influencing health</td>
<td>Alpár Lázár</td>
</tr>
<tr>
<td>5</td>
<td>LECTURE</td>
<td>Brain and Behavior</td>
<td>Dr. Róbert Bódizs</td>
</tr>
<tr>
<td>6</td>
<td>SEMINAR</td>
<td>Physician - Patient relationship- adherence to treatment</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>SEMINAR</td>
<td>Communication- basic concepts - The medical interview</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>SEMINAR</td>
<td>Chronic illness, disability, and pain- psychological consequences</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>SEMINAR</td>
<td>Death, dying, and grief</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SEMINAR</td>
<td>Communicating bad news</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>SEMINAR</td>
<td>Families, relationships, and health</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>SEMINAR</td>
<td>Birth, childhood, adolescence, middle years, old age</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>SEMINAR</td>
<td>Providing health care in a multicultural community</td>
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</tr>
<tr>
<td>14</td>
<td>SEMINAR</td>
<td>Review</td>
<td></td>
</tr>
</tbody>
</table>

Participation and making up for absences:
Participation list will be recorded at the end of every lecture. Content of the lectures may appear in the exams. Maximum number of absences in a semester is 3. Course at the end of the first semester will conclude with a signature, which will be given with the prerequisite of participation. Making up for absences by writing an essay discussed with the course leader may serve to receive the signature needed to absolve the course.

Course Textbook:
Course Director:  Dr. Piroska Balog  
NET 20th floor, room 2011  
Tel: 210-2930/6403, e-mail: balopir@net.sote.hu  
Further information: www.behsci.sote.hu

Seminar Teachers: Dr. György Purebl  
Dr. Mónika Kovács  
Dr. Piroska Balog  
Alpár Lázár

Dr. Róbert Bódizs  
Gyöngyvér Salavetz  
László Léder  
Krisztina Neculai

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

2nd Semester

In the first five weeks lectures will be held on Fridays (8 o’clock) in the lecture hall of the II. Pediatrics Clinic (IX. Tuzoltó 7-9). Seminars will be held on Fridays in the same time (8,00–9,30) from the 6th to 14th weeks in the venues indicated on the course information sheet.

<table>
<thead>
<tr>
<th>Week 1.</th>
<th>LECTURE</th>
<th>Behavioral interventions</th>
<th>Dr. Adrienn Stauder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 2.</td>
<td>LECTURE</td>
<td>Psychotherapeutic methods</td>
<td>Dr. György Purebl</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>Altered states of consciousness and suggestive communication in medical practice</td>
<td>Gábor Suhai-Hodász</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>
</tbody>
</table>

SPRINGBREAK

| Week 7. | SEMINAR | Anxiety and medical illnesses |
| Week 8. | SEMINAR | Somatization and Dissociative disorders |
| Week 9. | SEMINAR | Eating disorders |
| Week 10. | SEMINAR | Personality disorders |
| Week 11. | SEMINAR | Sleep and sleep disturbances |
| Week 12. | SEMINAR | Addiction, alcohol, nicotine and illicit substance abuse |
| Week 13. | SEMINAR | Human sexuality in health and disease, sexual disorders, HIV/AIDS, and treatment considerations |
| Week 14. | SEMINAR | Behaviour change and psychotherapy |
Participation and making up for absences:
Participation list will be recorded at the end of every lecture. Maximum number of absences in a semester is 3. A signature will be given with the prerequisite of participation. Making up for absences by writing an essay discussed with the course leader may serve to receive the signature needed to absolve the course. The course will conclude with a written final examination taken in the examination period.

Course Textbook:

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

Course Director: Dr. Piroska Balog, clinical psychologist
NET 20th floor, room 2011
Tel: 210-2930/6403, e-mail: balopir@net.sote.hu
Further information: www.behsci.sote.hu

Seminar Teachers: Dr. Piroska Balog Alpár Lázár
Dr. Mónika Kovács László Léder
Dr. Róbert Bódízs Imola Sándor
Dr. György Purebl
Bioethics  
Institute of Behavioral Sciences  
Tutor: Dr. József Kovács

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

3. week (Lecture)  
The basic principles of medical ethics.  
The principle of respect for autonomy.  
The principle of non-maleficence.  
The principle of beneficience.  
The principle of justice.  
Arguments against „principalism”.

4. week (Practicals)  
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 (Practicals)
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 physicians’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 (Practicals)
Ethical questions of reproductive medicine.
Abortion.
Artificial insemination from donor.
In vitro fertilization, surrogate motherhood.
Ethical questions of genetic counselling.
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 (Practicals)**
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 (Practicals)**
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 embry- or foetal tissue in human therapy.
Ethical problems of using anencephal newborns as organ donors.

**14. week (Practicals)**
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.)
List of questions

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

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

Second semester

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

Code: AOFRFMRFM_1,2,3_A
Total credits for the 3 semesters: 10
Course Director: Prof. Dr. Klára Gyires

Curriculum:

Pharmacology and Pharmacotherapy (three semesters)


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

Endocrine drugs. – Hypothalamic and pituitary hormones. Thyroid and antithyroid drugs. Calcium and agents that affect bone mineral homeostasis. Treatment of osteoporosis. Pancreatic hormones and antidiabetic drugs. Adrenocorticosteroids and andrenocortical antagonists.


Vitamins.


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. 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


COMPULSORY SUMMER PRACTICE (4 weeks)

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

Introduction to the Department of Internal Medicine and to the hospital.
Examination of the patient with special emphasis on the physical examination with cardiovascular and pulmonary diseases.
Under the attending physician’s supervision, taking responsibility and caring for patients who are assigned to the student by the chief physician. This is done at the level of a 3rd year student, recognizing that the student has not had pharmacology yet.
Learning and practicing the most important medical interventions.
Medication administration and dosing (different techniques).
Taking the pulse, blood pressure and temperature as well as the measurement of body height and weight.
Learning and practicing venipuncture and the administration of injections (intramuscular, intravenous, subcutaneous injections, administration of insulin).
Familiarity with equipment (ECG, Doppler and/or osccilometry, 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 Subjects

#### 1st semester

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKOZTOR_1A</td>
<td>History of Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOHUHFBI_1A</td>
<td>Developmental Biology I.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOKONKIN_1A</td>
<td>Information Retrieval Science in Library</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
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#### 2nd semester

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKOZTOR_1A</td>
<td>History of Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
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<tr>
<td>AOHUMKLA_1A</td>
<td>Introduction to Clinical Anatomy</td>
<td>2</td>
<td>–</td>
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<td>pract. mark</td>
<td>Anatomy, Histology, Embryology III.</td>
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<tr>
<td>AOHUHFBI_2A</td>
<td>Developmental Biology II.</td>
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<td>–</td>
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<td>pract. mark</td>
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</tr>
<tr>
<td>AOKONKIN_1A</td>
<td>Information Retrieval Science in Library</td>
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<td>–</td>
<td>2</td>
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## BASIC AND PRE-CLINICAL MODULES

### 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>
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<tbody>
<tr>
<td>AOLEKMSZ_3A</td>
<td>Hungarian Medical Terminology III</td>
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<td>2</td>
<td>pract, mark</td>
<td>Hungarian Medical Terminology II.</td>
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<tr>
<td>AOLEKMSZ_5A</td>
<td>Hungarian Medical Terminology V</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract, mark</td>
<td>Hungarian Medical Terminology IV.</td>
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<tr>
<td>AOTDKTDK?_A</td>
<td>Research (TDK munka)</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>pract, mark</td>
<td>–</td>
</tr>
<tr>
<td>AOKIOHE_1A</td>
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<td>2,5</td>
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<td>2</td>
<td>pract, mark</td>
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#### 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>
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<tr>
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<td>Hungarian Medical Terminology III.</td>
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<tr>
<td>AOLEKMSZ_6A</td>
<td>Hungarian Medical Terminology VI</td>
<td>2</td>
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</tr>
<tr>
<td>AOTDKTDK?_A</td>
<td>Research (TDK munka)</td>
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<td>–</td>
<td>1</td>
<td>pract, mark</td>
<td>–</td>
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<tr>
<td>AOKKCAR_1A</td>
<td>Clinical Cardiovascular Physiology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract, mark</td>
<td>Medical Physiology II.</td>
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</table>
Faculty of Medicine
4th year
### STUDY PROGRAMME

#### Fourth Year

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
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<tbody>
<tr>
<td>AOFRMFRM_2A</td>
<td>Pharmacology and Pharmacotherapy II.</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>semi-final</td>
<td>Pharmacology and Pharmacotherapy I.</td>
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<tr>
<td>AOKOZKOZ_1A</td>
<td>Public Health I.</td>
<td>1</td>
<td>1.5</td>
<td>2</td>
<td>semi-final</td>
<td>Preclinical module</td>
</tr>
<tr>
<td>AOKARKAR_1A</td>
<td>Cardiology</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>Internal Medicine II.</td>
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<tr>
<td>AOBL1BEL13A</td>
<td>Internal Medicine III.</td>
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<td>3</td>
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<td>2</td>
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<tr>
<td>AOFULFUL_1A</td>
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<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
<td>Preclinical module</td>
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<tr>
<td>AOBORBOR_1A</td>
<td>Dermatology (or)</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
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<td>Preclinical module</td>
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<tr>
<td>AOSZBOR0G_1A</td>
<td>Oral Surgery and Dentistry</td>
<td>2</td>
<td>-</td>
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<tr>
<td>ADRADRAD_1A</td>
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</table>

Total Number of Credit Points from Compulsory Subjects: 30

At least 4 credit points must be collected each semester. See the table after the fifth year.

#### Obligatory elective / Elective subjects

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

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

#### 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>AOFIRMFRM_3A</td>
<td>Pharmacology and Pharmacotherapy III.</td>
<td>2</td>
<td>2</td>
<td>4</td>
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<tr>
<td>AOKOZKOZ_2A</td>
<td>Public Health II.</td>
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<td>1.5</td>
<td>3</td>
<td>semi-final#</td>
<td>Public Health I.</td>
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<tr>
<td>AOBBL1BEL14A</td>
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<td>3</td>
<td>4</td>
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<td>Internal Medicine III.</td>
</tr>
<tr>
<td>AOSB1SEB_2A</td>
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<td>2.5</td>
<td>4</td>
<td>pract.mark</td>
<td>Surgery I.</td>
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<tr>
<td>AOFULFUL_1A</td>
<td>Otohinolaryngology (either)</td>
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<td>2</td>
<td>3</td>
<td>semi-final#</td>
<td>Pre-clinical module</td>
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<tr>
<td>AOBORBOR_1A</td>
<td>Dermatology (or)</td>
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<td>2.5</td>
<td>4</td>
<td>semi-final#</td>
<td>Pre-clinical module</td>
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<tr>
<td>AOPUPUL_1A</td>
<td>Pulmonology</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
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<tr>
<td>AOORTORT_1A</td>
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<td>2</td>
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<td>Surgery I.</td>
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</tbody>
</table>

**Total Number of Credit Points from Compulsory Subjects**: 28

**Obligatory elective / Elective subjects**: 

At least 4 credit points must be collected each semester. See the table after the fifth year.

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

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

   Paperback Pages
   www.oup.com/us/catalog/general/subject/Medicine/Dermatology
5. Fitzpatrick’s Dermatology in General Medicine, 7th ed.
17. Davis-Christopher: Essentials of Clinical Surgery. Mosby Year Book
PHARMACOLOGY AND PHARMACOTHERAPY

Tutor: Dr. Júlia Timár

First Semester

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

Code: AOFRMFRM_1,2,3_A
Total credits for the 3 semesters: 10
Course Director: Prof. Dr. Klára Gyires

Curriculum:

Pharmacology and Pharmacotherapy (three semesters)

Topic of Pharmacology and Pharmacotherapy II (Year 4, 2008/2009, 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 (spasmylytics). 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. 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: AOFMFIRM_1.2.3_A
Total credits for the 3 semesters: 10
Course director: Prof. Dr. Klára Gyíres

Curriculum:

Pharmacology and Pharmacotherapy (three semesters)

Topic of Pharmacology and Pharmacotherapy III (Year 4, 2008/2009, 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.
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, 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 6313
Email: terand@net.sote.hu

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

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

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

Other recommended sources:
- Information at numerous websites which are partly listed at the back of the required textbook (An Overview of Public Health) and also on the department’s website (http://www.kozegeszsegtan.sote.hu), or are announced separately during lectures and practicals.
Lectures:
One 45 minute lecture every week, 14 lectures per semester.

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

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

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

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

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

Academic administration (index matters, submission of assignments... etc.)
Mrs. Hlatky Sándorné (Hédi)
Mrs. Judit Németh
NET, 13th floor, room 1306
Phone: +36 1 210 2930 / extension 6178
Office hours: Monday-Friday 9-12 p.m., 1-3 p.m

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

First Semester

Lectures (1 hour per week)

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

Practices
(ward rounds, 2 hours per week)

1. Bedside practice – ECG
2. Bedside practice – heart failure, echocardiography
3. Bedside practice – valvular heart diseases
4. Coronary care unit – intraaortic balloon pump
5. Coronary care unit – invasive haemodynamics
6. Coronary care unit – cardiogenic shock
7. Out patient care – ischemic heart diseases
8. Out patient care – arrhythmias
9. Common practice – invasive cardiology
10. Common practice – non-invasive cardiology
INTERNAL MEDICINE

First Semester

The patient presenting with urinary symptoms.
Functional and morphological assessment of the kidney.
Glomerulopathies: the clinical syndromes; histology; possibilities of treatment.
Tubulopathies. Interstitial nephritis.

Acute and chronic renal failure. Diagnosis and treatment. Dialysis treatment, kidney transplantation.
Acute volume and electrolyte disorders.
Systemic lupus erythematoses (SLE), autoimmunne haematological diseases.
Rheumatoid arthritis
Autoimmune vasculitises. Periarteritis nodosa, Henoch-Schönlein purpura, Wegener’s granulomatosis, giant cell arteritis, temporal arteritis, Takayasu arteritis, Buerger disease.
Dermatomyositis, polymyositis, polymyalgia rheumatica, fibromyalgia. Osteoarthritis.
Autoimmune hepatitis and pancreatitis.

Competition – Written test

INTERNAL MEDICINE

Second semester

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

Lectures: Monday 8.00-9.40

Lecture Hall of 1st Department of Medicine, 1083 Budapest, Korányi S. u. 2A
Title of the lecture
Introduction. Epidemiology, etiology and pathomechanism of cardiac diseases
Diagnosis of cardiac diseases.
Acute coronary syndrome. Angina. Myocardial infarction
Cor pulmonale.
Sudden cardiac death.
Disorders of the heart valves
Inflammation and infection of the heart. Endocarditis, myocarditis, pericarditis.
Arrhythmias
Disorders of the electrical system of the heart. Cardiac electrophysiology.
Cardiac pharmaceutical agents
Procedures done for coronary diseases. Devices used in cardiology; pace maker, defibrillator, devices used to maintain blood pressure.
Heart surgery, heart transplantation. Primary tumors of the heart.
Competition – Written test

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

SURGERY
Tutor: Dr. Péter Kokas

First Semester

Lectures (2 hours per week)
History of Surgery. - Developments. Recent trends and perspectives.
General Anesthesia.
The resuscitation. (CPR). The Shock.
Fluid, electrolyte and metabolic disturbances. Artificial nutrition.
Surgical infections I. -Pyogenic infections, wound infections. Anaerob infections.
Tetanus and gas gangrene. -Artificial nutrition of septic patient.
Surgical infections II. -Hepatitis. Aids, etc.
The role of antibiotics in surgery.
Asepsis, antisepsis. - Prevention of Surgical infections.
Surgical complications. Preparation of the patients and problems of the perioperative period.
Principles of operative surgery. Basic technics, sutures etc.
Bleeding and blood clotting. Technics of haemostasis.
Plastic surgery.
Surgical oncology.
Tissue and organ transplantation.
Consultation. Questions/Answers.

Practice (2 hours per week)
Introduction of the Department. The OP, the instruments of OP. The organization. The wards, etc. The central sterilization station. The admission system of the patients.
The preoperative wash-up. Asepsis, antisepsis, Get dressed for OP. The practical preparation of the skin.
The surgical instruments. What and when.
The treatment of wounds. The wound healing. The type of wounds. Bandaging procedures.
Injections. - Hypodermic, intracutan, intra muscular etc.,-
The suture technics. Sutures, knots, clips, etc.
Laparoscopic technics.
Transfusion. The blood groups. Possible reactions and complications.
Anaesthesiology. - General anaesthesia. Narcosis systems. The intensive care unit.
The post operative treatments.
The resuscitation. - The CPR. - The latest pharmaceutical aspects of the CPR.
- Demonstration on AMBU unit.
Ward practices. (5x) - Investigate the surgical patients. The method of physical examinations. The evaluation of the findings.

SURGERY
Second Semester

Lectures (2 hours per week)
Appendicitis
Acute abdomen
The oesophagus and diaphragm
The stomach, duodenum and small intestine
The large intestine and the ano-rectal region
The ileus
The liver
The cholelithiasys and biliary surgery
Pancreas I. - Acut pancreatitis
Pancreas II. (Chr. Pancreatitis. Tumours)
The artificial nutrition - Enteral, parenteral
The acute gastrointestinal bleeding
Catastrophic surgery. - Surgery of tropical diseases
Pediatric Surgery
Consultation - Questions-answers

Site of lectures: (elôadasok 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

<table>
<thead>
<tr>
<th>Lecture (1 hour per week)</th>
<th>Practice (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute and chronic otitis media I. (etiology, diagnosis, pathology).</td>
<td>Diagnostical methods of the ear.</td>
</tr>
<tr>
<td>Acute and chronic otitis media II. (Complications and therapy)</td>
<td>Evaluation of different types of perforations of the tympanic membrane. Cadaver bone practice.</td>
</tr>
<tr>
<td>Physiology and lesions of the vestibular system.</td>
<td>Examination of the vestibular system. ENG. CCPG.</td>
</tr>
<tr>
<td>Dyspnoe and suffocation with upper airway origin. Conicotomy and tracheotomy.</td>
<td>Emergency management of suffocation.</td>
</tr>
</tbody>
</table>
Diseases of the trachea and the oesophagus. Oesophagoscopy, bronchoscopy.
Foreign bodies. Medial and lateral neck masses. 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. Dental alveolar surgery.
Dental reconstructions. Prosthodontics.
Biomaterials in the maxillofacial surgery.
Developmental anomalies of the maxillofacial region.
Dentomaxillofacial 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
Tutor: Dr. Ágnes I. Ottó

First Semester - half class
Second Semester - half class

Lectures: 1.5 hours/week practicals: 2.5 hours/week

Objectives of the course:
1. Morphology, structure, physiology and general pathology of the skin. Elements of dermatological diagnosis.
2. Bacterial, viral, and other infections of the skin. Skin symptoms of systemic infectious diseases.


7. Oncodermatology.


Goal of the training:
1. Knowledge of diagnostics, ethiopathogenesis and therapy of skin diseases concerning the competency of family doctors.
2. Problem-oriented assessment of skin symptoms and the knowledge of connections to general medicine

Objectives of practices:
Practice of forming a connection with the patient, recognition and correct interpretation of skin lesions, getting acquainted with investigative methods necessary for the establishment of diagnosis, forming the attitude to problems and knowledge of connections to general medicine, requirement of skills in dermatological treatment.

PULMONOLOGY
Tutor: Dr. Mátra Orosz

Second semester

Lectures (1 hour per week)
Invasive and noninvasive diagnostic techniques of the lung diseases. i.e. Fiberoptic bronchoscopy, lung biopsies, B.A.L., radiology, CT-scan, radiosotope 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 antytripsin deficiency)
Bronchial asthma (epidemiology, etiology, pathogenesis, diagnosis, clinical picture)
Allergic rhinitis
Bronchial asthma, allergic rhinitis (treatment)
Follow-up dispensation.
Role of the I.C.U. (Intensive Care Unit) in pulmonology.
(Respiratory failures, mechanical ventilation, ARDS.) Pneumonias (classification, etiology, causative agents, clinical features, diagnosis, therapy)
Opportunistic pathogens, AIDS and the lung, pulmonary mycotic infections
Tumors in the lung (statistics, etiology, classification, histology, clinical features, diagnosis, management, primary and metastatic forms)
Pulmonary embolism and pulmonary hypertension (clinical manifestations, origin, prevention, therapy, recurrent form)
Occupational lung diseases (Air pollution and the lung)
Immune diseases of the lung - Interstitial lung diseases
Sarcoidosis, Goodpasture-syndrome, hypersensitive pneumonitis, lung involvement in collagen vascular disease.
Diseases of the mediastinum and pleura.
Infrequent pulmonary diseases with uncertain etiology.

Consultation

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

ORTHOPEDICS
Tutor: Dr. Gergely Holnay

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).
Spondylolysis and spondylolisthesis. Lumbarization and Sacralization.
Deformities and diseases of the neck and the upper extremity.
Madelung deformity. Sudeck dystrophy of the upper extremity.
Osteoarthritis of the hip. Etiology, pathology, clinical and radiological symptoms.
Methods of conservative and operative Treatment.


Bone disorders. Osteoporosis, osteomalacia, osteogenesis imperfecta, Paget disease.

Developmental anomalies. Congenital anomalies of the extremities.

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, spondylysis, 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. Ephyseolysis.

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**

*Tutor: Dr. Ádám Mester*

**First Semester**

**Curriculum**


**Rudas, Gábor:** *From basic MRI to functional imaging*. Spectroscopy, magnetic resonance imaging. T1 native and contrast enhanced, T2 weighted measurements. Fat suppression, fluid attenuation, fast imaging, ECG-, breathing triggered techniques, MRAngio (TOF). Diffusion weighted MRI, diffusion tensor imaging, BOLD, fMRI neuroradiology, prenatal MRI.


**Hüttl, Kálmán:** *Cardiovascular radiology*. Cardiac imaging has progressed over the last decade to involve all modalities in diagnostic radiology. Imaging manifestations of cardiovascular disease.
including congenital disease, coronary artery disease (myocardial ischemia, infarction, valve disease, cardiomyopathy, major vessel diseases and peripheral vascular diseases are include.


**Hrabák Károly: Head and neck imaging.** Anatomy: borders of sub-regions. Pathology and diagnostics, based on sub-regions: sinuses, middle facial, frontal basal region, nasal pharynx, mide skull base. Lateral facial area, mandibula, temporal-mandibular joint, oral cavity, oropharynx, hypopharynx, larynx, trachea, temporal bone, internal meatal canal, ponto-cerebellar region. Organ and aetiology based: squamous cell cancer, lymphnodes, salivary glands, central neural diseases, vascular, skeletal, lipid lesions. Trauma, infection, developmental anomalies.


**Tarján, Zsolt: Imaging of abdominal parenchymal organs.** Clinical diagnosis in parenchymal diseases, information needed for treatment, algorithm for proper examination selection, detection, characterisation, surgical plan, therapeutic response, diagnostic accuracies of different imaging methods, what are the keys of characterisation, intensity, vascularity, specific contrast materials, patterns, types of biopsies, cross sectional and three dimensional methods, diagnosing tubular structures, ducts tubes and holes.

**Tarján, Zsolt: Imaging of the colon.** Methods:indications of endoscopy and radiology, colonoscopy, capsule endoscopy, monoscontrast, double contrast barium studies, ultrasound, endosonography, CT CT colonography, virtual colonoscopy, virtual dissection, lesions not depicted by virtual endoscopy, MR in bowel diseases, PET-CT, interventional methods in GI tract. Diseases: appendicitis acuta, megacolon congenitum, malrotation, invagination, diverticulosis, diverticulitis, colitis ulcerosa, Crohn, colorectal polyps, colon cancer, colon cancer screening, staging, perianal fistulas,

**Farkas, Szabolcs: Abdominal emergency radiology.** The aim of the lecture acut abdomen is to introduce the radiological aspects of the most improtant deseases and their complications of acut
abdomen. E.g.: perforations, ileus, inflammations, renal stones and choleliths, appendicitis, pancreatitis, diverticulitis, extraterin gravidity, mesenterial thrombosis and embolism. All modalities like conventional X-ray, ultrasound, CT examinations are going to be shown. Technical details of examining methods are going to be introduced also. With importance we also focus on which modality should be used in which cases and what is the correct examining pathway.


**Hüttl, Kálmán:** Vascular interventions. Interventional radiology includes all image-guided therapeutic procedures. The indication, technique, procedures such as percutan transluminal angioplasty, stenting, embolization procedures


**Vígváry, Zoltán: Radiation therapy and oncotherapy.** Radiotherapy is the safe use of controlled doses of radiation to treat disease, especially cancer. It’s usually given by pointing an X-ray machine or other radiotherapeutic sources at the part of the body to be treated. Radiotherapy can be given externally (Linear Accelerator, Gamma Knife), or internally (after-loading) Ra$^{226}$, Co$^{60}$, Cs$^{137}$, Ir$^{192}$. If you are having external to the radiotherapy, a simulator machine will also be used in
your treatment planning. The local dose is generally 55-65 Gy. HDR, MDR, LDR methods.
Common side effects of radiotherapy are: tiredness, sore skin, stiff joints and muscles, nausea,
temporary hair loss, loss of appetite. Combination possibilities with surgery, chemotherapy,
interventional methods.

Important note: Practices are about the same topics as lectures!

ELECTIVE SUBJECTS

Detailed programs see in the 5th year of Medicine!

COMPULSORY SUMMER PRACTICE
(4 weeks) at a Department of Surgery

Surgical practice in summer: 4 weeks’ general surgery.

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

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

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

Students should participate as second assistants in simple and moderately complicated
operations. They are expected to stay on night duty upon request, except on weekends. During
night duty, students are under the supervision of either the consultant or an authorized surgeon
and take part in the evaluation of all problems caused by either acute or chronic diseases.
Students are required to participate in the daily outpatient care. They are required to take part in
all consultations organized for 4th year medical students.
Faculty of Medicine
5th year
### 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>AOBL1BEL15A1</td>
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<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 must be collected each semester. See the table after the 5th year.

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

---

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

# The grade influences the qualification of the Diploma
### Fifth Year

#### 2nd semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
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<td>Pediatrics I.</td>
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<td>Pre-clinical module</td>
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<tr>
<td>ACSACSA1A</td>
<td>Family Medicine in Daily Practice</td>
<td>–</td>
<td>5*2/sem.</td>
<td>2</td>
<td>pract. mark</td>
<td>Internal Medicine V.</td>
</tr>
</tbody>
</table>

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

Obligatory elective / Elective subjects

At least 4 credit points must be collected each semester. See the table after the 5th year.

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

---

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

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

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

## Recommended textbooks:

4. ISBN 0-443-04782-0
5. Silver, Kempe Bryn and Fulginiti’s Handbook of Pediatrics. Appleton and Lange. ISSN 0440-192
11. Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers
INTERNAL MEDICINE
1st Dept. of Internal Medicine Tutor: Prof. Dr. Ferenc Szalay, Dr. Margit Abonyi
3rd Dept. of Internal Medicine Tutor: Dr. Katalin Keltai

First Semester

Lectures with case presentations

The patient presenting with urinary symptoms.
Functional and morphological assessment of the kidney.
Glomerulopathies: the clinical syndromes.
Glomerulopathies: histology; possibilities of treatment.
Renal involvement in systemic diseases.
Vascular diseases of the kidney.
Tubulopathies. Interstitial nephritis.
Chronic pyelonephritis. Urinary tract infection.
Uremia. Treatment of chronic renal failure.
Cystic diseases of the kidney. Renal neoplasms.
The patient with fever of unknown origin (FUO) Nosocomial infections.
Viral infections: herpes viruses of humans, neurotropic
viruses, systemic viral diseases.
Rickettsioses. Nonsexually transmitted treponematoses.
Mycoses: candidiasis, aspergillosis.
Helminthic diseases.
Protozoal diseases: amoebiasis, giardiasis.
Protozoal diseases: malaria, leishmaniasis, pneumocystosis,
toxoplasmosis, trypanosomiasis.
Principles of antibiotic treatment.

INTERNAL MEDICINE

Second Semester

Lectures with case presentations

Infections of the head, neck and lower respiratory tract.
Infections of the heart and vessels. Infective endocarditis.
Phlebitis.
Differential diagnosis of diarrhea. Food poisoning.
Acute infectious diarrhea. IBD.
AIDS syndrome and other HIV related disorders.
Infections involving bones and joints. Differential diagnosis
of musculoskeletal and connective tissue diseases.
Sexually transmitted diseases.
Lectures with case presentations
Poisoning I. Initial evaluation of the patient with poisoning or drug overdose. The symptomatic patient.
Diagnosis of poisoning. Other treatment.
Poisoning II. Treatment of common specific poisoning.
Differential diagnosis of thoracic pain.
Differential diagnosis of abdominal pain.
Differential diagnosis of jaundice.
Alcohol related diseases.
Disorders due to physical agents. Cold, heat, burns, electrical shock, drowning.
Geriatric medicine and the elderly patient.
The paraneoplastic syndromes. Oncologic emergencies.
Primary and systemic cancer therapy.

Surgery
Tutor: Dr. Péter Kokas

First Semester
Lectures (2 hours every second week)

NO LECTURE !!!
The surgery of herna*
The surgery of endocrin organs*
No lecture
The surgery of breast*
No lecture
Vascular surgery. (To be announced later)**
No lecture
Cardic surgery (To be announced later)**
No lecture
Thorax and pulmonary surgery***
No lecture
The minimal invasive surgery (MIC) and the surgical perspectives*
No lecture
Consultation. - Questions/Answers*

Site of lectures:
Lecture room of 1st Department of Surgery (Előadó terem 1. Seb. Klinika)*
Lecture room of Dept. Of Cardio-Vascular Surgery (Szív és Érseb. Kl.)**
(XII., Városmajor u. 68.)
Lecture room of Dept. Of Thoraco-Pulmonology (National Korányi Inst.)***

Time:
Every second week on MONDAY (EXCEPTION: ONLY the very first lecture will be held on the second Monday)

Site of practice: The venue is same as on the lecture will be held.
OBSTETRICS AND GYNECOLOGY
Tutors: Dr. József Gábor Joó
Dr. Gyula Richárd Nagy

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.

OBSTETRICS AND GYNECOLOGY

Second Semester

Lectures (2 hours/week)
Gynecological endocrinology. Menstrual disorders.
Inflammatory diseases in obstetrics and gynecology.
Stenility, 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.
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
Second Semester

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

TOPIC

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

**Second Semester**

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

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

**PSYCHIATRY**

*Tutor: Dr. 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.

<table>
<thead>
<tr>
<th>Week</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The psychiatric examination</td>
</tr>
<tr>
<td>2–5</td>
<td>Neurotic, stress-related and somatoform disorders</td>
</tr>
<tr>
<td>6</td>
<td>Eating disorders</td>
</tr>
<tr>
<td>7–10</td>
<td>Mood (affective) disorders (incl. suicide)</td>
</tr>
<tr>
<td>11–14</td>
<td>Organic mental disorders (incl. mental retardation)</td>
</tr>
</tbody>
</table>

Second Semester

Lectures

- Child and adolescent psychiatry
- Biochemical theories of mental disorders
- Other psychotic disorders: diagnosis
- Suicide and suicidal behaviour
- Emergency psychiatry
- Antipsychotic therapies
- Anxolytic 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 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

Lectures

Symptoms of disorders of the genitourinary (GU) tract. Basic physical, radiologic, ultrasonic and instrumental examinations.
Pediatric urology.
Nonspecific infections of the GU tract.
Endourology.
Urinary stones.
Injuries to the GU tract.
Incontinency. Neurogenic bladder.
Tumors of the kidney.
Bladder cancer.
Benign prostatic hyperplasia.
Prostate cancer.
Testicular tumors.
Emergency in urology.
Disorders of the male genital organs.
Male infertility.

**Practice**

In the course of practical training students are to study how to perform a complete urological history. We demonstrate and teach them the physical examination of the urology patient, the inspection and palpation of the urological organs. Rectal digital examination is an essential part of urological training. The students will visit the operating theatre, the endoscopy room and the radiology-ultrasound department. Practical training should involve the evaluation of laboratory, radiologic and endoscopic findings.

**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) Volatile anesthetic agents
  - c) Opioid and other analgetics
  - d) Muscle relaxant drugs
  - e) Local anesthetics
  - f) Other drugs of importance for Anesthesia

- **Anesthetic instruments**
  - a) The anesthetic machine
  - b) Anesthetic systems
  - c) Checking of the anesthetic systems and the common faults
  - d) Instruments of monitoring

- **Preoperative assessments**
  - a) Functional loading of the operation
  - b) Preoperative examination, investigations
  - c) Estimation of the functional reserve of the patient
  - d) The anesthetic significance of the coexisting diseases
    - cardiac diseases
    - vascular diseases (including hypertension)
    - pulmonary diseases
**Lectures and Practice**

- neurological diseases (including head injury)
- hepatic diseases
- renal diseases
- hematologic diseases
- endocrine diseases
- disorders of the fluid, ionic and acid/base balance
- malignancies
- infections
- the polytraumatized patients
- other conditions:
  - advanced age
  - neonates, infants
  - pregnancy
  - morbid obesity
  - rare diseases
  
**e) Preoperative therapy**

**f) Premedication**

**g) Choice of the method of Anesthesia**

The practical conduct of general Anesthesia

- Preparation
- Induction of Anesthesia
- Maintenance of the patient airway
- Intraoperative fluid management
- Maintenance of the Anesthesia
- Termination of the Anesthesia, recovery

**g) Anesthetic complications**

Regional anesthetic techniques

**Pain relief**

- Acute pain (including postoperative pain)
- Chronic pain

**Postoperative complications**

**Emergency and critical care**

Primary and advanced cardiopulmonary life support

Techniques and procedures of critical care

- Techniques of airway maintenance
- Techniques of intravenous access
- Evaluation of the fluid, ionic and acid/base balance

- Principles of fluid management
- Transfusion, blood products
- Principles of enteral and parenteral nutrition
Lectures and Practice

g) Equipment and techniques of ventilatory therapy
h) Techniques of support and replacement of renal function

i) Critical care monitoring
j) Invasive techniques of critical care
k) Special pharmacology of critical care
  – inotropic drugs
  – use of antibiotics
  – anticoagulation
  – steroid treatment
  – other drugs

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

do) 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

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**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  
- Investigations (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  
- 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 cristalline lens. Aetiology of cataract.
Management of infantile and adult cataract.
The orbit. Signs and symptoms of orbital diseases. Thyroid ophthalmopathy.
Lacrimal gland diseases.
The uvea and its diseases.
Disturbances of ocular circulation.
“Medical”, retina (vascular diseases, macular disorders) and “surgical” retina (retinal detachment).
Ocular manifestations of systemic diseases. The vitreous and its disorders.
Pediatric ophthalmology. Strabismus, amблиопия.
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.

Practice:

NEUROLOGY
General information
Tutor: Anita Kamondi M.D.
anita@neur.sote.hu
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 anamnesis. 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>10.</td>
<td>The cerebellum</td>
</tr>
<tr>
<td>12.</td>
<td>Inflammatory disorders, AIDS.</td>
</tr>
<tr>
<td>13.</td>
<td>Tumors of the nervous system</td>
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<tr>
<td>14.</td>
<td>Neuroradiology (CT, MRI, angiography)</td>
</tr>
</tbody>
</table>

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

2nd Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Headache</td>
</tr>
<tr>
<td>2.</td>
<td>Aphasia</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>7.</td>
<td>Movement disorders (part 1)</td>
</tr>
<tr>
<td>8.</td>
<td>Movement disorders (part 2)</td>
</tr>
<tr>
<td>9.</td>
<td>Aneurysm, subarachnoid bleeding and vascular malformations</td>
</tr>
<tr>
<td>10.</td>
<td>Dementia</td>
</tr>
<tr>
<td>11.</td>
<td>Neuromuscular diseases. Encephalopaties</td>
</tr>
<tr>
<td>12.</td>
<td>Genetic abnormalities in neurologic disorders</td>
</tr>
<tr>
<td>13.</td>
<td>Written semifinal exam</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Diagnostic procedures I.: EEG, evoked potentials, EMG, Doppler, CSF</td>
</tr>
<tr>
<td>2.</td>
<td>Diagnostic procedures II.: Neuroradiology, X-ray, CT, MRI, etc.</td>
</tr>
<tr>
<td>4.</td>
<td>Hyperkinesia and dystonia.</td>
</tr>
<tr>
<td>7.</td>
<td>Memory dysfunction, dementia.</td>
</tr>
<tr>
<td>8.</td>
<td>The cognitive functions</td>
</tr>
<tr>
<td>10.</td>
<td>Examination of muscle disorders.</td>
</tr>
<tr>
<td>11.</td>
<td>Examination of polynuropathies.</td>
</tr>
<tr>
<td>13.</td>
<td>Practical exam</td>
</tr>
<tr>
<td>14.</td>
<td>Consultation, questions and answers.</td>
</tr>
</tbody>
</table>

Neurology Examination Question List for Vth year Students

I. Neuroanatomical, physiological and biochemical basis of neurology

1. The visual system
2. Innervation of extraocular muscles. The oculomotor nuclei.
3. Gaze control. Gaze disturbances
5. Trigeminal nerve
6. Facial nerve
7. The vestibular system
8. Hearing
9. Glossopharyngeal, vagus, accessory and hypoglossal nerves
10. Organization of motor control
11. Sensory systems
12. Gross anatomy of the hemispheres
13. Basal ganglia and the thalamus
14. The limbic system
15. The cerebellum
16. Blood supply of the hemispheres. Cerebral metabolism
17. Blood supply of the brainstem, cerebellum and the spinal cord
18. The cerebrospinal fluid

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

III. Neurological Disorders
1. Classification of ischaemic cerebrovascular disorders
2. Intracranial bleedings, subarachnoid hemorrhage
3. Symptomatology of Parkinson’s disease
4. Classification of headaches. Trigeminal neuralgia
5. Focal epilepsies
6. Generalized epilepsies
7. Meningitis. Examination of the CSF in inflammatory neurological diseases
8. Encephalitis
Compulsory subject: Emergency Medicine and Prehospital Emergency Care (EMPEC) – program and topics

2 credit

<table>
<thead>
<tr>
<th>Content</th>
<th>Responsible speciality</th>
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<tbody>
<tr>
<td>Emergency patient evaluation – ABCDE approach and its pathophysiological and clinical background.</td>
<td>E/I: 90</td>
</tr>
<tr>
<td>CPR II. ALS. In-hospital CPR. Postresuscitation life support (PLS).</td>
<td>E/I: 90</td>
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<tr>
<td>C. Differential diagnosis of chest pain in the field and in the ED. Process of ACS management from first responder to definitive treatment. Pulmonary embolism, Aortic dissection.</td>
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</tbody>
</table>
C. Circulatory failure, hypotension, heart failure, hypertensive crisis. Pathophysiology, differential diagnosis, treatment in the field and in the ED. Peri-arrest arrhythmias.


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


Prehospital and ED care of trauma and polytrauma. Together

Military and disaster medicine I.

Military and disaster medicine II.

Toxycology I. General principles of toxycology. Recognition and treatment of common poisonings.

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

Practices (15x45 min + 2x12 hours shift „on call duty“)

1x90 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)

1x90 min CPR basic skills - AITK;
2x90 perc CPR simulations - AITK;

3x90 min case based learning (90 min OMSZ; 90min AITK; 90 min ED)

2x12 hours shift „on call duty“ in the ED according to the rotation schedule;

OMSZ: National Ambulance Service
AITK: Dept. of Anesthesia and Intensive Therapy (Kútövögyi Hospital)
ED: Emergency Department of Szt. Imre Hospital
Prehospital and Emergency Medicine (PEM) – Compulsory elective subject
Dept. of Anesthesiology and Intensive Therapy
Tutor: Dr. Balázs Hauser

Program and topics

2 credit

<table>
<thead>
<tr>
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<tr>
<td>Military and disaster medicine III.</td>
<td>M-C-M</td>
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<tr>
<td>Military and disaster medicine IV.</td>
<td>M-C-M</td>
</tr>
<tr>
<td>Toxycology II. Recognition and management of concerning intoxications. Prehospital emergency care. Orientation and important measures in the field. Patient disposition.</td>
<td>P</td>
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<tr>
<td>CPR III. Resuscitation of newborns, infants and children.</td>
<td>E/I</td>
</tr>
<tr>
<td>CPR IV. Adult resuscitation in special situations (pregnancy, electrolyte disturbances, acute severe asthma, anaphylaxis, electric injuries, immersion, submersion, hypothermia, severe trauma, intoxication).</td>
<td>E/I</td>
</tr>
<tr>
<td>Recognition and management of acute metabolic crises. Recognition and management of hemato-oncological emergencies.</td>
<td>E/I</td>
</tr>
<tr>
<td>Emergency care in ophthalmology and ENT.</td>
<td>E/I</td>
</tr>
<tr>
<td>Emergency care in urology and OB/GYN.</td>
<td>E/I</td>
</tr>
<tr>
<td>Psychological and social aspects of emergency medicine. Law and ethics during prehospital care and in the ED.</td>
<td>Together (P+E/I)</td>
</tr>
<tr>
<td>Case discussion: Chest pain.</td>
<td>Together (P+E/I)</td>
</tr>
<tr>
<td>Case discussion: Dyspnea.</td>
<td>Together (P+E/I)</td>
</tr>
<tr>
<td>Case discussion: Abdominal pain.</td>
<td>Together (P+E/I)</td>
</tr>
<tr>
<td>Case discussion: Altered mental state.</td>
<td>Together (P+E/I)</td>
</tr>
</tbody>
</table>
FAMILY MEDICINE IN DAILY PRACTICE
Tutor: Dr. Péter Torzsa

Second Semester

Week

1–2 Introduction.
   Family Medicine in general
   Activity of the general practitioners
   Primary Health care.

3–4 Special features of the family medicine
   Continuous observation
   Quick diagnosis
   Primary medical care.

5–6 Prevention in primary care
   Rehabilitation
   Health education, health promotion

7–8 Hypertension in daily practice
   Pain in chest. Differential diagnosis
   Pain in belly. Differential diagnosis.

9–10 Diabetes mellitus in daily practice.
   Arrangement for the 2 weeks practice
   Appreciation, closing of the course.

List and syllabi of the ELECTIVE SUBJECTS

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

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

1. a) Basic physics of medical ultrasound
   b) Demonstration of the ultrasound laboratory; technique of ultrasound scanning.

2. a) Sonography of the liver, the spleen, the gallbladder and the bile ducts.
   b) Patient demonstrations and training

3. a) Sonography of the pancreas and the lymph nodes.
   b) Patient demonstrations and training

4. a) Invasive sonography (US guided biopsies and 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  
Immunology of inflammation  
Immunity to infection. Immune deficiencies  
Lymphoproliferative disorders  
Immunology of HIV disease  
Tumor immunology  
Allergic diseases. Food Allergy  
Skin diseases of immunopathological origin.  
Allergic skin diseases  
Lung diseases of immunopathological origin.  
Bronchial asthma and allergic rhinitis  
Pediciatric allergic diseases  
Autoimmune diseases  
Systemic lupus erythematosus  
Rheumatoid arthritis  
Other systemic autoimmune diseases  
Transplantation: Kidney transplantation.  
Bone marrow transplantation  
Immunological laboratory investigations. Immunomodulation immunosuppression and immunostimulation  
Consultation (Exam - optional)

*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: 2 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.: 459-1500/5263;
Precondition: There isn’t.

1. Introduction, technical details introduction of Central Library’s Homepage: www.lib.sote.hu and its facilities
   Usefull Links, List of current periodicals, WebPac
   Basic concepts: book, periodicals, homepage and their identifiers, CD-ROM,
   Floppy file management (saving, copy files), email, mailing lists.
   Searching databases main concepts: bibliographic database, record, result list,
   thesauri, full text, abstract
   Organizing e-mail study groups
   Searching in the WePAc and current periodicals list
   6 samples - Homework

2. Web Searching and database searching professional discussion lists and their role in scientific work
   Web Searching with different types of search engines, advanced searching
   with Boolean operators, relevancy and decision making
   MESH and PubMed Searching
   Model searching – on general exercises
   6 samples - Homework

3. Link collections and professional portal sites
   concept of a portal,
   what a medical portal should contain: conference news, research news and
   abstracts from current articles, professional mailing lists and chat rooms, links
   http://www.medbioworld.com/
   Medical Matrix: http://www.medmatrix.org/reg/login.asp
   http://www.lib.uiowa.edu/hardin/md/index.html; BioSites
   http://galen.library.ucsf.edu/biosites/
   to make a link collection from a declared subject - Homework
Searching International Library catalogues
Searching in Ulrich’s Plus periodical catalogue and form books in Books in Print database at the Ovid platform
Library of Congress: http://lcweb.loc.gov/
The British Library http://www.bl.uk/
Heidelberg University Catalogue
http://www.ub.uni-heidelberg.de/Englisch/
National Széchenyi Library http://www.oszk.hu/

How do we get from the abstract to the full article?
- practicing the proper search strategy
6 samples- Homework

5. Information retrieval practical lesson
sample searching (bibliographic, statistical and web searching)
Consultation on search methods and results.
6 samples- Homework

6. OVID databases
Evidence Based Medicine databases: the role of the EBM in research and practice
Full text journals in Ovid databases: 115 Lippincott Williams and Wilkins journals and 1500 journals of Science Direct, Cross Ref how they can appear by results - OPENLINK technology
MEDLINE, EMBASE, CINAHL databases which kind of information they contain
unique and general search fields. Thesaurus 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, Identiindex; Micromedex Drug Reax
Images .MD medical image database
Model searching: 6 samples
Homework- Homework

7. 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

8. E-journals
e-journals – main concepts: fulltext and its formats, e-journal types:
Online only or with existing Print edition. Free medical journals:
http://www.freemedicaljournals.com/; Online First publishing, DOI code

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

Homework: collect 10 e-journals from own speciality

Information retrieval practical lesson

sample searching (database, journal searching)
Consultation on search methods and results. Reference Manager, e-journals, databases etc.

6 samples - Homework

Impact factor (JCR)

Homework discussion

calculating impact factor and its role by measuring scientific publications

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

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

Web of Science and its sections

general searching in the database model searching – guided

Homework: bibliographic searching on an exact author

Citation analysis

Homework discussion

meaning of Citation analysis and its role by measuring scientific works

preparing the citation analysis:

Web of Science database cited reference search

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

Homework: analysis of a professor. (in print)

scientometric practical lesson

calculating Impakt rystal and making citation analysis of given publication’s list

Correction and discussion on main rules

Information retrieval- practical lesson

Homework discussion

model searching on 6 samples – Bibliographic search, statistic search and Internet search for multimedia materials are included.

consultation on the search methods and results, which was the proper search strategy.

Summary of the course, consultation

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

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

This elective course is for medical students having finished successfully three semesters in Anatomy.

Course Director: **Prof. Dr. Tibor Wenger**

Time and location: Every second year in spring semester 2 hours weekly in the lecture hall of the Department of Human Morphology and Developmental Biology (district 9, Túzoltó u. 58.)

Exam: written

Value of the course: **2 credit points**

Subject:

The proposed subjects are the followings (the order is subject to possible changes).

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

CLINICAL GENETICS

1st Dept. of Obstetrics and Gynecology

First Semester

The fundamentals of classical genetics
Polygenic inheritance, multifactorial determination
General cytogenetics
Basic principles of embryology and teratology
Clinical molecular genetics
Amniotic fluid cell culture for cytogenetic analysis
Alpha-fetoprotein (AFP)
Genetic amniocentesis
Pathology of multiple pregnancy
Genetic counseling
General aspects of decision making regarding the fate of pregnancy
Elements of phenotype analysis
Embryopathology and fetal pathology
Sphingolipidoses
Mucopolysaccharidoses and mucolipidoses
Disorders of carbohydrate metabolism
Diseases of amino acid metabolism

ANAESTHESIA AND INTENSIVE THERAPY

Dept. of Anesthesiology and Intensive Therapy

First Semester

Lectures


Topics may change depending on lecturers’ availability.
NEONATOLOGY
Course Director: Prof. Dr. Tamás Machay

Second Semester

Physiology of the Fetus and Newborn. Transition to Extraterin 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.
Phrophysiology 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:

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

TROPICAL MEDICINE: PREVENTION, EPIDEMIOLOGY AND TREATMENT

Lecturer: Dr. Ágnes Axmann

Second Semester

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


Emergence of specialism. Logical outgrowth of localistic pathology, new instruments. Initially the medical professions: Pediatrics, Psychotherapy, Ophthalmology, Otology, Rhinology and Laryngology, Dentistry, Neurology and Psychiatry, Dermatology and Venerology.

From the black death to the AIDS. The history of epidemics. The theories and therapies. Tropical medicine. The development of epidemics, the bacteriology and immunology. The new medicaments. Ehrlich and the chemotherapy, sulphonamides, antibiotics. Virology, Salk and Sabin. New diseases and screening methods.

Rice of homeotherapy, hydrotherapy, special methods. Alternative medicine. The orthodox European medicine and the far East mentality. Education, selfcontrol, pedagogy for healing.


CLINICAL CARDIOVASCULAR PHYSIOLOGY
AOKKIKCAR_1A

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

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

Students who meet the following criteria will receive 2 credit points: regular attendance of classes and successful written exam. Material for the exam includes lecture topics and textbooks suggested by the lecturers.

Further information is available on this web page: www.elet2.sote.hu

MEDICINAL, EPIDEMIOLOGICAL, AND SOCIAL ASPECTS OF DRUG ABUSE

Department of Pharmacology and Pharmacotherapy
Course director: Prof. Dr. Susanna Fürst

Second semester

Code: A0FRMKAB_1A
Credit: 2

Topics:


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


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


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


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

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


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

Absence justification: Medical certificate is accepted

There is no midterm

Requirement: Participation at the lectures

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

Exam: written test
The written test is on the last lecture, registration has to be done through the NEPTUN system
How to modify the exam date: Personal discussion for another appointment

Exam absence justification: Medical certificate is accepted

BASICS OF FAMILY MEDICINE
2008/2009
Department of Family Medicine
Director: Prof. Dr. László Kalabay
Location: Kútvölgyi Hospital, first floor, library

Family medicine as a specialty
Past and present of family medicine in Hungary
Daily routine of family doctor
Dr. Kalabay László

Doctor-patient relationship in family practices. Communication skills
Dr. Torzsa Péter

Emergency care in family practice
Dr. Szabó János
History of the medical professionalism

Summary of the subject: Dr. Péter Balázs

It would be a general mistake to place back economic, ethical and professional patterns of the modern health system in the past millennia of men’s health culture. Sciences, such as health economics, ethics of distributive justice in the public controlled market economy and professional identification of physicians in the modern evidence based medicine exist only in the medical practice since the late 19th century. Nevertheless, devoted doctors on behalf of their patients were always investigating the clues of providing effective service for soul and body alike. There were being developed numerous healing ideas, kinds of responsibility and entitlements, types of professionalism, which determined specific healing methodologies. As a result, the modern scientific medicine, ethno-medicine, supportive and alternative scientific techniques, further on the faith-healing are all the parts of our inherited health culture. However, devoted professionalism should be traced back to the dawn of transcendent ideologies. Consequently, priests of healing cults backed up by legitimate religious bodies were professionals quasi officially both in medical and religious interpretations. Hippocrates and his colleagues in the ancient times believed in Gods and Goddesses, but according to the medicine they insisted on material principles. The early Christian theology rejected both faith healing and Hippocratic medicine, nevertheless, day-to-day
miracles of faith healing were being considered as the main ideological enemy for they endangered pre-eminently the ideological core of the emerging religion. In the 16th century, Reformation of the Roman Catholic Church by Martin Luther opened the way in the scientific medicine to reach the highest social esteem reserved only for the clergy so far during the middle Ages. The next step to be taken was the atheist philosophy of Enlightenment in the 18th century which separated first the highest devotion of professionalism from all other kinds of religious service. This desecration on the other hand, had a heavy impact on the world’s cosmic interpretation inherited from the former Renaissance and gridlocked natural sciences in a simplified materialism. Later, in the 20th century, this situation coupled with left wing extremist ideas ended up in the Communist deontology of the medical service. Latest developments at the end of the 20th century will actually determine new patterns of professional behaviour based on ancient societal values and directed by requirements of the market economy alike.

Proven by history, there were always different parallel interpretations of medical professionalism determined by patients, doctors and prevailing ideologies. Under liberal circumstances, free choice of patients is a precondition and a pledge too of effective medical service.

Class Sessions: 2 hours per week
Introduction: Mythology of European medical professionalism (part I.)
Introduction: Mythology of European medical professionalism (part II.)
Ancient Egypt, general transcendence
Mesopotamia, emerging of profane medicine (Code of Hammurabi)
Ideological roots of Judaism
Jesus’ healing activity and the early Christianity
Ancient Greece and Hellenism, Hippocrates and his successors
Roman Empire in the medicine
Christian professionalism in the medicine and ideology of the medical service
Impact of Islam and the Arab medicine in Europe
Protestantism and devotion
Industrial Revolution and social philosophy of the New Age
Impact of capitalism on the practice of medicine
Communist ideology and professionalism
Professionalism in the welfare society

Attendance at lectures, options for additional lectures:
Basic requirement: attendance at 12 sessions. In case of justified non-attendance of more students at a specific session, additional lecture available.

Justification for non-attendance at lectures
Up to 3 sessions no need for justification, in case of more than 3 sessions missed no confirming of the course.

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 12 sessions no confirming of the course.

Preliminary and final marks
Type of marks: five degree evaluation (1-5). Preliminary mark on the written work, final mark according to the actual answers (see below).
Type of exam
Base of exam: homework written about the history of medical professionalism sent by e-mail to the lecturer (deadline: 7 days before the exam, 5-6 A4-pages, margins, fonts, space agreed at the first session) Type of exam: each student will get several questions based on his/her own homework to determine the final mark.

Entering for examination
Student Administration System (NEPTUN)

Modification of data entered for examination
When registered in NEPTUN only after consulting the lecturer

Justification for non-attendance at the exam
Only certificates of administrative authorities.

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

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

2 hours/week

THEMES

Data, information, knowledge and decision in the medicine and health care
Classification and coding systems, ICD-10
Informatics in the prevention
Networking
WEB 2.0 and the health care system
Signal analysis and image processing
Standards in the medical informatics
Information systems in the health care
The electronic patient record
Knowledge management
Data security in the health systems. Digital signatures
Informatics of the primary health care and drug management
Health care financing and informatics
Health and health care statistics
Telemedicine
# CLINICAL MODULE

## OBLIGATORY ELECTIVE SUBJECTS

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOSZLABI_1A</td>
<td>Antibiotic Therapy and Infectology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract, mark</td>
<td>Pre-clinical module</td>
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</tbody>
</table>

## CLINICAL MODULE

## ELECTIVE SUBJECTS

### 1st semester

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
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</thead>
<tbody>
<tr>
<td>A0ANENT_1A</td>
<td>Anesthesia and Intensive Care</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract, mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>A0N01KLG_1A</td>
<td>Clinical Genetics</td>
<td>2</td>
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<tr>
<td>A0MMIMK_1A</td>
<td>Clinical Immunology</td>
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<td>pract, mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>A0NFMED_1A</td>
<td>Health Informatics</td>
<td>2</td>
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<tr>
<td>A0MMSTCM_1A</td>
<td>Traditional Chinese Medicine</td>
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<tr>
<td>A0MKULT_1A</td>
<td>Ultrasonography</td>
<td>2</td>
<td>–</td>
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<tr>
<td>A0UKOHIE_1A</td>
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<td>2.5</td>
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### 2nd semester

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<th>Subject Code</th>
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<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
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<tr>
<td>A0FRMKAB_1A</td>
<td>Aspects of Drug Abuse</td>
<td>2</td>
<td>–</td>
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<tr>
<td>A0KRCAP_1A</td>
<td>Clinical Cardiovascular Physiology</td>
<td>2</td>
<td>–</td>
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<td>Medical Physiology II.</td>
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<tr>
<td>A0BL2END_1A</td>
<td>Clinical Endocrinology</td>
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<td>–</td>
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<td>Pre-clinical module</td>
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<tr>
<td>A0BL2HEM_1A</td>
<td>Clinical Hematology</td>
<td>2</td>
<td>–</td>
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<td>pract, mark</td>
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<tr>
<td>A0S82SSB_1A</td>
<td>Emergency in Surgery</td>
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<td>–</td>
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<tr>
<td>A0S81CSS_1A</td>
<td>Family Surgery</td>
<td>2</td>
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<td>Surgery I.</td>
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<td>A0GYNED_1A</td>
<td>Neonatology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract, mark</td>
<td>Pre-clinical module</td>
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<tr>
<td>A0SLTRP_1A</td>
<td>Prehospital and Emergency Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract, mark</td>
<td>It can be taken only in the 10th semester.</td>
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<tr>
<td>A0SMKULT_1A</td>
<td>Ultrasonography</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract, mark</td>
<td>Pre-clinical module</td>
</tr>
</tbody>
</table>

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Faculty of Medicine
Faculty of Medicine
6th year
COMPULSORY INTERNSHIPS AND RESPONSIBLE DEPARTMENTS

Internal Medicine

1st Department of Internal Medicine
Budapest VIII., Korányi S. u. 2/Phone: 459-1500 / ext. 1554
Head of the Department: Dr. Miklós Szathmári
Tutors: Prof. Dr. Ferenc Szalay, Dr. Margit Abonyi

3rd Department of Internal Medicine
1125 Budapest, XII. Kútvolgyi út 4. 12. Phone: 355-1122
Head of the Department: Prof. Dr. István Karádi
Tutor: Dr. Katalin Keltai

Surgery

1st Department of Surgery
Budapest VIII., Üllői út. 78. Phone: 313-5216 / ext. 2167
Head of the Department: Prof. Dr. Péter Kupcsulik
Tutor: Dr. Péter Kokas

Traumatology

Department of Traumatology
Budapest VII., Péterfy S. u. 14. Phone: 461-4723
Head of the Department: Prof. Dr. András Sárváry
Tutor: Dr. Miklós Szebeny

Pediatrics

1st Department of Pediatrics
Budapest VIII., Bókay J. u. 53. Phone: 334-3186
Head of the Department: Prof. Dr. Tivadar Tulassy
Tutor: Dr. Erzsébet Horváth

2nd Department of Pediatrics
Budapest IX., Tűzőtő u. 7-9. Phone: 215-1380
Head of the Department: Prof. Dr. György Fekete
Tutor: Dr. Boglárka Bánssági

Obstetrics and Gynecology

1st Department of Obstetrics and Gynecology
Budapest VIII., Baross u. 27. Phone: 266-0473
Tutors: Dr. József Gábor Joó
Dr. Gyula Richard Nagy

SEMMELWEIS UNIVERSITY / FACULTY OF MEDICINE
Neurology
Department of Neurology
Budapest VIII., Balassa u. 6. Phone: 210-0330 / ext. 1123
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. 1100 or 155-1122
Head of the Department: Prof. Dr. István Bitter
Tutor: Dr. Annamária Rihmer

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

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

<table>
<thead>
<tr>
<th>Internship</th>
<th>Required number of weeks</th>
<th>Credits</th>
<th>Examination</th>
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<td>Internal Medicine</td>
<td>9</td>
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<tr>
<td>AOBEL2BEL6SA</td>
<td>(1 week Infectology)</td>
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<tr>
<td>AOBEL2BEL6SA</td>
<td>Surgery</td>
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<tr>
<td>AOTRAKRA6SA</td>
<td>(2 weeks Traumatology)</td>
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<tr>
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<td>Obstetrics and Gynecology</td>
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<td>AONEUIDG6SA</td>
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<td>AOCSSCI6SA</td>
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<td>Total:</td>
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<td>39</td>
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</table>

# The grade influences the qualification of the diploma.

### Important note concerning the 6th year rotation

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

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

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

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

*Professor Dr. Mark Kollai*

Academic Program Director
INTERNAL MEDICINE

- To be present for at least 6 hours per day (30 hours per week).
- Activities should include the following subjects: general survey of hospital/department organization, examination of patients in the Medical Department, with special emphasis to case history taking and full physical examination.
- The students should gain practice in patient documentation, problem-oriented medical record keeping, taking of pulse, blood pressure, temperature, measuring weight and height of patients.
- Participate in the preparation of diagnostic and therapeutic plan for patients.
- Be present at invasive and semi-invasive interventions (taps of abdominal and chest fluid, preparation of bone marrow smear etc.).
- Learn how to take venous blood.
- To spend time at the outpatient department.
- To practice basic laboratory techniques needed in bedside diagnosis (urinalysis, stool examination, use of dip sticks etc.).
- To be on night duty at least twice per month.
- Consultations in gastroenterology, diabetes, hematology, endocrinology, cardiology, sonography, X-ray, ECG etc.
- Watch endoscopy performed.
- See the intensive coronary care unit.
- Be present at postmortems.
- Regular consultations with the doctor responsible for the student.
- All these activities should be carefully supervised by members of the medical staff.
- The students should also practice communication with patients and their relatives, while giving them relevant medical information on the disease but avoiding conflicts with medical confidentiality.
- Students should take an active part in medical consultations concerning their patients, as well as in the medical conferences in the department.
- The students should practice the prescription of commonly used drugs.

SURGERY

- Acting as a HO or SHO under strict supervision, including administration and practical skills.
- Admitting of patients with full physical examination, including breast and PR examinations.
- Theoretical planning for examinations and treatments for the examined patients.
- Continuous observation and registration of the patient’s condition with administration.
- Writing of discharge reports.
- Performing different injections (iv., im, sc), insertion of venflons, phlebotomies. To determine blood group, performing of transfusions under strict supervision. Completion of administration.
- Insertion of NG tubes.
- Catheterization (urethral and suprapubic).
- Removal of clips and stitches.
- Changing of dressings.
- Assistance at abdominal and thoracic wash-outs or punctures.
- Taking part in consultations with other specialists.
- Theoretical decisions about operations. Consenting.
- Taking part in operations, scrubbing in, stitching.
- Being on duty for 24 hours once a week.
Examination and treating of emergency patients.
Taking part in anesthesiological preparation of patients.
Observation of premedications.
Assistance at several anesthesiological procedures, including spinal, peridural and GA.
Assistance at intubations. If possible, independent intubation.
Measurement of CVP.
Assistance at jugular and subclavian venal punctures.
Suction of the throat and trachea.
Observation of ITU work.

HO house officer
SHO senior house officer
PR per rectum
NG nasogastric
GA general anesthetic
CVP central venous pressure
ITU intensive therapy unit

Observation of postoperative treatment.
Observation of resuscitation and reanimation.
Observation of autopsies of the ward.
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.

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

– 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>
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<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>
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<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>Obstructive Bronchitis</td>
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<tr>
<td>13. Genetic counselling</td>
<td>Prof. Dr. Fekete Gy.</td>
</tr>
<tr>
<td>14. Congenital Heart Diseases and the Treatment in Infanthood</td>
<td>Dr. Szabolcs J.</td>
</tr>
</tbody>
</table>

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

**OBSTETRICS AND GYNECOLOGY**

**Essential Requirements in Obstetrics**

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

NEUROLOGY
General information

Tutor: Anita Kamondi
anita@neur.sote.hu
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, liquorhea.

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 ocuulocephalic response, intact versus disconjugate ice water calorics.
E. Diagnosis and management of increased intracranial pressure (ICP).
F. Symptoms of uncal and other herniations.

XIII. Headaches and facial pain
A. Clinical features of migraine, cluster headache, tension headache, trigeminal neuralgia,”organic” headache.
B. Treatment for common headaches.

XIV. Brain tumors
A. Clinical presentation and diagnosis of primary brain tumors.
B. Metastatic tumors to the brain in adults.

XV. Infections
A. Bacterial meningitis, viral meningitis, encephalitis including herpes simplex, chronic meningitis, brain abscess, Neurosyphilis, Lyme disease.
B. HIV and the nervous system.

XVI. Spinal cord disorders
A. Neurological symptoms caused by compression, transsection and hemisection of the spinal cord.
B. Autonomic deficits caused by spinal cord lesion.
C. Clinical presentation of vitamin B12 deficiency.

XVII. Peripheral nervous system disorders
A. Clinical syndromes of neuropathy, neuromuscular junction disorders, myopathy.
B. Describes: radicular pain, radiculopathy, mononeuropathy, monalgia paresthetica, mononeuropathy multiplex, polyneuropathy, paresthesia, fasciculation.
C. Clinical findings in root lesions at C5, L4, L5, S1.
D. Herniated nucleus pulposus.
E. The tunnel syndromes.
F. The acute inflammatory demyelinating polyneuropathy (Guillain-Barre synd.)
G. The motoneuron disease.
H. The myasthenia gravis.
I. Duchenne muscular dystrophy, myotonic dystrophy, polymyositis.

XVIII. Alcohol related disorders
A. Wernicke-Korsakoff syndrome, dementia.
B. Delirium tremens, alcohol withdrawal seizure.
C. Cerebellar degeneration, peripheral polyneuropathy.

Neurology Examination Question List for 6th year Students

1st series  Priority questions
1. Disorders of the innervation of pupils.
2. The facial nerve
3. Differential diagnosis of vertigo and dizziness
4. Localization of paresis syndromes
5. Symptoms of upper and lower motoneuron lesion
6. Types and cystalline of aphasia
7. Classification of unconscious conditions
8. Examination of the unconscious patient
9. Unconsciousness due to metabolic origin
10. Emergency in Neurology
12. Traumatic intracranial bleeding
13. Trauma of the spine and spinal cord
14. Clinical syndromes of impaired circulation of the internal carotid artery
15. Clinical syndromes of impaired circulation of the vertebro-basilar system
16. Emergency in cerebrovascular disorders
17. Diagnostic procedures in cerebrovascular disorders.
19. Intracerebral bleedings.
20. Diagnosis, treatment and prognosis of subarachnoid hemorrhage
21. Status epilepticus
22. Meningitis, encephalitis
23. Multiple sclerosis
24. Signs of brain tumors
25. Signs of tumors of the spine and spinal space
26. Brain edema
27. Diagnostic criteria of dementia
28. Diagnosis of Parkinson’s disease
29. Wernicke-Korsakow syndrome
30. Guillain-Barre syndrome
31. Disturbance of micturition and defecation
32. Myasthenia gravis

2nd series
1. Neurological causes of impaired visual acuity. Visual field defects.
2. Ocular movement and gaze disorders
3. Disorders of the vestibular system.
5. Syndromes of pons and mesencephalon lesions
6. The muscle tone control
7. Neuronal anatomical 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 polyneuropathies
23. Neuropathies in diabetes mellitus
24. Inherited neuropathies (Charcot-Marie, Dejerine-Sottas, Refsum)
25. Low back pain, and cervical disk disease
26. Cranioceval 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. Annamaria Rihmer

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/?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, 2008 and the second by the end of December, 2008.

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, 2008. 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. If 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, 2009! For the August exam latest until July 15, 2009 and for the November exam latest until October 15, 2009!
- 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.)
# STUDY PROGRAMME

## First Year

### 1st semester

<table>
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<th>Creditcode</th>
<th>Examination</th>
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<td>C5L2,5P2,5</td>
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<td>C7L4P5</td>
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<td>C9L3P6</td>
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<td>Physical Education I.</td>
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<td>FOKONKIN_1A</td>
<td>Library Informatics</td>
<td>C2L2P0</td>
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<td>FOHOZTO_1A</td>
<td>History of Medicine</td>
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### Total Credit

34
## BASIC MODULE

### 2nd semester

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<th>Creditcode</th>
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<td>FOANTANA_2A</td>
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<td>C9L3P6</td>
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<td><strong>Total Credit</strong></td>
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**Compulsory summer pract.**

| Dental Laboratory Practice (summer, 2 weeks) | 60 hours | signature |
| Nursing Practice (summer, 2 weeks)         | 60 hours | signature |

**Explanation**

- 15 credits should be gained from the elective subjects during the 5-year studies.
- The grade influences the qualification of the diploma.
- C = Credit point
- L = Lecture (hours/week)
- P = Practice (hours/week)
LIST OF TEXTBOOKS

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

Recommended textbooks:

5. Sasvári-Müllner: Bioorganic Compounds 4 kötet. (Bp.)
ANATOMY, HISTOLOGY AND EMBRYOLOGY
Department of Anatomy, Histology & Embryology
Tutor: Prof. Dr. Miklós Réthelyi

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

<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>Behaviour in the dissecting room. Bones and joints of the shoulder girdle and the arm. Demonstration: shoulder joint</td>
<td>Behaviour in the histology lab. Use of the microscope. Preparation of the</td>
</tr>
<tr>
<td>2. Structure of the limbs (bony skeleton, joints, muscles, groups of muscles, fascia, histological specimens, fascial compartments, arteries, superficial and deep veins, nerves, innervation of the muscles and the skin</td>
<td>Stains. Study of a solid and a hollow organs: surfaces, homogenous structure, layered structure.</td>
<td></td>
</tr>
<tr>
<td>3. Animal tissues, epithelial cells, simple epitheliums</td>
<td>Bones of the shoulder girdle and the upper extremity. Rules of the dissection (prevention of accidents). Dissection of the shoulder and elbow joints.</td>
<td>SIMPLE EPITHELIA: Simple squamous (mesothel, pleura); simple cuboidal (kidney); simple columnar (gallbladder); pseudostratified (trachea)</td>
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<tr>
<td>4. Stratified epithelia</td>
<td>Bones of the shoulder girdle and the upper extremity. Dissection of the shoulders and elbow joints.</td>
<td>STRATIFIED EPITHELIUM: squamous, non-keratinizing (esophagus); squamous keratinizing (skin); columnar male urethra; transitional epithelium (urinary bladder)</td>
</tr>
<tr>
<td>5. Types and composition of joints (general arthrology)</td>
<td>MUSCLES OF THE</td>
<td>GLANDULAR EPITHELIUM</td>
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<tr>
<td>6. Features of the skeletal musculature (general myology)</td>
<td>(general myology)</td>
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<tr>
<td>7. Shoulder joint and the muscles acting upon it</td>
<td>Muscles of the shoulder region, flexor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles.</td>
<td>Goblet cells (colon); meroctrine gland (salivary gland); apocrine gland (prostate); holocrine gland (sebaceous gland); PIGMENT EPITHELIUM (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>CONNECTIVE TISSUE, FIBERS. Collagen fibers (vessel wall); 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>9. Glandular epithelium</td>
<td>Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles.</td>
<td>CONNECTIVE TISSUE, CELLS. Various types of cells</td>
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<tr>
<td>10. Muscles of the hand</td>
<td>Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles.</td>
<td></td>
</tr>
<tr>
<td>11. Connective tissue, cells</td>
<td>Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles.</td>
<td></td>
</tr>
<tr>
<td>12. Connective tissue: fibers; types of the connective tissue</td>
<td>Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles.</td>
<td></td>
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<tr>
<td>13. Blood, hematopoiesis</td>
<td>Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles.</td>
<td></td>
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<tr>
<td>14. Supporting tissue</td>
<td>Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles.</td>
<td></td>
</tr>
<tr>
<td>15. Bone formation</td>
<td>Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles.</td>
<td></td>
</tr>
<tr>
<td>16. Vertebrae, sacrum, vertebral column</td>
<td>Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles.</td>
<td></td>
</tr>
<tr>
<td>17. Superficial and deep muscles of the back</td>
<td>Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles.</td>
<td></td>
</tr>
</tbody>
</table>

235
<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>18. Thorax, pectoral and intercostal muscles</td>
<td>Vertebrae, ribs, sternum</td>
<td>(scar tissue); mast cells peritoneum; fat cells (tongue, skin). CONNECTIVE TISSUE, TYPES. Mesenchyme umbilical cord; dense connective tissue (tendons); reticular tissue (lymph node); cell rich tissue (uterus). BLOOD, BONE MARROW.</td>
</tr>
<tr>
<td>19. Bones and ligaments of the pelvis</td>
<td>Muscles of the trunk. Bones and ligaments of the pelvis.</td>
<td>Blood smear, bone marrow smear. SUPPORTING TISSUE. Hyaline cartilage (rib); fibrous cartilage (meniscus); elastic</td>
</tr>
<tr>
<td>20. Abdominal muscles, rectus sheath</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Diaphragm</td>
<td>cartilage (epiglottis).</td>
<td>BONE, BONE FORMATION. Bone, cross and longitudinal sections. enchondral ossification the mesoderm (digit); intramembranous ossification (skull).</td>
</tr>
<tr>
<td>22. Gametogenesis, fertilization</td>
<td>Bones of the lower extremity.</td>
<td>REVIEW</td>
</tr>
<tr>
<td>25. Hip joint and the muscles acting upon it</td>
<td>Knee joint, joints of the foot. Flexor muscles of the thigh</td>
<td></td>
</tr>
<tr>
<td>26. Knee joint and the muscles acting upon it</td>
<td></td>
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</tr>
<tr>
<td>27. Foot and calf, muscles of the sole.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. Neurulation. Folding of the embryo. Fetal membranes</td>
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</tr>
<tr>
<td>29. Early embryonic and placental circulation. Structure of the placenta the motor system</td>
<td></td>
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<tr>
<td>31. Muscle tissue I.</td>
<td>Completion of the dissection</td>
<td>PLACENTA, UMBILICAL CORD</td>
</tr>
<tr>
<td>32. Muscle tissue II.</td>
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<tr>
<td>33. Herniae</td>
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<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>
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<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>
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<tr>
<td>37. Sphenoid and ethmoid bones</td>
<td>Skull</td>
<td>NEURAL TISSUE, CELLS. Multipolar neurons (spinal cord, autonomous ganglion, cerebral cortex, cerebellar cortex); pseudounipolar neurons (spinal ganglion)</td>
</tr>
<tr>
<td>38. Temporal bone</td>
<td></td>
<td>NERVE FIBERS.</td>
</tr>
<tr>
<td>39. Calvaria, base and interior of the skull</td>
<td></td>
<td>GLIAL CELLS.</td>
</tr>
<tr>
<td>40. Facial skeleton, orbit</td>
<td>Skull</td>
<td>Peripheral nerve, glial cells (spinal cord, cerebral cortex)</td>
</tr>
<tr>
<td>41. Nasal cavity, paranasal sinuses</td>
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<td></td>
</tr>
<tr>
<td>42. Oral cavity, pterygopalatine and infratemporal fossae</td>
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<tr>
<td>43. Mandible, temporomandibular joint</td>
<td>Skull</td>
<td>EFFECTORS, RECEPTORS. Motor end plate, sensory nerve ending.</td>
</tr>
<tr>
<td>44. Atlasoccipital and atlantoaxial joints. Suboccipital muscles</td>
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<td>Review</td>
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<tr>
<td>45. Development of the skull. Fontanelles</td>
<td>TEST. Skull</td>
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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.</td>
<td>Heart: surface structure, vessels, myocard</td>
<td>VESSELS. Elastic artery (carotid artery); middle size artery and vein, arterioles, venules, capillaries (tongue)</td>
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<tr>
<td>2.</td>
<td>Chambers of the heart, valves</td>
<td>LYMPHATIC ORGANS.</td>
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<td>3.</td>
<td>Pericard, In situ heart dissection.</td>
<td>LYMPHATIC ORGANS.</td>
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<td>4.</td>
<td>Vessels of the heart, conducting system, topology, Pericard</td>
<td>Thymus, palatine tonsil, lingual tonsil.</td>
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<td>5.</td>
<td>Development of the heart and the pericard I.</td>
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<td>6.</td>
<td>Development of the heart and the pericard II.</td>
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<tr>
<td>7.</td>
<td>HEART. Wall structure, Malformations.</td>
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<tr>
<td>8.</td>
<td>Viscera, introduction. Histological structure of the solid and hollow viscera</td>
<td>TEST. Heart, anatomy and embryology</td>
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<tr>
<td>9.</td>
<td>Muscles of the face (demonstration) Tongue, cervical organs on the visceral complex</td>
<td>Foliate papilla (demonstration)</td>
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<tr>
<td>10.</td>
<td>Development and histology of the teeth</td>
<td>DIGESTIVE SYSTEM. Salivary glands (parotid, submandibular, sublingual); tooth (demonstration)</td>
</tr>
<tr>
<td>11.</td>
<td>Development of the face, malformations</td>
<td>DIGESTIVE SYSTEM. Tooth development, esophagus</td>
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<td>12.</td>
<td>Esophagus, aorta</td>
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<td>13.</td>
<td>Abdominal organs, peritoneum.</td>
<td>DIGESTIVE SYSTEM. Stomach, cardia, pylorus</td>
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<tr>
<td>14.</td>
<td>Hepatoduodenal ligament, mesentery</td>
<td>DIGESTIVE SYSTEM. Duodenum, jejunum, ileum, colon, appendix</td>
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<td>15.</td>
<td>Unpaired branches of the abdominal aorta, tributaries of the portal vein</td>
<td>DIGESTIVE SYSTEM.</td>
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<tr>
<td>17.</td>
<td>Esophagus, stomach: anatomy and histology</td>
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<tr>
<td>18.</td>
<td>DIGESTIVE SYSTEM.</td>
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<tr>
<td>19.</td>
<td>Abdominal organs, peritoneum.</td>
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<td>20.</td>
<td>Hepatoduodenal ligament, mesentery</td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>Unpaired branches of the abdominal aorta, tributaries of the portal vein</td>
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</tr>
<tr>
<td>22.</td>
<td>Demonstration of the abdominal visceral topography in the cadaver</td>
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</tr>
<tr>
<td>23.</td>
<td>Abdominal organs, peritoneum.</td>
<td></td>
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<tr>
<td>24.</td>
<td>DIGESTIVE SYSTEM. Stomach, cardia, pylorus</td>
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</tr>
<tr>
<td>25.</td>
<td>DIGESTIVE SYSTEM. Duodenum, jejunum, ileum, colon, appendix</td>
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<tr>
<td>26.</td>
<td>DIGESTIVE SYSTEM. Liver, gallbladder, pancreas cadaver.</td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>TEST. Lymphatic organs, vessels, heart, digestive system</td>
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<tr>
<td>28.</td>
<td>Female urethra</td>
<td></td>
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<tr>
<td>29.</td>
<td>TEST. Anatomy and embryology of the digestive and respiratory systems. Capsules of the kidney, components of the renal hilum.</td>
<td></td>
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<tr>
<td>30.</td>
<td>RESPIRATORY SYSTEM. Larynx, trachea, lung.</td>
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<tr>
<td>31.</td>
<td>RESPIRATORY SYSTEM. Larynx, trachea, lung.</td>
<td></td>
</tr>
<tr>
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<td>RESPIRATORY SYSTEM. Larynx, trachea, lung.</td>
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<td>RESPIRATORY SYSTEM. Larynx, trachea, lung.</td>
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### Lectures Dissecting room Histology lab.

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<tr>
<th>Lecture</th>
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<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>34. Development of the uropoetic system, malformations</td>
<td>Aorta, inferior vena cava, ureter; pelvic organs.</td>
<td>UROPOETIC SYSTEM. Kidney, urinary bladder.</td>
</tr>
<tr>
<td>35. Testis, spermiogenesis, epididymis</td>
<td>Retropertioneum</td>
<td>Demonstration: ureter</td>
</tr>
<tr>
<td>36. Ductus deferens, spermatid cord, seminal vesicle, prostate, male urethra: anatomy and histology</td>
<td>Pelvic organs.</td>
<td>MALE GENITAL SYSTEM.</td>
</tr>
<tr>
<td>37. Penis: anatomy and histology. Male perineum</td>
<td>Peritoneum in the pelvis.</td>
<td>Testis, epididymis, spermatid cord, seminal vesicle, prostate</td>
</tr>
<tr>
<td>38. Ovary and uterine tube: anatomy and histology. Oogenesis.</td>
<td>Pelvic organs, topography.</td>
<td>MALE GENITAL SYSTEM.</td>
</tr>
<tr>
<td>39. Anatomy of the uterus, broad ligament</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40. Histology of the uterus, menstrual cycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41. Vagina, outer female genital organs. Female perineum</td>
<td>Perineum</td>
<td>Penis.</td>
</tr>
<tr>
<td>42. Development of the genital organs</td>
<td>Review</td>
<td>FEMALE GENITAL SYSTEM.</td>
</tr>
<tr>
<td>43. Separation of the body cavities. Development of the diaphragm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44. Development of the major arteries and veins. Fetal circulation</td>
<td>TEST. Urogenital system</td>
<td>Uterus, vagina, mammary gland</td>
</tr>
</tbody>
</table>

Semester examination (semi-final)

### PREVENTIVE DENTISTRY I.
Department of Conservative Dentistry
Lecturer: Prof. Dr. Ida Nyárasdy

#### Second Semester

**Week** | **Lectures** (1 hour/week)
---|---
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 x 2,5 hours practices – at schools

14th (last week) – lecture: questioner; practical course grade
GENERAL DENTAL MATERIALS
Lecturer: Dr. András Kóbor D.M.D.

Second Semester

Lectures (1 hour/week)

History of dental education
Impression materials I.
Impression materials II.
Metals, technologies
Casts, models and dies
Precious alloys, non precious alloys
Investment materials, flasking methods
Dental ceramics I- Silicate ceramics
Dental ceramics II- Oxidceramics
Dental resins
Luting cements
Restorative materials
Technologies: CAD/CAM,CNC, sintering
Auxiliary materials
Consultation

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

Second Semester

Topics
Dangerous scene. Safety measurements on the scene. Call for an ambulance.
Emotional viewpoints of managing emergencies.
The unconscious patient. Airway management. Assessment of the vital signs.
Recovery position.
Heart attack. Sudden death. Chain of survival.
BLS (Basic Life Support)
AED (Automated External Defibrillator). PAD (Public Access Defibrillation)
BLS + AED
Choking, Drowning. Electrocution.

Note: Participation at 75% of practices is necessary. Compensation of absences is possible in subsequent practices. Development in learning skills will be controlled all the time during the practices in the semester. Mode of certifying absences: oral – referring to practices. Requirements: The student should be able to:
– recognize emergencies, and call for help
– start with BLS + AED
– provide airway management in unconscious patients
– provide first aid for patients complaining for chest-pain, shortness of breath, signs for hypoglycaemia and having suffered from fainting, shock condition, convulsion, injuries.

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

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

GENERAL INFORMATION:
The program in Medical Informatics trains students in the application of computer and information sciences to the quantitative aspects and decision needs of the health and life sciences. Medical Informatics encompasses not only mathematics, statistics and computing, but also includes other engineering, management, and information sciences applied to problems arising in biology, medicine and the delivery of health care. In addition to basic biostatistician and computing techniques, it is necessary that students be familiar with other methodologies such as mathematical modeling, systems analysis, image and signal processing, management information systems and decision sciences. Possible areas of emphasis include health information systems, biomathematical modeling, evaluation of health programs, system development, clinical decision studies and WEB 2.0 solutions in health care system.

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

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

<table>
<thead>
<tr>
<th>THEMES</th>
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</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>6. Structuring and representing medical knowledge, Evidence and case bases.</td>
<td>Lecture</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Data manipulation in the computer. Working with text, image, sound and video</td>
</tr>
<tr>
<td>2. Getting Started With The Internet.</td>
</tr>
<tr>
<td>3. Database management programs, constructing a relational data base of students' lecture books using Microsoft access.</td>
</tr>
<tr>
<td>4. Extracting data from a food database using MS Access.</td>
</tr>
<tr>
<td>5. Data manipulation and visualizations with Microsoft Excel.</td>
</tr>
<tr>
<td>6. Compiling food recipes using Microsoft Word.</td>
</tr>
<tr>
<td>7. Compiling publication a food cookbook using Netscape.</td>
</tr>
<tr>
<td>8. Browsing In Dental Information Resources On The Internet</td>
</tr>
<tr>
<td>9. Diet planning using MS Excel.</td>
</tr>
<tr>
<td>10. Mobile Communication</td>
</tr>
<tr>
<td>11. JAVA, AJAX and RSS in WEB 2.0 applications</td>
</tr>
<tr>
<td>12. Presentation using Microsoft PowerPoint.</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 spittoons
Helping with taking temperatures, sterilization of thermometers
Helping with serving food
Helping with feeding bed patients

Week 2 (practicing the things learnt the previous week)
Helping with the patients’ placing in chairs, stretchers and wheelchairs
Helping with the washing of not seriously ill patients, mouth hygiene and nail care
Helping with the dressing and undressing of the patients
Taking temperatures
Practicing how to feel the pulse
Helping with changing clothes
Practicing to keep temperature and pulse charts
Working with syringe, practicing pumping
Helping to sterilize the syringe (the importance of sterilization)
Helping with preparing and sending samples to the labs, filling up guide slips
Staying in the lab for one day favourable in the department’s lab helping with and practicing urine analysis with reagents

Students are not allowed to do the course in a children’s ward.

II.

Dental Laboratory Technical Practice (60 hours)

Two weeks should be spent in a dental laboratory where students should practice dental laboratory procedures, casting, investing, setting up teeth and carving wax models. It is recommended to mix stones, plasters, pour impressions and make sculpture wax teeth.
<table>
<thead>
<tr>
<th>subjects code</th>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
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<td>FOANTANA_3A</td>
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<td>C6L4P3</td>
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<td>Medical Chemistry II.</td>
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<td><strong>Total Credit</strong></td>
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</tbody>
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**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)
LIST OF TEXTBOOKS


Recommended textbooks:

ANATOMY, HISTOLOGY AND EMBRYOLOGY
Department of Anatomy, Histology & Embryology
Tutor: Prof. Dr. Miklós Réthelyi

First Semester

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

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Dissecting room</th>
<th>Histology lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The significance of the nervous system in the medical curriculum and practice.</td>
<td>Divisions of the brain meninges, arteries and veins of the brain, surface structure of the hemispheres basis cerebris.</td>
<td></td>
</tr>
<tr>
<td>2. Development of the telecephalon, Meninges anatomy of the hemispheres, lateral ventricles</td>
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<tr>
<td>6. Differentiation of the neural tube, development of the spinal cord</td>
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<tr>
<td>7. Anatomy of the spinal cord, spinal segment</td>
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<tr>
<td>8. Neuronal architecture of the spinal cord: proprioceptive and withdrawal reflex arches</td>
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<tr>
<td>9. Neuronal architecture of the spinal cord: autonomous reflex arch, spinal pathways</td>
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<tr>
<td>11. Nuclei and pathways in the brain stem II.</td>
<td>Demonstration: spinal cord</td>
<td></td>
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<tr>
<td>12. Nuclei and pathways in the brain stem III.</td>
<td>Coronal and horizontal sections</td>
<td>Cerebellum, cerebral cortex</td>
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<tr>
<td>13. Microscopic structure and connections of the thalamic nuclei</td>
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<tr>
<td>14. Sensory pathways</td>
<td>Test. Anatomy of the brain and the spinal cord; nuclei, pathways (tracts), embryology, Regio (r.) frontalis, r. infraorbitalis et buccalis, r. supraclavicularis, r. vocalis, R. frontalis, r. infraorbitalis et buccalis, r. supraclavicularis, r. axillaris, R. parotideomasseterica, r. mediana colli, r. infraclavicularis, r. deltoida</td>
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<tr>
<td>15. Neural correlates of the pain sensation</td>
<td></td>
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<tr>
<td>16. Cerebellar cortex</td>
<td></td>
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<tr>
<td>17. Cerebellar pathways</td>
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<td>18. Structure and connections of the basal nuclei (extrapyramidal system)</td>
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<td>19. Motor pathways</td>
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<td>20. Patient demonstration</td>
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<tr>
<td>21. Cerebral cortex</td>
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<tr>
<td>22. Trigeminal nerve</td>
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<tr>
<td>23. Facial nerve</td>
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<tr>
<td>24. Glossopharyngeal, vagus, accessory and hypoglossal nerves</td>
<td></td>
<td></td>
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<tr>
<td>25. Olfactory and gustatory systems</td>
<td>R. parotideomasseterica, r. mediana colli, r. infraclavicularis, r. deltoida.</td>
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<tr>
<td>26. Outer and middle coats of the eyeball</td>
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<tr>
<td>27. Lens, chambers of the eye, vitreous body, accommodation</td>
<td>Dissection of the eye</td>
<td></td>
</tr>
<tr>
<td>Lectures</td>
<td>Dissecting room</td>
<td>Histology lab.</td>
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<tr>
<td>-------------------------------------------------------------------------</td>
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<tr>
<td>28. Inner coat of the eyeball, retina</td>
<td>R. submandibularis,</td>
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<td></td>
<td>trigonum caroticum,</td>
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<tr>
<td>29. Outer eye muscles, movement sof the eye</td>
<td>fossa scalenotrachealis.</td>
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<td></td>
<td>Demonstration:</td>
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<tr>
<td></td>
<td>middle and inner ear</td>
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<tr>
<td>30. Protective and lacrimal apparatus of the eye</td>
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<td></td>
<td>R. submandibularis, trigonum caroticum,</td>
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<td></td>
<td>fossa scalenotrachealis.</td>
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<td></td>
<td>Development of the eye</td>
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<tr>
<td>31. Optic nerve, visual pathway, visual cortex.</td>
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<tr>
<td>32. Outer ear, tympanic cavity, auditory ossicles</td>
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<td></td>
<td>Demonstration:</td>
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<td></td>
<td>inner ear</td>
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<tr>
<td>33. Bony and membraneous labyrinth</td>
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<tr>
<td>34. Vestibular system</td>
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<tr>
<td>35. Organ of Corti</td>
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<tr>
<td>37. Limbic system</td>
<td>In situ dissection of the brain</td>
<td>Endocrine organs, Pituitary,</td>
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<tr>
<td></td>
<td></td>
<td>pineal gland, thyroid gland,</td>
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<td></td>
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<td>parathyroid gland</td>
</tr>
<tr>
<td>38. Hypothalamo-hypophyseal systems</td>
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<td>40. Endocrine organs: Adrenal</td>
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<tr>
<td>41. Parasympathetic nervous system</td>
<td>Tympanic cavity, inner ear</td>
<td>gland, pancreas, testis, ovary,</td>
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<td></td>
<td></td>
<td>placenta</td>
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<tr>
<td>42. Sympathetic nervous system</td>
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<tr>
<td>43. Enteral nervous system</td>
<td></td>
<td>Skin, Palmar (non-hairy) skin,</td>
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<tr>
<td>44. Skin and appendages I.</td>
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<tr>
<td>45. Skin and appendages II., mammary gland</td>
<td></td>
<td>axillary skin</td>
</tr>
</tbody>
</table>
## Second Semester

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

250
ODONTOTECHNOLOGY
Dental Technology
Lecturer: Dr. Péter Kivovics D.M.D.

First Semester

Lectures (1 hour/week)
History of Dental Technology
Dental technician as the member of the dental team
Placement of the dental technology in dentistry
Types of the prosthetic appliances
Impression and casting, types of casts
Types and use of articulators I.
Types and use of articulators II.
Setting up teeth at complete denture
Processing dentures
Impression and casting at fixed restorations
Metal casting for fixed restorations
Porcelain fused to metal restorations
Metal free fixed restorations
Casting of metal based removable partial dentures
Consult

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

Second Semester

Lecture: –

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

See all the other detailed curricula at General Medicine, 2nd year
## STUDY PROGRAMME

### Third Year

#### 5th semester

<table>
<thead>
<tr>
<th>subjects code</th>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOKFKKFP_2A</td>
<td>Conservative Dentistry and Endodontics, Pre-clinical II.</td>
<td>C4L1P3</td>
<td>semifinal</td>
<td>BASIC MODULE</td>
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<tr>
<td>FOMIKOMIK_1A</td>
<td>General and Oral Microbiology</td>
<td>C5L2P3</td>
<td>final#</td>
<td>BASIC MODULE</td>
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<tr>
<td>F00BTOPF_1A</td>
<td>General and Oral Pathophysiology</td>
<td>C4L2P2</td>
<td>final#</td>
<td>BASIC MODULE</td>
</tr>
<tr>
<td>FOSZBSBP_1A</td>
<td>Oral and Maxillofacial Surgery, Pre-clinical course</td>
<td>C2L0P2</td>
<td>pract.mark</td>
<td>BASIC MODULE</td>
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<tr>
<td>FOSZBOPT_1A</td>
<td>Oral Pathology I.</td>
<td>C2L2P0</td>
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<td>BASIC MODULE</td>
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<tr>
<td>FOPFKPAT_1A</td>
<td>Pathology I.</td>
<td>C6L4P2</td>
<td>semifinal</td>
<td>BASIC MODULE</td>
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<tr>
<td>FOKFKPRF_2A</td>
<td>Preventive Dentistry II</td>
<td>C3L1P2</td>
<td>pract.mark</td>
<td>BASIC MODULE</td>
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<tr>
<td>FOLEKFSZ_1A</td>
<td>Hungarian Dental Terminology I.</td>
<td>C4L0P4</td>
<td>pract. mark</td>
<td>BASIC MODULE</td>
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<tr>
<td>FOPFPKPP_1A</td>
<td>Prosthodontics, Pre-clinical Course</td>
<td>C4L1P3</td>
<td>final#</td>
<td>BASIC MODULE</td>
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</table>

**Total Credit** 34
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<tr>
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<th>Credits code</th>
<th>examination</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>FOKFK0F_1A</td>
<td>Conservative Dentistry and Endodontics I.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Conservative Dentistry, Pre-clinical II.</td>
</tr>
<tr>
<td>FUBL3BEL_1A</td>
<td>Internal Medicine I.</td>
<td>C4L2P2</td>
<td>pract.mark</td>
<td>General and Oral Pathophysiology</td>
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<tr>
<td>FOSZBSZB_1A</td>
<td>Oral and Maxillofacial Surgery I.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Oral and M. Surgery, Pre-clinical</td>
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<tr>
<td>F00BTOBI_1A</td>
<td>Oral Biology</td>
<td>C5L3P2</td>
<td>final#</td>
<td>General and Oral Pathophysiology</td>
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<td>FTPKPAT_2A</td>
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<td>final#</td>
<td>Pathology I.</td>
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<td>FTPFKTOP_1A</td>
<td>Prosthodontics I.</td>
<td>C4L1P3</td>
<td>pract.mark</td>
<td>Prosthodontics, Pre-clinical Course</td>
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<td>FTPKPSUG_1A</td>
<td>Radiation Protection</td>
<td>C2L1,SP1</td>
<td>semifinal</td>
<td>BASIC MODULE</td>
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<td>FOHFXPRF_3A</td>
<td>Preventive Dentistry III</td>
<td>C1L1P0</td>
<td>final#</td>
<td>Preventive Dentistry II</td>
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<td>FOLEKFSZ_2A</td>
<td>Hungarian Dental Terminology II.</td>
<td>C4L0P4</td>
<td>final</td>
<td>Hungarian Dental Terminology I.</td>
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</table>

| Elective          |                                                  | C2           |               |                                            |

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<th>subjects code</th>
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<th>Credits code</th>
<th>examination</th>
<th>Prerequisites</th>
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<tr>
<td>FODTKTDK_1A</td>
<td>TDK Work within the Union of Research Students</td>
<td>C1L1P0</td>
<td>pract.mark</td>
<td>for 3rd, 4th and 5th year students</td>
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</table>

**Total Credit**: 35

**Compulsory summer practice**: Dentof-Arveolar practice (summer, 4 weeks) 120 hours signature

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**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= Practic (hours/week)
LIST OF TEXTBOOKS

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

Recommended textbooks:

GENERAL AND ORAL PATHOPHYSIOLOGY
Department of Oral Biology
Lecturer: Prof. Dr. Gábor Varga
Tutor: Dr. Ákos Nagy

First Semester

**Lectures** (2 hours per week)
- Pathophysiology of gastric disorders. GERD, Peptic - and duodenal ulcer. Intestinal digestion and absorption.
- Diseases and regulation of exocrine pancreas.
- Acute and chronic pancreatitis
- Pathophysiology of liver. Processes leading to the lysis of liver cells. Viral hepatitis Development of jaundice. Fatty liver. Pathophysiology of cirrhosis
- Regulation of blood pressure in hypertension. Risk factors and definitions in hypertension. Processes leading to elevation in blood volume and total peripheral resistancy.
- Consequences of hypertension
  - Changes in sodium intake: hypo- and hypernatremia
  - Protein metabolism. Development of hypoproteinemia. Low protein and amino acid intake and absorption.
  - Complete and incomplete proteins Kwashiorkor and marasmus.
  - Energy balance. Low and high energy intake. Regulation of metabolic rate. Anorexia nervosa.
  - Various types of obesities. Control of appetite and energy balance.
  - Lipid metabolism. Absorption and metabolism of lipids. Regulatory and endocrine effect of WAT.

**Practices** (2 hours per week)
- Gastric function
- Liver
- ECG-I (Rhythm, frequency, axis, development of various waves on the normal ECG)
- ECG-2 (Defects of excitation. ES)
- ECG-3 (Defects in conductance, blocks.)
- ECG-4 (Defects of repolarisation. Myocardial infarction)
- ECG-5 (Hypertrophy, hypokalemia)
- Midterm exam

**Urine analysis, renal function tests**
Atherosclerosis. Risk factors and epidemiological aspects. Various theories for the development of atherosclerosis (lipid theory, connective tissue theory, immune theory, thrombogene theory, response to injury etc)

Proteins, malnutrition astric function


Salt and water metabolism


Lipid metabolism. Atherosclerosis

Diabetes

Pain sensation: central and oral mechanisms.

Clinico-chemical assays for endocrine disorders

Pathophysiology of malignancies.

Molecular laboratory diagnostic (Prof. Varga)


Acid base analysis

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

More than 3 absences invalidate the semester

ORAL PATHOLOGY

1st Department of Oral, Dental and Maxillofacial Surgery

Lecturer: Prof. Dr. Zsuzsa Suba

First Semester

Lecture

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

Developmental disturbances in structure of the teeth.

Growth disturbances of teeth. Premature eruption, delayed eruption.

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

Developmental disturbances of the jaws and the temporomandibular joint.

Developmental anomalies of the face and soft oral tissue.

Developmental disturbances of the salivary glands. Etiology of malformations.

Discoloration of the teeth. Dental plaque. Dental calculus.


Hypercementosis. Resorption of the teeth.

Diseases of the pulp. Periapical lesions.


Homoiotransplantation.
Inflammation of the oral mucosa and tongue. Halitosis (Stink of the mouth.)
Cysts of jaws.
Cysts of the oral floor, neck and salivary glands.
Focal infection. Diseases of the jaws.
Physical, heat, chemical and electrical injuries of oral and paraoral structures.
Diseases of microbial origin of oral and paraoral structures.
Diseases of the blood and blood forming organs.
Injury from inorganic chemicals and disturbances of metabolism of oral and paraoral structures.
Avitaminosis. Mucocutaneous disorders.
Diseases of accessory nasal sinus. Diseases of the temporomandibular joint.
Diseases of the nerves and muscles, facial hemihyperplasia and hemihypoplasia.
Premalignant lesions
Benign oral epithelial tumors. Benign oral mesenchymal tumors.
Odontogenic tumors. Benign tumors of the jaws.

Note: Lectures and slide seminars in oral pathology will be held together.
The maximum number of absences in a semester is 3
More than 3 absences invalidate the semester

**ORAL PATHOLOGY**

**Second Semester**

*Lecture and slide seminars* (2 hours per week)

Malignant tumors of epithelial origin.
Malignant tumors of mesenchymal origin.
Malignant lymphomas.
Malignant odontogenic and non-odontogenic tumors of the jaws.
Metastatic tumors of the jaws. Biopsy technique, Healing of oral wounds.
Staging and grading of oral tumors. Spread of oral and paraoral tumors.
Regional and general metastases of oral and paraoral tumors.
Etiology of paraoral tumors.
Diseases of oral and paraoral lymphoid tissue. Joining of diseases.
Diseases of salivary glands.
Benign tumors of salivary glands.
Malignant tumors of salivary glands.
Oral and paraoral syndromes.
General manifestations of oral diseases.
Forensic oral pathology.

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester
Lectures and slide seminars in oral pathology will be held together
# PATHOLOGY

1st Department of Pathology  
Course director and tutor: Dr. Attila Zalatnai

## First Semester

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction. Historical backgrounds.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Cell and tissue injury. Adaptive responses. Necrosis.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Acute inflammation. Vascular and cellular events. Schematic mediators.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Acute inflammation Morphological patterns.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Chronic inflammation.</td>
<td>HISTOLOGY</td>
</tr>
<tr>
<td>Extracellular matrix. Repair. Wound healing.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Immunopathology. Cellular components. Immunologically mediate tissue injury.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Transplantation. Immunodeficiency. Autoimmune diseases.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Neoplasia. Classification. Histological diagnosis. Invasion and metastasis.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Growth patterns. Carcinogenesis.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Epidemiology of malignancies. Preblastomatosis. Screening.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Tumor therapy. Tumor immunology.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Benign and malignant tumors of epithelial and mesenchymal origin.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Developmental and genetic diseases.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Environmental and nutritional pathology</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Hemodynamic diseases. Water and electrolyte disturbances.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Edema. Shock.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Hypoemia. Haemorrhage. Thrombosis.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Embolism. Infarct.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Infectious and parasitic diseases. Viral and bacterial diseases.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Tuberculosis. Syphilis. Leprosy. Diseases caused by fungi, nematodes, cestodes.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Aneurysms. Tumors.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Heart diseases. Congenital, ischemic, hypertensive heart diseases.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Rheumatic heart disease. Inflammatory diseases. Cardiomyopathy.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Respiratory system. Pathology of larynx and trachea. Lung cancer.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Gastrointestinal tract. Esophagus. Stomach.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Acute and chronic hepatitis. Liver cirrhosis. Toxic injury. Tumors</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Kidney. Non-inflammatory lesions. Inflammatory glomerular lesions.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Tubulointerstitial diseases. Renal diseases associated with systemic conditions. Vascular diseases. Tumors.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Consultation.</td>
<td>CONSULTATION</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>Gynecologic pathology. Vulva, Cervix, Body of uterus and endometrium.</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>AUTOPSY</td>
</tr>
<tr>
<td>Gallbladder and extrahepatic bile ducts. Pancreas. Diabetes.</td>
<td>HISTOLOGY</td>
</tr>
<tr>
<td>Head and neck pathology.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Bones and joints, skeletal muscles.</td>
<td>AUTOPSY</td>
</tr>
<tr>
<td>Pediatric oncology.</td>
<td>HISTOLOGY</td>
</tr>
<tr>
<td>Nervous system. Trauma. Circulatory and inflammatory diseases.</td>
<td>AUTOPSY</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.
GENERAL AND ORAL MICROBIOLOGY
Department of Medical Microbiology
Program Director and tutor: Prof. Dr. Károly Nagy
Tutor: Dr. Zsuzsanna Csukás

First Semester

Lectures (2 hours per week)
Introduction to microbiology. General bacteriology (morphology, physiology and cultivation of bacteria) Bacterial genetics.
Infections and diseases (pathogenesis of bacterial infection, virulence, importance of biofilm formation). Specific and non-specific host defences. Active and passive immunization.
Sterilization and disinfection. Antibacterial chemotherapy (mode of actions, resistance, side effects).
Gram-positive facultative and obligate anaerobic cocci. Gram-negative facultative anaerobic, microaerophilic and obligate anaerobic cocci and coccobacilli.
Gram-positive aerobic and anaerobic rods.
Gram-positive spore-forming rods.
Gram-negative facultative anaerobic rods.
Gram-negative anaerobic rods.
Mycobacteria.
Rickettsia, Chlamydia.
Mycoplasma.
Spirochetes. Importance of bacterial infections involving the oral, perioral tissues and salivary glands.
Medical importance of fungi (general mycology, chemotherapy of fungal infections). Importance of fungal infections involving the oral and perioral tissues.
Protozoa (general characterization and the most important human pathogenic protozoa).
Helminths (general characterization and the most important human worms).
Important respiratory pathogen viruses. Important enterally transmitted viruses.
Hepatitis viruses.
Retroviruses (AIDS).
Viruses and cancer.

Practices (3 hours per week)
Introduction to basic microbiology. Microscopic examination of bacteria (staining procedures).
Cultivation of aerobic and anaerobic bacteria (culture media, colony morphology of bacteria).
Methods used for sterilization and disinfections (physical and chemical possibilities).
Antibiotic susceptibility of bacteria

In vitro antigen-antibody reactions (serological methods).
Gram-positive and -negative cocci and coccobacilli
Gram-positive rods (Corynebacterium, Lactobacillus, Actinomyces).
Gram-negative rods (Enterobacteriaceae)

Gram-negative anaerobic rods (Bacteroides, Prevotella, Porphyromonas, Fusobacterium, Leptotrichia). Gram-positive spore-forming aerobic and anaerobic rods (Bacillus, Clostridia)
Chlamydiae.
Mycoplasma.
Medically important fungi

Medically important protozoa.
Medically important helminths.
General virology (cultivation of viruses, cell-virus interactions, serological tests and molecular techniques used in laboratory diagnosis of viral diseases)
Arbo- and robovirus infection. Rabies. Slow viruses. Viral infections involving the oral, perioral tissues and salivary glands.


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. Júlia Nemes

First Semester

Phantom-course (Pre-clinical laboratory course)

**Lectures** (1 hour/week)

- Amalgam and tooth color restorations (indications and contraindications, mixing amalgam, mercury hygiene, silicate cement, acrylic resin, composite resin).
- Amalgam restorations (indications; contraindications; inserting cement bases; mixing amalgam; mercury hygiene, finishing and polishing restoration).
- Tooth-colored restorations (acrylic resin, acid etch technique, matrices for composite resins, reading bonding, agent along with either self-curing or light-activated composite resin, insertion of composite resins, finishing composite resin, glazing the restoration).
- The rubber dam.
- Direct gold restoration (inlay).
- Indirect inlay-onlay restoration.
- The dental pulp. Diagnosis of pulpal damage.
- Endodontic morphology and access cavities.
- Introduction; modern endodontology; scope of endodontology. General and systemic aspects of endodontology (the differential diagnosis of dental pain, examination, systemic disease and endodontology; endodontics and infective endocarditis).
- Basic instrumentation in endodontology.
- Conventional root canal therapy: preparation of the root canal system.
- Conventional root canal therapy: medicaton.
- Conventional root canal therapy: root filling.

**Practices/Manual training** (3 hours/week)

- Cavity preparation from mirror view (indirect method)
- Pulp protection, plastic restorations.
- Finishing and polishing of amalgam restorations
- Class III., IV., V. restorations.
- Cavity preparation in extracted teeth.
- Esthetic restoration in extracted teeth.
- Direct filling restorations. Practical exam.
- Access cavity preparation.
- Working length determination
- Cleaning and shaping of root canal I.
- Cleaning and shaping of root canal II.
- Obturation of root canal I.
- Obturation of root canal II.
- Completion of the root canal filling
Surgical endodontics. Reconstruction of root canal treated teeth
Preparation for restoration of the endodontically treated tooth: the pinledge restoration; onlay restoration; veneers techniques; crowns.

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

CONSERVATIVE DENTISTRY AND ENDODONTICS

Second Semester

**Lectures** (1 hour/week)

- 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

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. Nyárasdy Ida

## First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (1 hour/week)</th>
<th>Practices (2 hours/week)</th>
</tr>
</thead>
</table>
| 1.   | Primary, secondary and tertiary prevention.  
      Health-protection, health-education: collective, group and individual prophylaxis. Oral-prophylaxis | Clinical workplace |
      Oralhygiene-indices. Plaque-determination  
      Periodontal indices |
| 4.   | Gingivitis and periodontal disease. Epidemiological Characteristics,  
      Pathomechanism and diagnosis. | Toothbrushing  
      Possibilities of prevention in orthodontic anomalies  
      /HPK Orthodontic and Dental Department/ |
      Effect of alimentation in baby-and childhood  
      on development of mandibula and maxilla and on the formation of parafuction |
      Demonstration of oral hygiene  
      /HPK Orthodontic and Dental Department/  
      Clinical infection control  
      The role of trace elements and vitamins in maintaining oral health  
      The role of certain nutrient –groups in maintaining oral health |
| 7.   | Oralhygiene | Plaque diagnostic 2.  
      Possibilities of caries-risk, CRT-test,  
      definition of saliva –secretion, pH measurement |
| 8.   | Fluorides | Plaque-removal; scaling; Polishing, finishing |
| 9.   | Collective and individual fluoride-prevention  
      /sugar-substitutes, rysta-possibilities/ |  
      Clinical infection control  
      The role of certain nutrient –groups in maintaining oral health |
| 10.  | Other possibilities in caries prevention  
      Prevention of iatrogen traumas; infection control |  
      Caries diagnostic 2.  
      Possibilities of caries-risk, CRT-test,  
      definition of saliva –secretion, pH measurement |
| 11.  | Fissure-sealant |  
      Plaque-removal; scaling; Polishing, finishing |
| 12.  | Caries incipient and remineralisation |  
      Plaque-removal; scaling; Polishing, finishing |
| 13.  | Prevention of iatrogen traumas; infection control |  
      Plaque-removal; scaling; Polishing, finishing |
      Prophylaxis of pregnant mothers, the elderly and other handicapped patients.  
      Realization of complex prevention, unity of preventive and curative supply. Recall-system.  
      Dental care |  
      Plaque-removal; scaling; Polishing, finishing |
PREVENTIVE DENTISTRY III
Department of Conservative Dentistry
Lecturer: Prof. Dr. Nyárasdy Ida

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

Bite registration on phantom head
Mounting casts on Földvári articulator
Setting up teeth I.
Setting up teeth II.
Setting up teeth III.
Denture repair, temporary prosthodontic appliances

Note: Lectures will be held in the lecture hall of the Department of Maxillofacial Surgery and Dentistry. The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. The semester is divided into two mid-term examinations should be passed. Closing semi-final

PROSTHODONTICS

Second Semester

Lectures (1 hour per week)
The reasons and the consequences of the tooth loss
Complaints, medical history, extra-oral and intra-oral examination, treatment plans, and prognosis at endodontic patients
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 (6 hours per week)
Tooth preparation on lower 7 with shoulder
Tooth preparation on lower 5 with a shoulder
Construction of wax occlusal record, impression of the opposing dental arch and a lower precision impression
Die construction
Cast construction, mounting on casting

Construction of adapted caps on lower abutments (7 and 5), wax patterns
Construction of wax pattern of a lower bridge (5–7). Investment of the wax pattern.
Midterm test: Technology and materials of fixed appliances
Preparation of lower 4 for a 4/5 crown, preparation of lower 3 for a post-core crown
Finishing the casts, application, framework try-in on phantom-head
Acrylic facing and a wax pattern for an acrylic crown on lower 3
Investment of wax patterns, for 4/5 and a post and core crown
INTERNAL MEDICINE
3rd Department of Internal Medicine
Tutor: Dr. László Jakab

Second Semester

**Lectures** (2 hours per week)
- Introduction to internal medicine.
- History taking.
- Physical examination
- Respiratory diseases, Physical examination and respiratory diagnostic procedures. Bronchitis.
- Pneumonias, Syndromes of the respiratory system.
- Bronchiectasis. Lung abscess. Pulmonary embolism.
- Chronic aspecific respiratory disorders.
- Tumors of the lung.
- Disorders of the cardiovascular system.
- Physical examination.
- Examination of the peripheral blood vessels.
- Coronary heart disease.
- Acute myocardial infarction.
- Acute heart failure. Shock.
- Chronic heart failure.
- Rheumatic fever. Valvular heart disorders.
- Infective endocarditis. Disorders of the pericardium.
- Cor pulmonale.
- Cardiac arrhythmias. Conduction disturbances.
- Hypertension.
- Atherosclerosis. Thromboangiitis obliterans.
- Raynaud’s phenomenon.
- Headache. Dental relation of the heart diseases

**Practices** (2 hours per week)
- The bases of the diagnostic procedures in the internal medicine
  (The exact preparation of the patient’s case history, the methods of physical examination of the patients)
- The medical examination of the heart and lung (percussion, auscultation)
- The investigation of the peripheral arterial pulse rate and blood pressure
- Practicing injection technique
- The physical examination of the abdominal organs
- The medical considerations of dentistry and dental considerations of internal medicine
- Consultation
- Consultation

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

Preclinical training

First Semester

**Practices** (2 hours per week)

- Oral surgery as a part of general surgery
- The surgical anatomy of the teeth
- The splanchnocranium, The Maxillary Nerve
- The mandible, the Mandibular Nerve
- The injection (instrumentation, rules, techniques)
- Midterm (written)
- Surgical hygiene. The principle of antisepsis and asepsis
- The operation theater
- Oral surgical instrumentation
- The removal of teeth/ practice on phantom
- The removal of teeth/ practice on phantom
- The removal of teeth/ practice on phantom
- Semester closing midterm (oral + practical)
- Practicing, repetition

Second Semester

**Week**  | **Lectures** (1 hour per week) | **Practices** (3 hours per week)
---|---|---
| | | Surgical anatomy of the jaws and teeth
| | | Local anesthesia
| | | Oral and maxillofacial surgical instruments
| | | Clinical diagnosis, medical examination of the patients
| | | Midterm demonstration
| | | Practicing simple tooth extraction
| | | Practicing simple tooth extraction
| | | Practicing tooth extraction
| | | Minor oral surgery
| | | Operation technique of dentoalveolar surgery Part I. (surg. tools, flaps, suturing)
<table>
<thead>
<tr>
<th>Subject</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation technique of dentoalveolar surgery Part II. (complications of tooth removal, surgical root removal) (video)</td>
<td>Minor oral surgery</td>
</tr>
<tr>
<td>Problems with the eruption of teeth.</td>
<td>Midterm Demonstration</td>
</tr>
<tr>
<td>The removal of the impacted teeth</td>
<td>Minor oral surgery</td>
</tr>
<tr>
<td>Guest speaker</td>
<td>Minor oral surgery</td>
</tr>
<tr>
<td>Midterm exam</td>
<td>Minor oral surgery</td>
</tr>
<tr>
<td>Consultation</td>
<td>Midterm Demonstration</td>
</tr>
</tbody>
</table>

**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. Tivadar Zelles

Second Semester

Lectures (3 hours per week)

The oral mineralized tissues – Amelogenesis-dentinogenesis – cementogenesis
dentin and cementum. Microanatomy and
and structures of enamel, physiology and innervation
of the pulp. – Chemistry of formation and solubilization
of the various calcium phosphate salts. Crystallography
of 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
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
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
– Part I. Classification of leukemias. Acute
leukemias Cytochemical differentiation of
acute leukemias and Plasma cell dyscrasias
Hematology V.
– Malignant white cell disorders. Part II.
Chronic leukemias. The importance of
oral symptoms in the early diagnosis of
leukemias
Hematology VI.
– Abnormalities of red blood cell
production. Part I. Classification of
anemias. Aplastic, iron deficiency,
sideroblastic, hemolytic anemia.
Thalassemia
Hematology VII.
– Hemolytic anemia. Polycythemia, erythrocytosis.

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. Platelet disorders
– Dentin sensitivity and its control. Biochemistry and
physiology of taste perception
Biomechanics and structure of the temporomandibular
joint – Neuro-physiology of mastication – Kinesiology

Midterm exam of hematology
<table>
<thead>
<tr>
<th>Disease Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>and electromyography of oral musculature –</td>
<td>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</td>
</tr>
<tr>
<td>The oral mucosa and periodontium – Ultrastructure</td>
<td>Determination of salivary flow rate and collection of samples for analysis</td>
</tr>
<tr>
<td>of oral mucosa – epithelial cell and oral</td>
<td>Plaque associated diseases – Structures adhering to dental pellicle</td>
</tr>
<tr>
<td>Plaque and the demineralization-remineralization</td>
<td>– Formation, composition and metabolism of dental plaque.</td>
</tr>
<tr>
<td>phenomena</td>
<td>– Plaque and the demineralization-remineralization phenomena</td>
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<td>Pathogenesis of caries – Pocket formation Plaque</td>
<td>– Dynamism and control of the oral microbial ecosystems</td>
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<td>and dental calculus formation – Gingivitis and</td>
<td>– Pathogenesis of caries – Pocket formation Plaque and dental calculus formation – Gingivitis and periodontitis and alveolar bone resorption.</td>
</tr>
<tr>
<td>periodontitis and alveolar bone resorption.</td>
<td>Anti-inflammatory therapy</td>
</tr>
<tr>
<td>Aging – Nutrition</td>
<td>Immunologic techniques</td>
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<td>Aging Nutrition Part Two – Physiology and</td>
<td>Oral clearance measurements</td>
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<tr>
<td>biochemistry</td>
<td>Analyses of oral hard tissues</td>
</tr>
<tr>
<td>– Activators and inhibitors of blood clotting</td>
<td>Measurement of plaque and salivary pH</td>
</tr>
<tr>
<td>and fibrinolysis</td>
<td>– Thrombosis and bleeding disorders: etiology, pathomechanism, oral symptoms, differential diagnosis</td>
</tr>
<tr>
<td>– Vascular permeability – cellular reactions –</td>
<td>Analyses of oral hard tissues</td>
</tr>
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</table>

**Note:** A semi-final exam will be organized at the end of the semester. During the semester one midterm examination (hematology) should be passed. The mark of that will also be considered when establishing the mark of the semi-final. During the semi-final examination there are the following
requirements: a.) to reach the minimum level of a written theoretical evaluation, b.) to present orally one of the main theoretical questions, and also, c.) to present one question of the subject-specific practices. In the case of an invalid midterm the examination will start with assessing the knowledge of hematology. Under the minimum level of passing hematology (mark 2) there is no possibility of continuing of the semi-final. A failed exam can be retaken at least one week after the first one.

Radiation protection
department: Independent Division of Radiology
Lecturer: Dr. Csaba Dobó-Nagy
prerequisites: basic module

third year second semester

Lectures (2 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 (2 hours 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.
<table>
<thead>
<tr>
<th>subjects code</th>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
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<td>Conservative Dentistry and Endodontics I.</td>
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<td>Oral and Maxillofacial Surgery I.</td>
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<tr>
<td>FOFPMRM_1A</td>
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<td>C3L1P2</td>
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<td>Pathology II.</td>
</tr>
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<td>Oral Biology</td>
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</tr>
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<td><strong>Obligatory Elective</strong></td>
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<td>General and Oral Microbiology</td>
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<tr>
<td>Anesthesiology and Intensive Therapy</td>
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<td>Traditional Chinese Medicine</td>
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<tr>
<td>Antibiotic Therapy and Infectology</td>
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<td><strong>Total Credit</strong></td>
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### 8th semester

<table>
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<td>C4L1P3</td>
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<td>Pharmacology, Toxicology I.</td>
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<td>Clinical Endocrinology</td>
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<td>History of Medicine</td>
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<td><strong>compulsory summer practice</strong></td>
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<tr>
<td>General Dentistry practice (4weeks)</td>
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</table>

**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)
LIST OF TEXTBOOKS


Recommended textbooks:

PHARMACOLOGY, TOXICOLOGY
Lecturer: Dr. Valéria Kecskeméti
Tutor: Dr. Zsuzsanna Gyarmati

First Semester

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

Practices (2 hours per week)
- Drug interactions (agonists, antagonists)
- Factors influencing pharmacokinetic.
- Drug abuse, dependency, Allergy.
- Basic and clinical evaluation of new drugs
- Prescription writing
- Ganglionic blocking drugs
- Skeletal muscle relaxants
- Clinical pharmacology of alpha-, beta-receptor blocking drugs
- Smooth muscle relaxants
- Prescription writing
- The alcohol
- Antiepileptic drugs
- Antiseptics, disinfectants
- Disinfectants
- Aminoglycosides
- Antimycobacterial drugs
- Antiviral chemotherapy Urinary antiseptics

PHARMACOLOGY, TOXICOLOGY

Second Semester

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

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

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

### Internal Medicine

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

#### First Semester

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practices (2 hours per week)</th>
</tr>
</thead>
</table>
INTERNAL MEDICINE

Second Semester

Lectures (2 hours per week)

Diseases of the kidney. Physical examination.
Urinalysis.
Primary glomerular disorders. Nephritic syndrome.
Interstitial nephritis. Tubular disorders.
Acute and chronic pyelonephritis. Nephrolithiasis.
Acute and chronic renal failure.
Disorders of the digestive system. History taking and physical examination. Special techniques for diagnosing disorders of the digestive system.
Disorders of the esophagus. Peptic ulcer disease.

Tumors of the stomach.

Crohn’ s disease. Chronic ulcerative colitis.

The malabsorption syndrome.

Colonic and rectal neoplasms.

Acute abdomen. Mechanical obstruction and ileus.

Practices (2 hours per week)

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

Note: The maximum number of absences in a semester is 3.
More than 3 absences invalidate the semester.
Semi-final examination.
Lectures (2 hours per week)
Disorders of the liver. Physical examination.
Diagnostic procedures.
Jaundice. Cirrhosis of the liver.
Acute and chronic hepatitis.
Disorders of the gall bladder and the biliary tract.
Disorders of the pancreas.

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

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

CONSERVATIVE DENTISTRY AND ENDODONTICS
Tutor: Dr. Júlia Nemes

First Semester

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

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

Note: The maximum number of absences in a
semester 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)

- Preventive Endodontics: protecting the pulp
- Evaluation of success and failure in Endodontics
- Esthetic dentistry: Bleaching discolored teeth.
- Internal and External
- Direct fillings of molars: amalgam or composite
- Local anesthesia in Conservative Dentistry and its complications
- Treatment of cervical lesion
- New equipment and methods in Conservative Dentistry
- Indications and techniques of veneer
- Discussion of thesis of diploma work
- Discussion of thesis of diploma work
- Special dental treatment of some general diseases (AIDS, hepatitis, diabetes, epilepsy, etc.)
- Principles of the Oral Health Insurance System
- “Anatomie” of dental praxises.
- Management of Traumatized Teeth
- Special cavity preparation. (Tunnel, slot, mini cavities)

Practices (3 hours per week)

- Clinical practice
- Clinical practice
- Clinical practice
- Clinical practice
- Clinical practice
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- Clinical practice
- Clinical practice
- Clinical practice

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

PROSTHODONTICS

First Semester

Lectures (1 hour per week)

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

Practices (7 hours per week)

- Partially dentate patients
- Partially dentate patients
- Partially dentate patients
### PROSTHODONTICS

#### Second Semester

<table>
<thead>
<tr>
<th>Topics</th>
<th>Lectures</th>
<th>Practices</th>
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<tbody>
<tr>
<td>Diagnosis and treatment planning</td>
<td>Partially dentate patients</td>
<td>Partially dentate patients</td>
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<tr>
<td>Oral health for the partially edentulous patient</td>
<td>Partially dentate patients</td>
<td>Partially dentate patients</td>
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<tr>
<td>Principles of partial denture design</td>
<td>Partially dentate patients</td>
<td>Partially dentate patients</td>
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<tr>
<td>Construction of removable partial dentures</td>
<td>Partially dentate patients</td>
<td>Partially dentate patients</td>
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<tr>
<td>Classification of the partially edentulous dental arches</td>
<td>Partially dentate patients</td>
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<tr>
<td>Treatment planning for the class 0., 1A. and 1B. dental arches</td>
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<td>Treatment planning for the class 2A. dental arches</td>
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<tr>
<td>Treatment planning for the class 2B. dental arches</td>
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<tr>
<td>Treatment planning for the class 2A/1. and 3. dental arches</td>
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<td>Maxillo-facial prosthetics</td>
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<tr>
<td>Implants in prosthodontics</td>
<td>Partially dentate patients</td>
<td>Partially dentate patients</td>
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<tr>
<td>Partially dentate patients</td>
<td>Partially dentate patients</td>
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<tr>
<td>Orthodontic aspects of prosthodontics</td>
<td>Partially dentate patients</td>
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<tr>
<td>Consultation</td>
<td>Partially dentate patients</td>
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**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. Semifinal examination.
## SURGERY

I. Department of Surgery
Department Section of Surgery
Tutor: Prof. Dr. József Sándor

### Second Semester

<table>
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<th>Lectures (2 hours per week)</th>
<th>Practices (2 hours per week)</th>
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<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>
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<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>
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<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>
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<tr>
<td>Appendicitis</td>
<td>Visiting patients’ ward</td>
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<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>
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<tr>
<td>Hernias</td>
<td>Visiting operating theater</td>
</tr>
<tr>
<td>Basic principles in vascular surgery</td>
<td>Visiting patients’ ward</td>
</tr>
<tr>
<td>Shock, Cardiopulmonary resuscitation, intensive therapy</td>
<td>Visiting operating theater</td>
</tr>
<tr>
<td>General principles of traumatology.</td>
<td>Visiting operating theater</td>
</tr>
<tr>
<td>First aid</td>
<td></td>
</tr>
<tr>
<td>Traumatological management of catastrophes.</td>
<td></td>
</tr>
<tr>
<td>Burned patients</td>
<td></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, perinostitis) 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. 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

ORAL AND MAXILLOFACIAL SURGERY

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>
<tr>
<td>(Diagnosis and management)</td>
<td></td>
</tr>
</tbody>
</table>
### 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
- Case Demonstration

### 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**
Preparation of dental students for practical education of orthodontic health care, focusing primarily on the development of manual skills.

**Training form and time frame**
- Practical education: 1 hour/week
- Form of examination: practical mark based on the practical performance
- Subject code: FOGFKSP_1A
- Credit code: K1EDG1
- Comment: The practical education takes place in 7x2 hours. Training starts in the autumn semester 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.: 459-1500/9161, 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>
</table>
| 1.   | The Diagnostic method. Medical and dental history. The importance of “Oral diagnosis”.
| 4.   | Molecular oral Diagnostics |
| 6.   | New imaging methods in dentistry. Making decisions in dental radiology. (03.03.) |
| 7.   | Up-to-date diagnosis of the periodontal tissues. |
| 9.   | Diagnosis of the salivary glands. |
| 10.  | Diagnosis of the TMJ disorders and Differential diagnosis of orofacial pain |
| 11.  | Clinical evaluation of dental conditions, and malocclusion |
Rules of practices
Activity of the students:

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

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

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

4. Making diagnosis and complete preliminary treatment planning.

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

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

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

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

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

Non-performance of the minimal expectations invalidate the semester!

Textbook:
BC Decker Inc Hamilton London 2002

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

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

Lecture-0  Practice (1 hour/week)

Rules of practices

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

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

Non-performance of the minimal expectations invalidate the semester!

Textbook:
BC Decker Inc. Hamilton London 2002

Recommended books
Bengel, Veltman, Loey, Taschini: Differential Diagnosis of Diseases of the Oral Mucosa
“hand-outs” will be prepared and presented for the students by the lecturers
# GENERAL AND DENTAL RADIOLOGY

Department of Prosthodontics  
Lecturer: Dr. Csaba Dobó Nagy

## First Semester

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practices (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiation physics</td>
<td>Normal radiographic anatomy: Tooth anatomy (lecture)</td>
</tr>
<tr>
<td>Dental caries</td>
<td>Normal radiographic anatomy: Anatomic</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</td>
</tr>
<tr>
<td>Hypercementosis</td>
<td>teeth, extraction of the teeth</td>
</tr>
<tr>
<td>Excessive bone formation</td>
<td>Periapical lesions</td>
</tr>
<tr>
<td>Injuries to teeth</td>
<td>Periodontal disease</td>
</tr>
<tr>
<td>Osteomyelitis</td>
<td>1st midterm</td>
</tr>
<tr>
<td>Tumors</td>
<td>Cysts of the jaws</td>
</tr>
<tr>
<td>Apicoectomy</td>
<td>2nd midterm</td>
</tr>
<tr>
<td>Anomalies</td>
<td>Hypercementosis</td>
</tr>
<tr>
<td>Salivary gland diseases</td>
<td>Excessive bone formation</td>
</tr>
<tr>
<td>Resorption of the teeth</td>
<td>Injuries to teeth</td>
</tr>
<tr>
<td>Radiation biology</td>
<td>Osteomyelitis</td>
</tr>
<tr>
<td>Health physics</td>
<td>Tumors, apicoectomy</td>
</tr>
<tr>
<td>Long-cone paralleling technique</td>
<td>Anomalies</td>
</tr>
<tr>
<td>Traditional extraoral radiographic</td>
<td>Review</td>
</tr>
<tr>
<td>examinations</td>
<td></td>
</tr>
<tr>
<td>Panoramic technique I.</td>
<td>Viewing of the examination</td>
</tr>
<tr>
<td>Panoramic technique II.</td>
<td>radiographs I.</td>
</tr>
<tr>
<td></td>
<td>Viewing of the examination</td>
</tr>
<tr>
<td></td>
<td>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 AND ORAL MEDICINE
Department of Periodontology

Second Semester

Lectures (2 hours per week) Practices (2 hours per week)
Introduction to Periodontology Clinical practice
The morphology of the periodontium, Clinical practice
Histology and embryology of the periodontium Clinical practice
The dental plaque. Its origin and role in the periodontal Clinical practice
diseases. Periodontal microbiology
Oral immunobiology Clinical practice
Oral immunopathology
Drugs and chemicals used in the periodontology Midterm Demonstration
Pathomechanism of the periodontal disease Clinical practice
Clinical forms of periodontal diseases Clinical practice
Acute necrotizing ulcerative gingivitis
Pregnant gingitis, Periodontal diseases Clinical practice
with endocrine background,
Non-plaque related periodontal conditions Clinical practice
Oral mucous membrane diseases located on the gingiva
Periodontal diseases of the child and adolescents Clinical practice
### Lectures (2 hours per week)

- 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 (2 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.

### PUBLIC HEALTH
**Tutor:** Dr. András Terebessy

#### English Dental

<table>
<thead>
<tr>
<th>Lectures (1 hour per week)</th>
<th>Practicals (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition of Public Health; Past, present and future of Public Health</td>
<td>Introduction Basic demographical data</td>
</tr>
<tr>
<td>Demography: International and Hungarian situation</td>
<td>Public Health Program of EU</td>
</tr>
<tr>
<td>General epidemiology Analytical and intervention methods on field of chronic non-communicable diseases</td>
<td>Visit into the Central Kitchen of the University</td>
</tr>
<tr>
<td>Lifestyle: smoking, alcohol consumption, drug-abuse</td>
<td>Practical aspects of epidemiological investigations: study-planning and analysis</td>
</tr>
<tr>
<td>Epidemiology and prevention of non-communicable diseases I</td>
<td>Dentist’s task on prevention of non-communicable diseases I: smoking, alcohol consumption and drug-prevention</td>
</tr>
<tr>
<td>Epidemiology and prevention of non-communicable diseases II</td>
<td>Dentist’s task on prevention of non-communicable diseases II: HBP-prevention</td>
</tr>
<tr>
<td>Epidemiology and prevention of Cancer</td>
<td>Dentist’s task on prevention of non-communicable diseases III: cancer-prevention</td>
</tr>
<tr>
<td>Screening-screening programs</td>
<td></td>
</tr>
</tbody>
</table>
DENTAL PSYCHOLOGY

2008/2009

FOMAGDPS-1A

Second Semester

The duplicated lectures will be held at the lecture hall of the I. Pathology Institute (Üllői 26) on Fridays of the semester from 10.30-12.00 o’clock. The first lecture will be held on February 8, 2008.

Course syllabus:

1+2 Stress and stress management programs, Dr. Adrienne Stauder
3+4 Dental anxiety and music therapy, László Harmat
5+6 Psychotherapeutic methods, Dr. György Purebl
7+8 Dental anxiety, pain reduction and suggestive communication in dentistry, Gábor Suhai-Hodász
9+10 Mood disorders, Dr. György Purebl
11+12 Establishing rapport and formulating positive suggestions in dental practice, Gábor Suhai-Hodász
SPRINGBREAK
13 Health psychology and behavior, Dr. Róbert Bódis
14+15 Review and semi-final exam, Dr. Piroska Balog

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

- Fadem B: Behavioural Science. Harwal, 2nd ed., 1994,

**Course Director:** Dr. Piroska Balog, clinical psychologist  
NET 20th floor, room 2011  
Tel: 210-2930/6403, e-mail: balopir@net.sote.hu  
Further information: www.behsci.sote.hu

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**Medical Ethics (Bioethics) and Sociology**

**Second Semester**

**Bioethics**

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

**Course objectives:**

a.) To enable students to recognize ethical issues when encountered in everyday clinical practice and research

b.) To provide students with a conceptual-logical system, which helps them to address ethical questions and 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 (Practicals)**

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

4. week (Practicals)
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 (Practicals)
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 (Practicals)
Ethical questions of reproductive medicine.
Abortion.
Artificial insemination from donor.
In vitro fertilization, surrogate motherhood.
Ethical questions of genetic cystalin.
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 (Practicals)
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 (Practicals)
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.
The ethical questions of organ harvesting from the dead.
The debate about the market of organs.
The ethical questions of using embryo- or foetal tissue in human therapy.
The ethical problems of using rystalline newborns as organ donors.

14. week (Practicals)
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), 210-2930/6350; e-mail: kovjozs@net.sote.hu
Ágnes Dósa, MD, JD, PhD e-mail: dosaagi@yahoo.com
Imre Szebik, MD, PhD e-mail: szebimre@net.sote.hu
Jeno Lorincz, MD, JD e-mail: lorjen@net.sote.hu

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

List of questions
1. Deontological theories of ethics.
2. Utilitarian theories of ethics.
3. The principles of dental ethics.
4. Justice and dental ethics: the allocation of scarce medical resources.
5. Paternalism in dental practice.
6. Informed consent.
7. Information disclosure for terminally ill patients.
8. Advance Directives.
10. Objection to Transplantation of Organs and Counterarguments.
11. Ethical problems of live organ donation.
15. Withdrawing and withholding life sustaining rystallis.
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.
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:

MEDICAL SOCIOLOGY
Tutor: Dr. József Kovács

1. Introduction. Health and illness behaviour.
2. The social structure and health.
4. The problems of social deviance.
5. The doctor – patient relationship.
6. Health professions.
7. Health services and health care system.

The students are supposed to pass exams both from ethics and sociology. Failure in any of these two subjects requires to repeat the exam. The final grade will be the average of the two grades. If the average does not give an unequivocal result, the grade will be decided on the basis of the student’s activity during the semester.

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

GNATHOLOGY – lectures and practices
Department of Prosthodontics
Lecturer: Dr. Peter Hermann

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Introduction into the physiology of the stomatognathic system. Morphology of the masticatory system. Occlusion.</td>
</tr>
<tr>
<td>5.</td>
<td>Mounting of the adjustable articulator: Arcus Digma</td>
</tr>
</tbody>
</table>

300
Complete denture fabrication in the articulator.

6. Diagnosis and management of the problems related to the temporomandibular joint.
7. Traumatic occlusion – Occlusal trauma
   Periodontological aspect of gnathology
8. Examination of patients. Occlusal diagnostics.

Week Practice
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.
15. 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.
Faculty of Dentistry
5th year
## STUDY PROGRAMME

### Fifth Year

#### CLINICAL MODULE

<table>
<thead>
<tr>
<th>9th semester</th>
<th>subjects</th>
<th>Creditcode</th>
<th>examination</th>
<th>prerequisites</th>
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<tbody>
<tr>
<td><strong>Compulsory</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>C41</td>
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<tr>
<td>F0FPK9L1F11A</td>
<td>Clinical Dentistry I.</td>
<td>C8L0P6</td>
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<td>Prosthodontics III and</td>
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<tr>
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<tr>
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<td>Oral and Maxillofacial Surgery III.</td>
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<tr>
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<tr>
<td>F0GFSZ4A</td>
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<td>C6L1P5</td>
<td>pract.mark</td>
<td>Conservative Dentistry and Endodontics III.</td>
</tr>
<tr>
<td>F0GFNGY1A</td>
<td>Pedodontics I</td>
<td>C6L1P5</td>
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<td>Conservative Dentistry and Endodontics III.</td>
</tr>
<tr>
<td>F0DFP2K5A</td>
<td>Periodontology III.</td>
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<td>F0SB/IMP2A</td>
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</tr>
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<td>Prosthodontics III.</td>
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<tr>
<td><strong>Obligatory Elective</strong></td>
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<tr>
<td>F0FULF1A</td>
<td>Otorhinolaryngology</td>
<td>C2L1P1</td>
<td>final</td>
<td>Pathology II.</td>
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<tr>
<td>F0WSZ21A</td>
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<td>final</td>
<td>Pathology II.</td>
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<td>F0GSG1A</td>
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<tr>
<td>F0OMS1X1A</td>
<td>Prehospital Emergency Medicine</td>
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<tr>
<td><strong>Electives</strong></td>
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<tr>
<td>Anesthesiology and Intensive Therapy</td>
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<td>Antibiotic Therapy and Infectiology</td>
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<td>Conservative Dentistry and Endodontics IV</td>
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<tr>
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<tr>
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<td>C5L1P4</td>
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<tr>
<td>FOPAKFOF_5A</td>
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<td>C3L0P3</td>
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<td>Prosthodontics IV</td>
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**Compulsory Elective C23**

<table>
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<th>examination</th>
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<td>FOBOR0R_1A</td>
<td>Dermatology</td>
<td>C2L1P1</td>
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<td>Pharmacology, Toxicology II.</td>
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<td>Obstetrics and Family Planning</td>
<td>C11L1P0</td>
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</table>

**Electives C16**

<table>
<thead>
<tr>
<th>subjects</th>
<th>Creditcode</th>
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<tbody>
<tr>
<td>Clinical Endocrinology</td>
<td>C2L2P0</td>
<td>pract.mark</td>
<td>for 3rd, 4th and 5th year students</td>
</tr>
<tr>
<td>Clinical Hematology</td>
<td>C2L2P0</td>
<td>pract.mark</td>
<td>for 3rd, 4th and 5th year students</td>
</tr>
<tr>
<td>Tropical Medicine</td>
<td>C2L2P0</td>
<td>pract.mark</td>
<td>for 3rd, 4th and 5th year students</td>
</tr>
<tr>
<td>Ultrasonography</td>
<td>C2L2P0</td>
<td>pract.mark</td>
<td>for 3rd, 4th and 5th year students</td>
</tr>
<tr>
<td>Medical Epidemiological and Social Aspect of Drug Abuse</td>
<td>C2L2P0</td>
<td>pract.mark</td>
<td>for 3rd, 4th and 5th year students</td>
</tr>
<tr>
<td>Emergency in Surgery</td>
<td>C2L2P0</td>
<td>pract.mark</td>
<td>for 3rd, 4th and 5th year students</td>
</tr>
<tr>
<td>Evironment Protection - Ecology</td>
<td>C2L2P0</td>
<td>pract.mark</td>
<td>for 3rd, 4th and 5th year students</td>
</tr>
<tr>
<td>History of Medicine</td>
<td>C2L2P0</td>
<td>pract.mark</td>
<td>for all years</td>
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</table>

**Total Credit 75**

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 points;
L = Lecture (hours/week);
P = Practice (hours/weeks).
LIST OF TEXTBOOKS


Recommended textbooks:

7. Online: www.lib.sote.hu – Ádattárazók, 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

<table>
<thead>
<tr>
<th>Lectures (2 hours per every 2nd week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The role of otorhinolaryngology in dentistry and medicine. Clinical anatomy of the ear. Diseases of the external ear.</td>
</tr>
<tr>
<td>Acute and chronic otitis media. Etiology, diagnosis, complications and therapy.</td>
</tr>
<tr>
<td>Types of hearing losses. Fundamental audiological diagnostic methods. Surgical management of hearing losses. Otosclerosis and cochlear implant.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>Clinical aspects of diseases of the mouth and pharynx. Diseases of the labial, oral and laryngeal mucosa.</td>
</tr>
<tr>
<td>Anatomy and physiology of the larynx. Disorders of the voice. Infections and tumors of the larynx and their management.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practices (2 hours per every 2nd week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine clinical examinations in practice.</td>
</tr>
<tr>
<td>Routine audiology. Operating theater. Video demonstration.</td>
</tr>
<tr>
<td>Direct and indirect laryngoscopy. Videostroboscopy and fiberoscopy.</td>
</tr>
</tbody>
</table>
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 edentoulossness, 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. I.
(Diagnostics, pathology, epidemiology)
Malignant tumors of the head and neck region. II.
(Surgical therapy)
Malignant tumors of the head and neck region. III.
(Complex therapy)
Esthetical consideration in maxillofacial surgery
Risk patient treatment in oral surgery I. (internal diseases, fainting, antifebrile and painkiller treatment)

Practices (2 hours / week)
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Practicing minor oral surgery
Lectures (1 hour / week)
Sinus lifting.
Dentoalveolar deformities.
Consultation

Practices (2 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)
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
Consultation

Practice
Two weeks’ clinical practice at the in-patient ward of the clinic
(1st week in the morning, 2nd week in the afternoon hours, every day)
Practical course grade and final examination

Note: The maximum number of absences in a semester is 3.
More than 3 absences invalidate the semester.
During the semester three midterm examinations should be passed.
PEDODONTICS
Department of Orthodontics and Pediatrics Dentistry

First Semester

Lectures (1 hour/week)

The subject, the connection and significance of pedodontics.
Induction of caries, caries theories, and indices.
General aspects of caries prevention.
Possibilities of caries prevention and fluoride 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 (4 hours/week)

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

PEDODONTICS

Second Semester

Week Lectures (1 hour/week)
1 Radiology in pedodontics.
2 Minor oral surgery in pedodontics, local anaesthesia.
3 General anesthesia.
4 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.
Week  Lectures (1 hour/week)
10  Diagnostic competition.
11  Organizing of pedodontic treatment and nursing.
    Administration and documentation.
12  Significance of agegroup in pedodontics.
13  Consultation.

Practice  (5 hours/week)
Treatment of patients.
Types of evaluation:
Practical grade (1-5 grading system)
Final examination. Evaluation of the whole subject matter.
(1-5 grading system).

ORTHODONTICS

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  (4 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>
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<tbody>
<tr>
<td>1</td>
<td>Direct bonding.</td>
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<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 (5 hours/week)

Treatment of patients.
Types of evaluation:
Practical grade (1-5 grading system)
Final examination. Evaluation of the whole subject matter (1-5 grading system).

PERIODONTOLOGY

Department of Periodontology

First Semester

Lectures (1 hour/week)

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

Practices (2 hours/week)

Clinical practice
Clinical practice
Clinical practice
Clinical practice
Midterm Demonstration
Clinical practice
Clinical practice
Clinical practice
Clinical practice
Clinical practice
**PERIODONTOLOGY**

**Second Semester**

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

**Lectures** (1 hour/week)  
Practices (2 hours/week)

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

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

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

Practice within the period

Midterm Demonstration

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

Second Semester

Lectures (1 hour/week)

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (Part One)</th>
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<tbody>
<tr>
<td>1.</td>
<td>Vesiculo-bullous oral diseases</td>
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<td>2.</td>
<td>Oral signs and symptoms of benign tumors</td>
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<tr>
<td>3.</td>
<td>Precancerous conditions in the oral cavity</td>
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<td>4.</td>
<td>Leukoplakia</td>
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<tr>
<td>5.</td>
<td>Malignant tumors of the oral mucous membrane</td>
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<tr>
<td>6.</td>
<td>Oral signs and symptoms of hematological diseases</td>
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<tr>
<td>7.</td>
<td>Clinical differential diagnosis of gingival enlargements</td>
</tr>
<tr>
<td>8.</td>
<td>Lichen oris</td>
</tr>
</tbody>
</table>

Seminar (1 hour/week)

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

Midterm Demonstration
Week Lectures (Part One) Seminar (1 hour/week)

9. The diseases of the lip Literature review
10. The diseases of the tongue Literature review
11. The diseases of the salivary glands Differential diagnosis
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 oxygenology
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 Erös

Department of Dermatology, Venerology and Dermatooncology
Mondays 13.00 – 14.45

Second Semester

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Lecturer</th>
</tr>
</thead>
</table>
| Introduction to Dermatology. Diagnostic procedures, anatomy, functions of skin comparing to oral mucosa. Elementary lesions. | Dr. Márta Marschalkó  
(Deputy: Dr. Norbert Wikonkál) |
| Sexually transmitted diseases (syphilis, gonorrhoea, NGU, HPV and herpes virus infections) | Dr. Péter Holló  
(Deputy: Dr. Márta Marschalkó) |
| Bacterial skin diseases.                                              | Dr. Márta Marschalkó  
(Deputy: Dr. Norbert Wikonkál) |
| Cutaneous and mucosal diseases caused by fungi. Treatment modalities. | Dr. Nóra Eros  
(Deputy: Dr. Norbert Wikonkál) |
| Allergic skin diseases. Dermatitis, eczema, implication for dentists. | Dr. Márta Marschalkó  
(Deputy: Dr. Nóra Eros) |
| Atopic dermatitis, urticaria.                                         | Dr. Norbert Wikonkál  
(Deputy: Dr. Péter Holló) |
| Skin tumors. Malignant melanoma, basal cell carcinoma, squamous cell carcinoma. Benign tumors, paraneoplastic syndromes. | Dr. Norbert Wikonkál  
(Deputy: Dr. Péter Holló) |
| AIDS. Psoriasis                                                       | Dr. Péter Holló  
(Deputy: Dr. Norbert Wikonkál) |
| Autoimmune diseases, bullous diseases, drug allergy, vasculitis.     | Deputy: Dr. Norbert Wikonkál  
(Deputy: Dr. Márta Marschalkó) |
| Dermatological treatment.                                            | Dr. Gyöngyvér Soós  
(Deputy: Dr. Péter Holló) |
| Seborrheic dermatitis, acne.                                          | Dr. Nóra Eros  
(Deputy: Dr. Márta Marschalkó) |
| Cutaneous and oral manifestations of internal diseases.               |                                        |
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.
Diseases of the crystalline lens. Cataract surgery.
Diseases of the retina
Intraocular tumours
Glaucoma (pathomechanismus).
Glaucemia (conservative and surgical treatment).
Diseases of the eyelids.
Ocular injuries.
Sudden visual loss.
First aid in ophthalmology.

Practical guide (1 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. Márcia Hubay

First Semester

Lectures (1 hour/week)
The discipline of forensic medicine, relation to law, the legal aspects of dentistry
Injuries
Asphyxia
Identification
Toxicology I.
Toxicology II.
Alcohol and narcotics
The legal aspects of clinical medicine I.
The legal aspects of clinical medicine II.
Facial and cranial injuries
Sudden death, SIDS
Risk and malpractice in dentistry
Forensic psychiatry
Autopsy demonstration
Autopsy demonstration
### STUDY PROGRAMME

#### First Year

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
</tr>
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<tbody>
<tr>
<td>Mathematics I. Practice</td>
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<td>Mathematics I.</td>
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<tr>
<td>Medical Terminology**</td>
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<td>16,5</td>
<td>28</td>
<td>32</td>
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The grade influences the qualification of the diploma.

* From the second semester students can decide to continue studying Hungarian at the University or at a language school. The prerequisite to start the 4th year is to take a Basic Hungarian Language Exam (oral). Hungarian language course requirement in the second semester: signature (2 credit points).

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

*** 2nd, 3rd and 4th year Pharmacy students of 2008/09 have to complete the subject in the 4th year (second semester) of their studies. Students of the 1st year study the program in the first year second semester of the 2008/09.

Credit

Faculty of Pharmacy 1st year

1st semester

<table>
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<td>GYNYEMAGG1A</td>
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* C-Credit, L-Lecture, P-Practice
### 2nd semester

<table>
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<td>GYA5KANKG1A</td>
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<td>C3L3P0</td>
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<tr>
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<td>COLOP1</td>
<td>Physical Education I.</td>
</tr>
</tbody>
</table>

*C-Credit, L-Lecture, P-Practice
LIST OF TEXTBOOKS

7. Mihalik: 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.

MATHEMATICS
University Pharmacy, Department of Pharmacy Administration
Tutor: Dr. Andrea Meskó

First Semester

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

Differential and differential coefficient. Rules for derivations of functions.
The derivative of the power function.
Application of differentiation for calculation of limits of fractions.
An iterative method to solve equations (Newton-method).
Expansion of differentiable functions to power series. The Taylor series of exp x, sin x, cos x, ln x and other functions.
Qualitative examination of functions. Roots, extremes and inflexion points.
The multiplicity of a root.
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: 2 hours 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 chisquared distributions. The use of statistical tables.
Theoretical background of statistical inference. Qualitative and quantitative conclusions. Estimation; confidence interval for the expected value.
Testing hypotheses. The concept of “significance”. Errors of the first and of the second kind. The t-tests.

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

**1st Semester**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
<th>Practice</th>
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<tbody>
<tr>
<td>1.</td>
<td>The cell membrane: structure and function</td>
<td>The light microscope in use</td>
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<tr>
<td>3.</td>
<td>Structure and function of the nucleus II</td>
<td>Cyto(histo)chemistry</td>
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<tr>
<td>4.</td>
<td>Endoplasmic reticulum and the ribosomes</td>
<td>Endoplasmic reticulum</td>
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<tr>
<td>5.</td>
<td>Golgi complex, secretion and protein transport</td>
<td>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>Enzyme-histochemistry</td>
</tr>
<tr>
<td>10.</td>
<td><strong>Cell adhesion, cell junctions</strong></td>
<td>Store and supply of energy. Mitochondria. Peroxisome.</td>
</tr>
<tr>
<td>11.</td>
<td>Extracellular regulation of cells, signal transduction I</td>
<td>Cytoskeleton and cellular movement</td>
</tr>
<tr>
<td>12.</td>
<td><strong>The cell cycle and its regulation I</strong></td>
<td>Cell surface differentiation, ultrastructure of cellular junctions</td>
</tr>
<tr>
<td>13.</td>
<td>The cell cycle and its regulation II</td>
<td>Midterm (written)</td>
</tr>
<tr>
<td>14.</td>
<td>Cellular aging and programmed cell death (apoptosis)</td>
<td>Cell death (necrosis and apoptosis)</td>
</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>Meiosis</td>
<td>Cytogenetics I</td>
</tr>
<tr>
<td>4.</td>
<td>Introduction to human genetics; human genom</td>
<td>Cytogenetics II</td>
</tr>
<tr>
<td>5.</td>
<td>Meiosis</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>
BIOPHYSICS
Tutor: Dr. Károly Módos

First Semester

**Lectures** (2 hours per week)
- Introduction; structure of matter; interactions
- 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
- Emission spectroscopy, Light sources
- Spectrophotometry
- Optical lenses; light microscope
- Detection of nuclear radiations
- Oscilloscope
- Radioactive power of an X-ray tube
- Special light microscopes
- Gamma energy determination
- Electronic blood particle counting
- Picoscale
- Determination of skin-impedance
- Concentration determination with refractometer
- Isotope diagnostics
- Repetition, consultation

Second Semester

**Lecture** (2 hours per week)
- Transport phenomena, flow of fluids and gases
- 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

**Laboratory** (3 hours per week)
- U V-dosimetry
- 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
GENERAL AND INORGANIC CHEMISTRY

Lecturers: Dr. Béla Noszáli, Dr. István Szalai
Tutor: Dr. Krisztina Kuriin-Csórgel

First Semester

**Lectures** (3 hours per week)

Elementary particles: quarks, leptons, gauge particles, electron, proton, neutron.
The Bohr model of the atom.
Complex formation equilibria. Types of ligands. Mass balance equations, calculation of complex equilibria. Heterogeneous equilibria, the solubility product constant, solubility.
Photochemistry and radiation chemistry. States of matter. Properties and kinetic

PRACTICAL GENERAL AND INORGANIC CHEMISTRY

Tutor: Dr. Zoltán Szakács

First Semester

**Lectures** (2 hours per week)

Methods of purification of chemical substances. Recrystallization. Sublimation.


Preparation of inorganic compounds. Stoichiometry of chemical reactions. Theoretical yield, actual yield and percent yield. Types of chemical reactions.

Acid-base reactions. Preparation of inorganic compounds by acid-base reactions. Acid-base properties of salt solutions, hydrolysis. Thermal decomposition of inorganic compounds (acids, bases, salts).


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


Precipitation reactions. Equilibria in precipitation reaction.

**Practicals** (5 hours per week)

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

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

Distillation of hydrochloric acid. Preparation of CuSO4. 5 H2O

Preparation of (NH4)2SO4, H3BO3 from borax (Na2B4O7)

Preparation of CaHPO4. Observation of hydrolysis of some salts. Determination of the mass of a


Preparation of Cu2O and FeSO4

Preparation of precipitated sulfur. Experimental observation of direction of redox reactions (standard potentials).

Preparation of a double salt (Mohr salt, (NH4)2 Fe(SO4)2). 6 H2O

Preparation of a buffer solutions, Preparation of Cu(NH3)4 SO4 and Co Hg(SCN)4 coordination compounds. Qualitative comparison of solubility products. Observation of osmosis.
Problem-solving in general chemistry.
(Calculation of molar masses of nonelectrolytes from colligative properties).

Problem solving in general chemistry
(Electrochemistry)

Dependence of the reaction rate on concentration and temperature.
Observation of catalysis.
Decomposition of hydrogen peroxide.
Closing inventory. Problem-solving.

INORGANIC CHEMISTRY
Lecturer: Dr. Zsuzsanna Nagy-Ungvárai

Second Semester

3 hours per week (lecture)

Weeks

Introduction

1 The elemental composition of the Universe. Origins of the elements.
The composition of the lithosphere, hydrosphere and atmosphere. The evolution
of the atmosphere. The classification of the elements: metals, nonmetals and

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.

Chemistry of coordination compounds


11 The dynamics of coordination compounds: Complex equilibria, ligand exchange rates. The coordination chemistry of alkali metal ions. (Hostguest 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 litosphere, hydrosphere and atmosphere.

ANALYTICAL CHEMISTRY I.
Qualitative Chemical Analysis
Lecturer: Dr. István Szalai
Practical: Dr. István Szalai
Tutor: Dr. Krisztina Kurin-Csörgel

Second Semester
Lectures (2 hours per week)


Practicals (5 hours per week)

of properties of elements and reactions of Group II cations.
Precipitation reactions. Equilibria in cations, precipitation reactions. Solubility and pH.
Precipitation and solubilities of metalsulfides.

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

Summary of properties of elements and reactions of Groups IV–V cations.
Flame tests. Atomic spectroscopic methods of qualitative analysis.
Classification of anions into analytical groups. Group reagents for qualitative analysis of anions.
Oxidation-reduction.
Oxidation-reduction reactions in qualitative chemical analysis.

Summary of reactions of common anions.
Analysis of cation-anion solution sample. Preliminary and specific tests.
Analysis of cation-anion unknown solid sample. General procedure for chemical analysis.
Physical methods of qualitative analysis.

Study of ion reactions of Group III cations.
Part I: Co2+, Ni2+, Fe2+, Fe3+, Cr3+.
Study of ion reactions of Group III Part II: Al3+, Mn2+, Zn2+. Analysis of unknown mixture of the third analytical group of cations.
Study of ion reactions of Groups IV–V cations.
Analysis of Group III cations in unknown samples. Detection of cations in the mixture of the fourth and fifth analytical groups of cations.
Analysis of unknown samples containing cations of the Groups I–V.
Study of reactions of the first analytical group anions.
Study of reactions of the second and third analytical groups of anions.

Study of reactions of the fourth group of anions.
Identification of anions in the mixture of Groups I–IV anions.
Special tests for mixture of anions.
Analysis of cation anion unknown solution sample (3–5 ions).
Analysis of cation anion unknown solid samples (3–5 ions).
Analysis of unknown simple substances.
Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Practicals (Tutor: Dr. Gyöngyi Szedlay)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction. The Plant Kingdom. The botanical sciences. Pharmaceutical Botany, the program of the lectures.</td>
<td>Fundamentals in Botany. The use of the light microscope. Knowledge of the medicinal plants</td>
</tr>
<tr>
<td>2</td>
<td>Compartmentalization and metabolic pathways in plant cells.</td>
<td>Plant cells (plasmolysis, cycoloses).</td>
</tr>
<tr>
<td>3</td>
<td>Chloroplast and photosynthesis. Starch formation and degradation.</td>
<td>Plastids, reserve polysaccharides, protein bodies.</td>
</tr>
<tr>
<td>5</td>
<td>Mitochondron and respiration.</td>
<td>Vacuole, crystals, lipid bodies.</td>
</tr>
<tr>
<td>8</td>
<td>Formation of alkaloids and phenolics. Lignification. Vacuole, cell sap, osmoregulation, crystal formation, autophagy, autolysis.</td>
<td>Simple tissues, meristems.</td>
</tr>
<tr>
<td>9</td>
<td>Nucleic acid metabolism. The nucleus. Plant specificities of mitosis and meiosis.</td>
<td>Dermal tissue system, trichomes.</td>
</tr>
<tr>
<td>10</td>
<td>Organizational types of plants. The cormophyte plant body. Tissues, tissue system. Meristems.</td>
<td>2nd Test Examination</td>
</tr>
<tr>
<td>11</td>
<td>Dermal tissue system.</td>
<td>Analysis of living plants (Rosaceae, Apocynaceae), medicinal plants.</td>
</tr>
<tr>
<td>12</td>
<td>Conductive tissue system.</td>
<td>Conductive tissue system.</td>
</tr>
<tr>
<td>13</td>
<td>Ground tissue system.</td>
<td>Ground tissue system.</td>
</tr>
<tr>
<td>14</td>
<td>Secretory structures.</td>
<td>Analysis of living plants (Papaveraceae, Primulaceae).</td>
</tr>
</tbody>
</table>

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></td>
</tr>
<tr>
<td>4 Ossification, development of the vertebral column</td>
<td>Microscopy: artery and vein, blood, lymph node, spleen, palatine, tonsil</td>
</tr>
<tr>
<td>5 Heart and its development</td>
<td>Macroscopy: bones and joints of the pelvic girdle and lower limb</td>
</tr>
<tr>
<td>6 Blood vessels</td>
<td>Microscopy: lung, submandibular gland, liver, pancreas</td>
</tr>
<tr>
<td>7 Blood, development of the blood cells</td>
<td>Macroscopy: vertebral column and skull</td>
</tr>
<tr>
<td>8 Lymphatic organs</td>
<td></td>
</tr>
<tr>
<td>9 Respiratory system</td>
<td>Microscopy: stomach, ileum, kidney, ureter</td>
</tr>
<tr>
<td>10 Development of lung and intestines</td>
<td>Macroscopy: muscles, vessels and nerves of the upper limb.</td>
</tr>
<tr>
<td>11 Intestinal tract.</td>
<td>Microscopy: ovary, uterus, placenta, testis, penis</td>
</tr>
<tr>
<td>12 Digestive glands</td>
<td>Macroscopy: muscles, vessels and nerves of the lower limb.</td>
</tr>
<tr>
<td>13 Kidney</td>
<td>Microscopy: hypophysis, thyroid, adrenal gland, cerebellum, spinal cord.</td>
</tr>
<tr>
<td>14 Ureter, urinary bladder, urethra</td>
<td>Macroscopy: intestinal complex</td>
</tr>
<tr>
<td>15 Inner and outer genitals</td>
<td>Microscopy: eye, organ of Corti</td>
</tr>
<tr>
<td>16 Development of the urogenital organs</td>
<td>Macroscopy: brain and spinal cord.</td>
</tr>
<tr>
<td>17 Endocrine gland</td>
<td></td>
</tr>
<tr>
<td>18 Development of the nervous system</td>
<td></td>
</tr>
<tr>
<td>19 Spinal cord.</td>
<td></td>
</tr>
<tr>
<td>20 Oblongate medulla, pons, mesecephalon</td>
<td></td>
</tr>
<tr>
<td>21 Diencephalon, neurosecretion</td>
<td></td>
</tr>
<tr>
<td>22 Cerebral cortex</td>
<td></td>
</tr>
<tr>
<td>23 Cerebellum, extrapyramidal system</td>
<td></td>
</tr>
<tr>
<td>24 Olfactory and limbic systems</td>
<td></td>
</tr>
<tr>
<td>25 Eye, optic tracts and centers</td>
<td></td>
</tr>
<tr>
<td>26 Auditory and static system</td>
<td></td>
</tr>
<tr>
<td>27 Gustatory buds, skin and accessory organs</td>
<td></td>
</tr>
<tr>
<td>28 Development of the sensory organs</td>
<td></td>
</tr>
<tr>
<td>29–30 Repetition, complementary day for holidays</td>
<td></td>
</tr>
<tr>
<td>Week</td>
<td>Lectures (2 hours per week)</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>1</td>
<td>The place and importance of the subject in the curriculum. Professor's history as bridge, methods, main fields. Symbols of medicine and pharmacy.</td>
</tr>
<tr>
<td>2</td>
<td>Knowledge of medicine and pharmacy in Babylonia-Assyria. Knowledge of medicine and pharmacy in Egypt.</td>
</tr>
<tr>
<td>4</td>
<td>The Arabs and the European Middle Ages. Transit ways of knowledge. Monastic medicine and pharmacy. The School of Salerno. Universities emerge, the birth of European professional pharmacy.</td>
</tr>
<tr>
<td>5</td>
<td>The idea of renaissance. Paracelsus and chemical drugs. Homeopathy as an example of medical sectarianism.</td>
</tr>
<tr>
<td>6</td>
<td>Development of pharmacy in Italy and France. Development of pharmacy in Germany and Britain.</td>
</tr>
<tr>
<td>7</td>
<td>Development of Pharmacy in Hungary.</td>
</tr>
<tr>
<td>9</td>
<td>Definition of drugs. Aspects of classification. Classification of drugs according to their origin and on the basis of strength.</td>
</tr>
<tr>
<td>10</td>
<td>Classification of drugs by their pharmaceutical action, use and by the place of application. Drug and doses. Specially named doses.</td>
</tr>
<tr>
<td>13</td>
<td>Ordering of drug preparation. Pharmacy, galanic laboratories, pharmaceutical factories.</td>
</tr>
<tr>
<td>14</td>
<td>Pharmacists, connections with physicians, etc. Health for all – all for health by the year 2000.</td>
</tr>
</tbody>
</table>
FIRST AID
Institute of Traumatology
Tutor: Dr. Miklós Szebeny

First 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.

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

1 lect. + 1 pract/ week / two semesters

1. GENERAL INFORMATION:
The program in Medical Informatics trains students in the application of computer and information sciences to the quantitative aspects and decision needs of the health and life sciences. Medical Informatics encompasses not only mathematics, statistics and computing, but also includes other engineering, management, and information sciences applied to problems arising in biology, medicine and the delivery of health care. In addition to basic biostatistical and computing techniques, it is necessary that students be familiar with other methodologies such as mathematical modeling, systems analysis, image and signal processing, management information systems and decision sciences. Possible areas of emphasis include health information systems, biomathematical modeling, evaluation of health programs, system development, clinical decision studies and WEB 2.0 solutions in health care system.

2. AIMS
to discuss the structure and operation of state of art information technology tools in the health care to teach medical students the basic principles of using information technology and general-purpose software in medical activity to help students to learn skills of using telecommunication systems and information resources on the Internet in education, learning, research and clinical practice
3. REQUIREMENTS:
The student is allowed to take the semi-final examination
1st semester: presented the masterwork completed during the practices and his/her absences did not exceed 25% of all practices.
2nd semester: passed the two midterm written examinations and his/her absences did not exceed 25% of all practices.
Semi-final examination is in written form.

THEME/ 1. semester
1. e-HEALTH
2. Networks and telecommunication. The Internet
3. Data handling by computer
4. The World Wide Web – WEB 2.0 and the health care system
5. Data manipulation
6. Databases
7. Digital signature, e-card

1.2 Computer platforms and computer architectures
2. Getting familiar with the Internet (E-mail, news groups, Telnet, FTP)
3. Browsing and searching on the Web
4. Hypertext document. How to create Web pages
5. Handling text, image, sound and moving images in computers
6. Creating database
7. Working with clinical trial database using Excel
8. JAVA, AJAX and RSS in WEB 2.0 applications

THEME/ 2. semester
1. The knowledge in medicine and pharmacy
2. Drug and pharmacotherapeutic databases on the Net
3. Statistical tools of drug development
4. Wireless Communication
5. Computer-aided drug design
6. Data Analysis with SPSS
7. How to read scientific articles?

1. Electronic medical knowledge bases practice (Medline, Micromedex, Cochrane Library, ...)
2. Diet planning using Excel
3. Mobile communication
4. How to create a presentation. Electronic slide show and animation. Presentation with PowerPoint

HUNGARIAN LANGUAGE, TERMINOLOGY – See information before the Study Programs!
## STUDY PROGRAMME

### Second Year

#### Subjects 1st semester

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>600 Analytical Chemistry (quantitative) I.</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Organic Chemistry I. Practice</td>
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<td>5.5</td>
<td>5</td>
<td>practical course grade</td>
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<tr>
<td>in0 Organic Chemistry I.</td>
<td>4</td>
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<td>semi-final</td>
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<tr>
<td>Physical Chemistry I.</td>
<td>4</td>
<td></td>
<td>4</td>
<td>semi-final</td>
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<tr>
<td>Pharmaceutical Botany II. Practice</td>
<td></td>
<td>3</td>
<td>2</td>
<td>practical course grade</td>
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<tr>
<td>Pharmaceutical Botany II.</td>
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<td>2</td>
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<tr>
<td>Physical Education III.</td>
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</table>

#### Subjects 2nd semester

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical Chemistry (quantitative) II. Practice</td>
<td></td>
<td>5</td>
<td>3</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Analytical Chemistry (quantitative) II.</td>
<td>2</td>
<td></td>
<td>6</td>
<td>final #</td>
</tr>
<tr>
<td>Organic Chemistry II. Practice</td>
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<td>5.5</td>
<td>4</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Organic Chemistry II.</td>
<td>4</td>
<td></td>
<td>5</td>
<td>final #</td>
</tr>
<tr>
<td>Physical Chemistry II.</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Colloid Chemistry I.</td>
<td>2</td>
<td></td>
<td>2</td>
<td>semi-final</td>
</tr>
<tr>
<td>Biochemistry I.</td>
<td>3</td>
<td></td>
<td>3</td>
<td>semi-final</td>
</tr>
<tr>
<td>Physical Education IV.</td>
<td></td>
<td>1</td>
<td>0</td>
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<td>27.5</td>
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</tbody>
</table>

# The grade influences the qualification of the diploma. From the first year second semester students can decide to continue studying Hungarian at the University or at a language school. The prerequisite to start 4th year is to take a Basic Hungarian Language Exam. Hungarian language course requirement: signature.

* 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.
# Faculty of Pharmacy 2nd year

## 3rd semester

<table>
<thead>
<tr>
<th>Subjects code</th>
<th>Subjects</th>
<th>Credit code*</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>GYASKAVKG1A</td>
<td>Analytical Chemistry I. (quantitative)</td>
<td>C7L2P5</td>
<td>Mathematics II.</td>
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<tr>
<td>GYSZKSNKE1A</td>
<td>Organic Chemistry I.</td>
<td>C5L4P0</td>
<td>General and Inorganic Chemistry II,</td>
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<tr>
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<td></td>
<td>Analytical Chemistry I. (qualitative)</td>
</tr>
<tr>
<td>GYSZKSNKG1A</td>
<td>Organic Chemistry I. practice</td>
<td>C5LOP5,5</td>
<td>General and Inorganic Chemistry II,</td>
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<td></td>
<td>Analytical Chemistry I. (qualitative)</td>
</tr>
<tr>
<td>GYFKTFIKE1A</td>
<td>Physical Chemistry I.</td>
<td>C4L4P0</td>
<td>General and Inorganic Chemistry II,</td>
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<td>Mathematics II.</td>
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<td>Biophysics II.</td>
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<td>Biophysics II. practice</td>
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<tr>
<td>GYNOVGYNE2A</td>
<td>Pharmaceutical Botany II.</td>
<td>C2L1P0</td>
<td>Biology II.</td>
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<td>Biology II. practice</td>
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<tr>
<td>GYNOVGYNG2A</td>
<td>Pharmaceutical Botany II. practice</td>
<td>C2LOP3</td>
<td>Biology II.</td>
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<td>Biology practice II.</td>
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<td></td>
<td>Pharmaceutical Botany I.</td>
</tr>
<tr>
<td>GYTSITSNG3A</td>
<td>Physical Education III.</td>
<td>C0L0P1</td>
<td>Physical Education II.</td>
</tr>
</tbody>
</table>

*C-Credit, L-Lecture, P-Practice
### 4th semester

<table>
<thead>
<tr>
<th>Subjects code</th>
<th>subjects</th>
<th>Credit</th>
<th>Prerequisites</th>
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</thead>
<tbody>
<tr>
<td>GYASKAKKE2A</td>
<td>Analytical Chemistry II. (quantitative)</td>
<td>C5L2P0</td>
<td>Organic Chemistry I., Organic Chemistry I. practice,</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>Analytical Chemistry I. (quantitative).</td>
</tr>
<tr>
<td>GYASKAKKG2A</td>
<td>Analytical Chemistry II. (quantitative) practice</td>
<td>C2L0P5</td>
<td>Organic Chemistry I., Organic Chemistry I. practice,</td>
</tr>
<tr>
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<td></td>
<td>Analytical Chemistry I. (quantitative)</td>
</tr>
<tr>
<td>GYSZKSZKE2A</td>
<td>Organic Chemistry II.</td>
<td>C4L4,5P0</td>
<td>Organic Chemistry I.,</td>
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<tr>
<td></td>
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<td></td>
<td>Organic Chemistry I., practice</td>
</tr>
<tr>
<td>GYSZKSZKG2A</td>
<td>Organic Chemistry II. practice</td>
<td>C5L0P5</td>
<td>Organic Chemistry I., Organic Chemistry I. practice,</td>
</tr>
<tr>
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<td>Organic Chemistry I.</td>
</tr>
<tr>
<td>GYFKFTRKG2A</td>
<td>Physical Chemistry II.</td>
<td>C5L1P4</td>
<td>Physical Chemistry I.</td>
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<tr>
<td>GYKOLKOLE1A</td>
<td>Colloid Chemistry I.</td>
<td>C2L2P0</td>
<td>Physical Chemistry I.</td>
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<tr>
<td>GYKOLKOLE1A</td>
<td>Biochemistry I.</td>
<td>C3L3P0</td>
<td>Organic Chemistry I., Organic Chemistry I. practice,</td>
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<td></td>
<td></td>
<td>Biophysics II., Biophysics II. practice,</td>
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<tr>
<td></td>
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<td></td>
<td>Biology II., Biology II. practice,</td>
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<tr>
<td></td>
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<td></td>
<td>Anatomy</td>
</tr>
<tr>
<td>GYXQGGY_NA</td>
<td>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.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* C-Credit, L-Lecture, P-Practice
LIST OF TEXTBOOKS


Recommended textbooks:

**QUANTITATIVE ANALYTICAL CHEMISTRY**
Tutor: Dr. **Krisztina Kurin-Csörgő**

**First Semester**

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practicals (5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic</strong></td>
<td><strong>Task</strong></td>
</tr>
<tr>
<td>Introduction. <strong>Laboratory</strong></td>
<td>Introduction; Safety and order</td>
</tr>
<tr>
<td>concepts. <strong>Titrimetric</strong></td>
<td>in the laboratory; The schedule of the</td>
</tr>
<tr>
<td>methods of analysis.</td>
<td>semester; Practical and theoretical</td>
</tr>
<tr>
<td></td>
<td>requirements in the semester</td>
</tr>
<tr>
<td>Acid-base reactions, repetition of different</td>
<td>Calibration of burette (3-6-9-12 ml);</td>
</tr>
<tr>
<td>calculations. Titrations in acid-base</td>
<td>Calibration of pipettes (10, 20 ml)</td>
</tr>
<tr>
<td>titration.</td>
<td></td>
</tr>
<tr>
<td>End point detection</td>
<td>Acid-<strong>Alkalimetry</strong></td>
</tr>
<tr>
<td>Acid-base indicators.</td>
<td>Practicing the use of the laboratory tools;</td>
</tr>
<tr>
<td>Standard solutions in acid-base</td>
<td>Determination of sulfuric acid</td>
</tr>
<tr>
<td>acid titrations and the survey of the</td>
<td></td>
</tr>
<tr>
<td>most important methods.</td>
<td>Acid-<strong>Alkalimetry</strong></td>
</tr>
<tr>
<td>Acid-base titrations in non-aqueous</td>
<td>Standardization of ± 0.1N hydrochloric</td>
</tr>
<tr>
<td>solutions. Determination of organic</td>
<td></td>
</tr>
<tr>
<td>bases in glacial acetic acid.</td>
<td></td>
</tr>
<tr>
<td>Effects of common ion, pH, complex</td>
<td>Acid-<strong>Alkalimetry</strong></td>
</tr>
<tr>
<td>formation and redox processes on</td>
<td>Potentiometric titration of acetic acid;</td>
</tr>
<tr>
<td>precipitation.</td>
<td>Conductometric determination of</td>
</tr>
<tr>
<td>Formations and morphology of precipitates.</td>
<td>Betaine hydrochloride</td>
</tr>
<tr>
<td>Development and treatment of precipitates.</td>
<td>Indirect determination of sodium</td>
</tr>
<tr>
<td>Important methods in precipitation</td>
<td>Acid-alkalimetry;</td>
</tr>
<tr>
<td>gravimetry.</td>
<td>Determination of lactic acid;</td>
</tr>
<tr>
<td>Precipitation titrimetry.</td>
<td>Chelatometric determination of lead.</td>
</tr>
<tr>
<td>Complex formation, chelate effect.</td>
<td>Chelatometry</td>
</tr>
<tr>
<td>Stability constant. <strong>Complexometric</strong></td>
<td>Chelatometric determination of copper and zinc in the presence of each other;</td>
</tr>
<tr>
<td>and chelatometric titrations.</td>
<td>Determination of aluminium in “Aluminium tartaricum solutum”</td>
</tr>
<tr>
<td>Effect of pH and forign ligands on</td>
<td>Gravimetry;</td>
</tr>
<tr>
<td>the apparent stability constant.</td>
<td>Gravimetric determination of sulfate ions in the form of BaSO4;</td>
</tr>
<tr>
<td>Chelatometric titrations. Titrations</td>
<td>Argentometry</td>
</tr>
<tr>
<td>curves. Methods of end point detection.</td>
<td>(filtration, preparation of filter)</td>
</tr>
<tr>
<td>Types and applicability of EDTA</td>
<td>Argentometry Test III.</td>
</tr>
<tr>
<td>titrations.</td>
<td>Determination of bromide ions by</td>
</tr>
<tr>
<td>Redox reactions and their mechanism.</td>
<td>Volhard’s and Fajans’ methods</td>
</tr>
<tr>
<td>The redox potential and its calculation.</td>
<td>Liebig-Denigees’ Method;</td>
</tr>
<tr>
<td>The effect of pH, the complex and</td>
<td>Supplements</td>
</tr>
<tr>
<td>precipitate formations on redox potential.</td>
<td>Supplements;</td>
</tr>
<tr>
<td>Redox equilibria.</td>
<td><strong>Closing</strong></td>
</tr>
</tbody>
</table>

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**SEMMELWEIS UNIVERSITY / FACULTY OF PHARMACY**

346
# QUANTITATIVE ANALYTICAL CHEMISTRY

## Second Semester

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practicals (5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic</strong></td>
<td><strong>Task</strong></td>
</tr>
<tr>
<td>Titration curves in oxidimetry. Titration with permanganate solution.</td>
<td>Introduction</td>
</tr>
<tr>
<td>Titrations with chromate and cerium (IV). Bromatometry I.</td>
<td>Permanganometry</td>
</tr>
<tr>
<td>Bromatometry II. Reactions with periodate and their analytical use.</td>
<td>Chromatology</td>
</tr>
<tr>
<td>Iodometric titrations and other reductometric methods.</td>
<td>Bromatometry</td>
</tr>
<tr>
<td>Sampling and preparatory processes in analytical chemistry.</td>
<td>Iodometry</td>
</tr>
<tr>
<td>Interactions between electromagnetic radiations and materials. Emission spectroscopy. Flame emission photometry, atomic absorption spectrophotometry. ICP – ES and ICP – MS possibilities.</td>
<td>Iodometry</td>
</tr>
<tr>
<td>Molecular absorption spectroscopy in UV-VIS region as well as in IR. Possibilities of spectrophotometric method(s) in complex systems.</td>
<td>Optional measurements*</td>
</tr>
<tr>
<td>Separation methods in analytical chemistry. Distillation, extraction and their possibilities.</td>
<td>Optional measurements*</td>
</tr>
</tbody>
</table>
SPECTROPHOTOMETRIC DETERMINATION OF PHOSPHATE CONTENT IN EGG SHELL

SEMELWEIS UNIVERSITY / FACULTY OF PHARMACY

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

<table>
<thead>
<tr>
<th>Topic</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectrophotometric determination of phosphate content in egg shell</td>
<td>Semi-quantitative analysis using &quot;Merkoquant&quot; testpapers (Public) Holiday</td>
</tr>
<tr>
<td>Different planar chromatographic methods and their use in pharmaceutical analyses. Gas chromatographic methods.</td>
<td>Optional measurements* From &quot;Potentiometric determinations&quot;</td>
</tr>
<tr>
<td>High performance liquid chromatography, Supercritical fluid extraction and chromatography, HPCE and its future application. Survey on analytical chemistry.</td>
<td>Final test (Qualitative and quantitative analysis of complex samples)</td>
</tr>
<tr>
<td>Potentiometric determinations:</td>
<td>TEST III.</td>
</tr>
<tr>
<td>1. Direct potentiometric determination of fluoride content in tooth paste</td>
<td>+ Determination Quantitative determination of the sample</td>
</tr>
<tr>
<td>2. Potentiometric titration of bromide content of &quot;Elixirium thymi composita&quot;</td>
<td></td>
</tr>
<tr>
<td>3. Potentiometric titrations of iodide and chloride ions in presence of each other</td>
<td></td>
</tr>
<tr>
<td>4. Potentiometric titration using computer controlled burette: Determination of phosphoric acid content in &quot;Coca Cola&quot;</td>
<td></td>
</tr>
<tr>
<td>Other determinations:</td>
<td></td>
</tr>
<tr>
<td>1. Complexometric determination of metals in coins: (e.g., 1,- Ft; 2,- Ft; 5,- Ft; US cent; Groschen) (Cu$^{2+}$ - Ni$^{2+}$; Cu$^{2+}$ - Ni$^{2+}$ - Zn$^{2+}$; Cu$^{2+}$; Al$^{3+}$)</td>
<td></td>
</tr>
<tr>
<td>2. Determination of calcium and magnesium ions in mineral water (e.g., Römerquelle, Teodora Quelle, Margitszigeti), in bitter water (Míra) and in tap water</td>
<td></td>
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<tr>
<td>3. Chelatometric determination of aluminium ions in &quot;Aluminium aceticum tartaricum solutum&quot;</td>
<td></td>
</tr>
<tr>
<td>4. Iodometric determination of Cr$^{3+}$ ions</td>
<td></td>
</tr>
<tr>
<td>5. Permanganometric determination of hydrogen peroxide content in tablet &quot;Hyperol&quot;</td>
<td></td>
</tr>
<tr>
<td>6. Complex analysis of &quot;Solutio iodi alcoholica&quot;</td>
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<tr>
<td>7. Determination of &quot;Papaverinium chloride&quot; in nonaqueous solution (glacial acetic acid)</td>
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<tr>
<td>8. Conductometric determination of acid contents in red wine</td>
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Summary. Supplements
Closing

348
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>
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<tbody>
<tr>
<td>1</td>
<td>Qualitative molecular orbital theory of organic compounds</td>
<td></td>
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<tr>
<td></td>
<td>Saturated acyclic and cyclic hydrocarbons. Constitution, conformation</td>
<td>2-3</td>
<td>Basic laboratory processes.</td>
</tr>
<tr>
<td>5</td>
<td>Isomerism. Steric and electronic effects in organic compounds and reactions.</td>
<td>2-6</td>
<td>Nomenclature of organic compounds without C=O bond</td>
</tr>
<tr>
<td>6-7</td>
<td>Alkenes, alkenes, and their cyclic analogs. Cis-trans isomerism. Elimination. Addition to carbon-carbon double bond.</td>
<td>3-6</td>
<td>Basic methods for preparations of organic compounds (5 preparations)</td>
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<tr>
<td>8</td>
<td>delocalized systems. Aromaticity and Linear and cyclic antiaromaticity. Interpretation of concerted reactions.</td>
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<tr>
<td>9</td>
<td>Aromatic hydrocarbons. Electrophilic aromatic substitution</td>
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<tr>
<td>10</td>
<td>Spectroscopy of organic compounds.</td>
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<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></td>
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</tr>
<tr>
<td>14</td>
<td>Amines and other nitrogen containing compounds. Basicity of organic compounds. Organic sulfur compounds.</td>
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</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</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>
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<tr>
<td>7</td>
<td>Amino acids, peptide, proteins.</td>
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<td></td>
</tr>
<tr>
<td>8-9</td>
<td>electron excessive heteroaromatic compounds.?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-11</td>
<td>electron deficient heteroaromatic compounds.?</td>
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</tr>
<tr>
<td>12</td>
<td>Terpenoids, carotenoids, steroids.</td>
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<tr>
<td>13</td>
<td>Nucleic acids. Alkaloids.</td>
<td>6</td>
<td>Electronic literature searching</td>
</tr>
<tr>
<td>14</td>
<td>Organic chemistry in the periodic system. Organic synthesis.</td>
<td></td>
<td></td>
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</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

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (4 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Nuclear magnetic resonance: The technique, the chemical shift. Electron spin resonance. Mass spectroscopy.</td>
</tr>
</tbody>
</table>
**Lectures (4 hours per week)**


14 Kinds of cell. E.m.f. and electrode potentials, the sign convention. The concentration dependence of the e.m.f. Standard electrode potentials. Thermodynamic data from cell e.m.f.-s and applications of e.m.f. measurement. The rate of charge transfer. The current density. Overpotential. Polarography.

**Practicals (4 hours per week)**

1 Determination of freezing point depression.
2 Calibration of a thermometer. Determination the temperature of a phase transition.
3 Studying IR Spectra.
4 Spectrophotometric investigations in the ultraviolet region.
5 Determination of ionization constant of indicators by spectrophotometric method.
6 Solubility product determination by potentiometric method.
7 Measurement of pH by hydrogen-electrode, measurement of redox potential.
8 Deadstop titration, determination of ionization constant of a weak acid.
9 Computer assisted conductimetric titration.
10 Polarography.
11 Studying the kinetics of the hydrolysis.
12 Investigation of stressed decomposition of a medicine.
13 Studying of the surface tension.
14 Supplementary lab.
<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What are colloids? Definitions, nomenclature, historical perspective.</td>
</tr>
<tr>
<td>2</td>
<td>Basic principles of colloid stability. Intermolecular forces, interparticle forces, effect of the intervening medium. Electrostatic forces and the electrical double layer.</td>
</tr>
<tr>
<td>3</td>
<td>Steric repulsion, the effect of adsorbed or anchored layers. The total interaction potential curve.</td>
</tr>
<tr>
<td>5</td>
<td>Interfaces. Surface tension, surface energy, wetting phenomena.</td>
</tr>
<tr>
<td>6</td>
<td>Adsorption: the Gibbs adsorption equation, the influence of adsorption on interparticle forces. The effect of the curvature of surfaces on equilibrium.</td>
</tr>
<tr>
<td>8</td>
<td>Rheology: viscosity, Newtonian and non-Newtonian systems, rheology of suspensions of colloidal particles.</td>
</tr>
<tr>
<td>10</td>
<td>Structure of flocs and sediments. Coalescence and particle growth.</td>
</tr>
<tr>
<td>11</td>
<td>Association colloids and self-assembly systems. Micellisation, solubilization.</td>
</tr>
<tr>
<td>12</td>
<td>Thin films, foams and emulsions. Film stability, film tension. Foams, foaming and antifoaming agents, froth flotation. Emulsions and microemulsions.</td>
</tr>
<tr>
<td>14</td>
<td>The industrial importance of colloids.</td>
</tr>
</tbody>
</table>
First Semester

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Lectures (1 hour per week)</th>
<th>Practicals (3 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Embryo development. The root apex, primary structure of roots. Root modifications</td>
<td>Germination, seedlings. Plants representing fam.: Fabaceae, Brassicaceae</td>
</tr>
<tr>
<td>2</td>
<td>The shoot apex. The primary structure of stems. Stem-root connection.</td>
<td>Roots. Plants representing fam.: Apiaceae, Euphorbiaceae</td>
</tr>
<tr>
<td>3</td>
<td>Secondary growth of roots and stems.</td>
<td>Stems I. Plants representing fam.: Solanaceae, Lamiaceae</td>
</tr>
<tr>
<td>4</td>
<td>Development and anatomy of leaves. Adaptations to the environment. Shoot modifications.</td>
<td>Stems II. Plants representing fam.: Asteraceae</td>
</tr>
<tr>
<td>5</td>
<td>The movement of water in plants. Mineral nutrition. Transport of assimilates.</td>
<td>1. Test Work: Plants representing fam.: Cannabaceae</td>
</tr>
<tr>
<td>6</td>
<td>Initiation and anatomy of flowers. Sporo- and gametogenesis in angiosperms. Fruits and seed.</td>
<td>Woody stems (Gymnosperms, Angiosperms.) The fungi (introduction). I. Test Work on the knowledge of medicinal plants</td>
</tr>
<tr>
<td>7</td>
<td>Control of growth and development.</td>
<td>The Fungi I.</td>
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<td>Mycophyta, Bryophyta, Pteridophyta, Gymnospermophyta</td>
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<td>9</td>
<td>Angiospermophyta: Magnoliidae</td>
<td>2. Test Work: Fungi Preparing a cleared specimen</td>
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<td>Leaf and flower anatomy</td>
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<td>Morphology and anatomy of the seed 2. Test Work on the knowledge of medicinal plants.</td>
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<td>Angiospermophyta: Dilleniidae</td>
<td>Morphology and anatomy of the fruit.</td>
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<td>3. Test Work: woody stems, leaf, flower, seed, fruit. Consultation, questioning, finishing the practicals.</td>
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<td>Angiospermophyta: Monocotyledoneae</td>
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Visit in the Botanical Garden of Eötvös Loránd University to learn taxonomy of higher plants. Field trip (1 day) to learn medicinal plants and fungi in the wild. Handing in of your own herbarium (collection of 30 medicinal plants, pressed and dried, mounted for permanent display with references).
BIOCHEMISTRY
Department of Medical Biochemistry
Tutor: Dr. Erzsébet Maróthy-Tóth

Second Semester

Lectures (3 hours per week)

Ordered conformations of polypeptide chains. Four levels of protein structure. Determination of secondary and tertiary structure. Oxygen transporting proteins.
Myoglobin and hemoglobin. Structure of myoglobin and hemoglobin.
Fine mechanism of enzyme action. Three-dimensional structure of chymotrypsin, a serine protease. Mechanism of acetylcholinesterase catalysis.
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.

Practicals (1 hour per week)

Protein purification
Enzyme kinetics
Midterm: proteins, enzymes
Bioenergetics: glycolysis
Citric acid cycle
Midterm: bioenergetics, carbohydrate metabolism
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.

Practicals (1 hour per week)

- Enzyme classification
- Consultation

SUMMER PRACTICAL TRAINING PROGRAM

Four weeks: 35 hours/week, min. 6/max. 8 hours/day. The aim of the summer practical training: getting acquainted with the pharmacy as a sanitary unit.

Duties and respects:

1. Survey of duties in a public pharmacy of drug dispensing.
2. Introduction to the structure of a public pharmacy: rooms, office, laboratories, stores etc., accessories.
3. Knowledge related to the storage of drugs in a pharmacy. Storage of drugs according to their activity, strength etc.
4. Accessories in a public pharmacy. Practising their use, working with pharmacy balances etc.
5. Examination of chemical and crude drugs already learnt in the 1st–4th semesters. (Knowledge of materials, organoleptic, physicochemical methods etc.)
6. Practising of some pharmaceutical technological manipulations: measuring, compounding, sieving, milling filtration, homogenization of powders, ointments etc. Getting acquainted with the equipments of these manipulations. Right selection of the accessories: scale, scale-relations, place etc.
8. Labour safety in a pharmacy. (Inflammmable, explosive goods, acids, corrosive chemicals etc.)
Faculty of Pharmacy
3rd year
## STUDY PROGRAMME

### Third Year

<table>
<thead>
<tr>
<th>Subjects</th>
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# The grade influences the qualification of the diploma

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

Faculty of Pharmacy 3rd year

5th semester

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*C: Credit, L: Lecture, P: Practice
# 6th semester

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*C-Credit, L-Lecture, P-Practice

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LIST OF TEXTBOOKS

3. Szász, Takács, Végh: Pharmaceutical Chemistry Lecture Notes I-III. (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

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<th>Week</th>
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<th>Practicals (5 hours per week)</th>
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<td>Preliminary testing and systematization of inorganic and organic compounds official in Ph. Eur.</td>
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<tr>
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<td>General purity tests in Pharmacopoeias</td>
<td>Preliminary testing and systematization of inorganic and organic compounds official in Ph. Eur.</td>
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<td>Structural and physical chemistry of drug action I.-II</td>
<td>General reaction of organic functional groups Analysis of IR spectra</td>
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<td>General purity tests of inorganic ions I. General purity tests of inorganic ions II.</td>
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<td>Narcotics, sedato-hypnotics</td>
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<td>Drugs acting on the vegetative nervous system I.</td>
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<td>Cardiac glycosides, sugars</td>
<td>Drugs acting on the vegetative nervous system II.</td>
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<td>Chemotherapeutic agents: sulfonamides</td>
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PHARMACEUTICAL TECHNOLOGY
Department of Pharmaceutics
Director: Prof. Dr. Imre Klebovich
Tutor: Dr. Mária Hajdú

First Semester

Lectures
History of pharmaceutical compounding and technology
Dosage forms as drug carrier systems. Classification of dosage forms and routes of administration.
Technological aspects of quality, safety, and efficacy.
The tasks, construction, and equipments of a pharmacy. Storage of pharmaceuticals.
Technological considerations of the pharmacopoeia (Eur. Ph.)
Physical chemical principles in the pharmaceutical technology.
Basic operations for pharmaceutical compounding.
Liquid dosage forms. Theory and classification.
Excipients for liquid dosage forms.
Preparation of solution, aromatic water, syrup, mucilago, mixture, gargarisma, klysma.
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.
Second Semester

Lectures
Dosage forms with coherent structure
Ointments, gels, pastes. Eye ointments.
Tests of semisolid preparations. Rheology and other characteristics.
Cosmetics.
Rectal and vaginal preparations.
Tests of suppositories.
Dosage forms prepared by aggregation. Pills, boluses, sticks, foams, medicated chewing gums.
Compounding powder preparations.
Compounding veterinary preparations.
Incompatibility problems I. Solutions.
Incompatibility problems II. Solid dosage forms.
Incompatibility problems II. Other dosage forms and role of excipients.
Good Pharmacy Practice.
Laws governing the pharmacy practice.

Practice
Formulae Normales: the guide for pharmaceutical compounding in Hungary.
Preparation of ointments of solution and emulsion type.
Preparation of ointments of emulsion and suspension.
Preparation of ointments of composite type.
Directions of eye ointments and gels. Preparations of eye ointments.
Preparation of pastes.
Preparation of cosmetics.
Preparation of suppositories by cold compression and by by moulding.
Preparation of vaginal preparations.
Preparation of pills.
Preparation of multidose powders. Topical powders.
Preparations of veterinary preparations.
Guidelines for the preparation of incompatible drugs.
Incompatibility problems of solutions.
Incompatibility problems of powder mixtures.
Incompatibility problems of emulsions.
Incompatibility problems ointments.
Health accessories in pharmacy.
Dispensing a test preparation independently.
Second Semester

Lectures (2 hours per week)
- Pharmacognosy, History of pharmacognosy.
- Medicinal plant - vegetable drug.
- Nomenclature. Classification of vegetable drugs.
- From plant to phytomedicaments (phytotherapy).
- Sources of drugs, factors involved in the production of drugs. Quality control.
- Compounds of primary metabolism.
- Carbohydrates. Mono- and oligosaccharides and their drugs. Homogenous polysaccharides and their drugs.
- Heterogenous polysaccharides: gums, neutral and acidic mucilages, pectins; polysaccharides from microorganisms and fungi. Algae polysaccharides.
- Lipids. Generalities, vegetable oils, alkyne derivatives.
- Amino acids (which are not constituents of proteins).
- Cyanogenic glycosides, glycosinolates. Betalains.
- Protein sweeteners. Lectins. Enzymes.
- Compounds of special (secondary) metabolism.
- Plant phenolics in general. Phenols, phenolic acids, derivatives and crude drugs.
- Coumarins and coumarin containing drugs.
- Medicinal application and toxicity.
- Lignans, lignan containing drugs. Biological interest of lignans. Silybum marianum and its significance.
- Flavonoids, chemical structure and classification, biological properties, use of flavonoid-containing drugs, therapeutical significans.
- Chief flavonoid containing vegetable drugs. (Crataegus species, Ginkgo biloba, etc.)
- Isoflavonoids, rotenoids, biological significance.
- Anthocyanins, chief anthocyanin-containing drugs.
- Phenoloids in Zingiberaceae family (diarylheptanoids and aryalkanones).

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.
- Phloroglucinolins.
- Cannabis sativa.
- Personal task.
- Consultation.
**BIOCHEMISTRY**
Dept. of Medical Biochemistry
Tutor: **Dr. Erzsébet Maróthy-Tóth**

**First Semester**

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Lectures (2 hours per week)

- Conjugation reactions in detoxification.
- Mechanism of the regulation of biomechanical pathways by hormones. Biochemistry of the hormonal action.
- Receptors, classification of receptors. The ion channels.
- Calcium homeostasis.
- The signal transduction: the G-proteins, role of the adenylate cyclase and phosphoinositol system in signal transduction. The protein kinases and phosphorylation of specific proteins.
- Interaction of receptors and hormones. Mechanism of neurotransmission. The cholinergic and adrenergic transmission. The insulin and steroid receptors.

Practicals

- Seminar: gene therapy

Consultation

Seminar: gene therapy

COLOID 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)

1 Historic overview, concepts of physiological control, homeostasis. Basics in cell physiology, Cell-to-cell interactions, Cellular membranes and transmembrane transport. Membrane receptors. Ionic equilibria and resting membrane potentials, ion channels and gates. Action potentials, synaptic transmission.
5 Cardiac functions: Biomechanical basis of cardiac functions. Cardiac pump. Signal transduction in the cardiomyocytes.
6 Cardiac cycle. Electrical activity of the heart. Transmembrane potentials. Conduction in cardiac fibers, cardiac excitability, cardiac rhythmicity, electrocardiography.
8 Cardiovascular control mechanisms: Systemic control mechanisms. Local control mechanisms. Control of cardiac output.
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
# Second Semester

**Lectures** (3 hours per week)  
**Practices** (2 hours per week)

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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
Immuino-pharmacology
Immunotolerance
Natural and pathological autoimmunity

Notes  The semester is completed with a written exam.
Deadline of claims for exemptions: 30th September
Updated information is available on our web site: www.dgci.sote.hu

COMPULSORY SUMMER PRACTICE
Program

Four weeks: 35 hours/week; min. 6 max. 8 hours/day.

The aim of summer practical training: to deepen theoretical and practical knowledge of
Pharmaceutical Technology learnt in the 3rd year; adaptation of basic knowledge (chemistry,
physics, colloidics, physiology etc.) to the practical work in pharmacies.

Duties and respects:
1. Appreciation of prescriptions, reading of prescriptions (Formula Magistralis, Formula
Normales, Formula Originalis). The forms of dispensing, dose calculating etc. Preparation of
medicaments (Formula Magistralis) under supervision of the instructing pharmacist.
2. Prescriptions and regulations of narcotics
3. Various dosage forms (solutions, suspensions, emulsions, ointments, solid dosage forms
etc.), their preparation.
4. Practising of the pharmaceutical technological manipulations, procedures etc.
5. Aseptic production of medicaments. Main technological steps.
6. Guidelines for the preparation of incompatible drugs. Preparation of these medicaments.
### STUDY PROGRAMME

#### Fourth Year

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* 2nd, 3rd and 4th year Pharmacy students of 2008/09 have to complete the subject in the 4th year (second semester) of their studies. Students of the 1st year study the program in the first year second semester of 2008/09.

** Obligatory elective

Compulsory summer practice: 4 weeks’ (140 hours) practical training in a community/hospital/institute pharmacy or laboratory.
## Faculty of Pharmacy 4th year

### 7th semester

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**Faculty of Pharmacy 4th year**

**8th semester**

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*C-Credit, L-Lecture, P-Practice
LIST OF TEXTBOOKS

5. Z. Vincze: Pharmacy Administration. Lecture notes.

Recommended textbooks:

PHARMACEUTICAL CHEMISTRY
Director: Prof. Dr. Béla NoszáI
Tutor: Dr. Miklós Józan

First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (2 hours per week)</th>
<th>Practicals (5 hours per week)</th>
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<tbody>
<tr>
<td>1</td>
<td>Antibiotics I.</td>
<td>Equipping, identification</td>
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<td>Anticancer agents</td>
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<td>8</td>
<td>Antiviral agents</td>
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<td>9</td>
<td>Lipophilicity in drug research</td>
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<td>10</td>
<td>Rational methods of drug design I.</td>
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<td>14</td>
<td>Antihistamines</td>
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</table>

PHARMACEUTICAL TECHNOLOGY
Department of Pharmaceutics
Director: Prof. Dr. Imre Klebovich
Tutor: Dr. István Antal

First Semester

Lectures
Scope of industrial pharmaceutical technology. History and development.
Aspects of the pharmaceutical development. Preformulation studies.
Applying principles of chemical engineering for the manufacturing of pharmaceutical preparations.
Critical manufacturing parameters and principles of scaling up.
Requirements and conditions for manufacturing (Good Manufacturing Practice)
Quality assurance and manufacturing. Safety regulations.
Validation. Concepts of the statistical process control.
Basic procedures: comminution, powdering, sieving.
Basic procedures: separation, filtering, settling, extraction.
Basic procedures: homogenization, dispersing, distillation, evaporation.
Basic procedures: fluidization.
Basic procedures: drying.
Basic procedures: freeze-drying.

SEMMELWEIS UNIVERSITY / FACULTY OF PHARMACY
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 Wieger’s tube.

Second Semester

Lectures
Physical chemistry for solid dosage forms.
Characterization of particle systems. Powder rheology.
Granules and granulation.
Pellets and pelletization.
Capsules and microcapsules.
The tablet compression process.
Tablets and their characteristics. Testing tablets.
Manufacturing methods and excipients for tablets.
Coated dosage forms and the coating procedure. Coating materials.
Traditional sugar coating and film-coating. Solvent-free coating.
Dosage form design: modified drug release and prolonged action.
Dosage form design: improving bioavailability and enhancement of absorption.
Modern dosage forms: concepts of the therapeutic systems.
Oral preparations with modified release.
Locally applied therapeutic systems.
Transdermal drug delivery systems.
Alternative routes of drug administration.
Colloidal drug delivery systems.
Micro- and nanofabrication.
Molecular pharmaceutics.
Technological aspects of genomics and biopharmaceuticals.
Technological aspects of veterinary drug delivery.
Innovation and the pharmaceutical technology. Generics and super generics.

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-oxybenzoate and macromolecules by dynamic dialysis.
Formulation of KCl prolonged release capsules and their dissolution test.
Dissolution test of aspirin containing tablets with rotating basket method.
Study on impurities by HPLC, GC/MS and LC/MS analytical methods.
Preparation of oxytetracycline containing microcapsules.
Testing dissolution profile of coated pellets.

Physical laboratory
Slipping-and drop point determination of ointment and suppository bases.
Study on drug release of suppositories.
Investigation of compression strength of suppositories.
Study of disintegration of suppositories.
Congealing-and softening point determination of ointment and suppository bases
Penetrometric test of ointments.
Study on the rheological behaviour of ointments with rotational viscometer.
Examination of drug distribution in suspension type suppositories.
Determination of the adsorptive surface of medicinal charcoal.
Study of polymorphism.
Determination of particle size and particle size distribution by sieve analysis.
Investigation of flow properties and real density of granules.
Investigation of disintegration of tablets and capsules.
PHARMACOGNOSY

Director: Prof. Dr. Éva Szőke
Tutor: Dr. Andrea Balázs

First Semester

Lectures (2 hours per week)


Practicals (4 hours per week)

Essential oil containing drugs (Lamiaceae, Asteraceae, Apiaceae)
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: Dr. Romána Zelkó
Tutor: Dr. Ágnes Meszáros

4th year term 2

Lecture

Objectives and research methods of pharmacy administration
European Pharmacopoeia, Ph.Hg. VIII, FoNo VII.
Managing health care
Financial pressures and human resource management
Resource allocation in health care
Managing quality in health care
Quality systems and total quality management
Good Clinical Practice (GCP)
European marketing authorisation procedures
The registration dossier
Legal regulations in health care
Health promotion
Good Pharmacy Practice (GPP)
International pharmaceutical organisations
Pharmaceutical ethics
BASIC MEDICAL PATHOPHYSIOLOGY
Institute of Pharmacodynamics
Course Director and Tutor: Prof. Dr. Kornélia Tekes

First Semester

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

Second Semester

Gastrointestinal disorders I
Gastrointestinal disorders II
Gastrointestinal disorders III
Respiratory diseases I
Respiratory diseases II
Genitourinary disorders
Infectious disorders I
Infectious disorders II
Ophthalmologic disorders I
Ophthalmologic disorders II, Ear disorders
Endocrine and metabolic disorders I
Endocrine and metabolic disorders II
Musculoskeletal disorders
Immunologic disorders, Oncologic disorders
Dermatologic disorders, Consultation
PUBLIC HEALTH
Tutor: Dr. András Terebessy

Second Semester

**Lectures** (2 hours per week)

- The development and role of public health in medicine. Basic principles of epidemiology and demography.
- Global situation of communicable diseases in the world and in Hungary. Life expectancy, morbidity, mortality in Hungary.
- The occurrences of communicable diseases.
- Surveillance. New immunizations, chemoprophylaxis.
- Infections of Gastrointestinal and Respiratory Tract.
- Haematogen infections and infections of the skin.
- STD. AIDS/HIV. Viral hepatitis.
- New, emerging diseases. Health care in case of disasters.
- 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 PHARMACY
Department of Pharmaceutics
Head: 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 formulations, manufacturing and production, quality assurance and control.
Topics:

Profiles of the pharmaceutical industry, career for pharmacists.
Pharmaceutical technological aspects of product authorization.
Manufacturing in connection with quality assurance and quality control.
Validation of the manufacturing method.
In-process control methods of the manufacturing.
Critical parameters in the production.
Methods for statistical process control.
Current Good Manufacturing Practice.
Preformulation and formulation studies.
Optimization of dosage form composition.
Optimization of manufacturing methods.
Comparison of scaling-up methods.

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.
8. Control of medicines and raw materials in the pharmacy.
   Administration in the pharmacy.
STUDY PROGRAMME

Fifth Year

First Semester (12 weeks)

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<th>Course</th>
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<th>Practicals</th>
<th>Credit</th>
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* 5th year Pharmacy students of 2008/2009 have already completed the subject in the 3rd year of their studies. First students of the actual 4th year will study the course according to the above study program in the first semester of the 2009/2010 academic year.

COMPULSORY PRACTICAL TRAINING

Autumn examination period for 4th year pharmacy students is from May 18, 2008 to July 10, 2008. 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; 8 + 16 credits).

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 1, 2008 to September 26, 2008.

   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 29, 2008 to December 19, 2008.

Program in the 10th Semester:

4. Second part of the practical training (4 months/640 hours) has to be done in a public pharmacy and in a hospital pharmacy (4 weeks at the same place) from February 2, 2009 to May 22, 2009.

5. The deadline of the defense of the diploma work – for 15 credits – is March 25, 2009.

LIST OF TEXTBOOKS

2. Z. Vincze: Pharmacy Administration, Lecture Administration.

Recommended textbooks:

**CLINICAL PHARMACY**
Faculty of Pharmacy  
University Pharmacy Department o Pharmacy Administration  
Director: 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.

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**PHARMACY ADMINISTRATION**
Faculty of Pharmacy
University Pharmacy Department of Pharmacy Administration
Director: **Dr. Romána Zelkó**
Tutor: **Dr. Ágnes Mézsáros**

**5th year term 1**

**Lectures**
1. Dispensing in Pharmacy
2. Reimbursement systems
3. RCT and clinical trials
4. Evidence Based Pharmacy
5. Pharmacoeconomics 1.
6. Pharmacoeconomics 2.
7. Quality of life analysis
8. Pharmaceutical research and development, Pharmaceutical industry
9. Good Manufacturing Practice (GMP), Good Laboratory Practice (GLP)
10. Good Documentation Systems, QC
11. Trends in the international drug markets
12. Marketing of pharmaceuticals
Practical lessons
1. Hospital Pharmacy Management
2. Micromedix, drug information
3. Publication strategies
4. Medline 1
5. Medline 2, IPA
6. Drug information, Micromedix
7. Presentation concerning health promotion
8. Internet in Pharmacy, computer skills
9. Quality criteria of economic evaluations
10. Critical decision making
11. Supply of OTC medicines
12. Consultation, assessment

BASIC DRUG THERAPY

Course Director: Dr. Éva Szökő
Tutor: Dr. Tamás Tabi
Department of Pharmacodynamics

Lecture: 2
Practice: 2
Credit: 4
Exam: semi-final (oral)

First semester

Program:

Lectures:
Strategies of drug therapy. Evidence based medicine
Pharmacotherapy of heart failure
Pharmacotherapy of hypertension
Pain management
Cancer chemotherapy: colorectal and breast cancer
Allergic disorders, therapy of dermatitis
Drug therapy of rheumatoid arthritis, back pain and sport injuries
Treatment of inflammatory bowel diseases
Drug abuse
Contraception, drug therapy during pregnancy
Pharmacotherapy of osteoporosis
Treatment of urology disorders (incontinence, erectile dysfunction, benign prostate hyperplasia)

Seminars:
Chemotherapy of common respiratory and urinary tract infections
Therapy of ischemic heart disease and myocardial infarction
Drug therapy of venous disorders
Treatment of peptic ulcer disease and gastroesophageal reflux disease
Therapy of diarrhea, constipation and irritable bowel syndrome
Therapy of common skin disorders (acne, fungal skin infections)
Therapy of allergic rhinitis
Treatment of bronchial asthma and chronic obstructive pulmonary disease
Drug therapy of anxiety and sleeping disorders
Therapy of alcohol abuse
Treatment of nausea and vomiting
Therapy of neurological disorders (Parkinson’s disease and schizophrenia)

**FACULTATIVE SUBJECTS**

**PHYTOCHEMISTRY**
Institute of Pharmacognosy

The aim of this subject is to introduce the pharmacy students interested in crude drug researches and knowledges deeper into phytochemistry. It is a laboratory practice completed with some theoretical lectures. Learning this theses, the students obtain an expertness in the qualification and standardisation of crude drugs and herbal remedies, as well as in discovery of biologically active substances from them, using different isolation methods and chromatographic (TLC, GC, HPLC) techniques, photometry or other equipment. They acquire the identification and characterisation of the most important substances and attain the mode of the scientific research work in this field.

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

Chromatography
Thin-layer chromatography (theory and practice) 4 hours
Gas chromatography (theory and practice) 3 hours
High pressure liquid chromatography 5 hours
(The theory and practice)

Spectroscopy
UV and visible spectrophotometry 9 hours
Fluorimetry 3 hours
NMR spectroscopy 6 hours
Mass spectrometry 3 hours
Infrared spectroscopy 3 hours

The course is given by teachers of the Institute of Pharmaceutical Chemistry and well-known researchers of academical institutes and the pharmaceutical industry.
The subject is offered to students who are interested in the pharmaceutical analysis. It is essential in the fields of the drug control, laboratory diagnostics, phytochemistry and pharmacokinetics.
The chromatographical as well as the spectroscopical lectures built on attained basis are also dealing with the up-to-date problems and statements of the research work.
The course is started only if candidates number at least four or five.

PHYTOTHERAPY
Institute of Pharmacognosy

1. Cardiac and cardiotonic natural products
   Vasodilators.
2. Plant preparations for troubles of memory, equilibrium and auditory disturbance.
   The horse-chest, its preparations and effectivites.
3. Oxy- and methoxycumarines in medical plants.
   The occurrence of rutin and diosmine.
4. The bitter principals.
   The appetiser preparations.
5. The essential oils.
   Procyanidine crude drugs and preparations.
6. The liver therapy (natural products and medical plants).
   Chloretics and cholagogues 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.
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10 The Kneipp cures and their possibilities.
    Gerontology.
11 Antitussives, expectorants and their application. Antiasthmatics.
    Treatment of rheumatism.
12 Phytopharmacy in the therapy of psoriasis. Unclean skin and eczema.
    Immunostimulant 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. András Jávor
Tutor: Dr. Mariann Szabó Dinya

2 hours/week

THEMES
Statistics in drug development

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<table>
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<tbody>
<tr>
<td>1</td>
<td>Elements of SPSS program: interactive means, data matrix, windows</td>
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<td>2</td>
<td>Command of Edit menu in the SPSS program: file menu, edit menu, view menu, data menu, transform menu, graphs menu, utilities menu, help menu</td>
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<td>3</td>
<td>Mathematical Statistical Principles: descriptive statistics, hypothesis theorem</td>
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<td>4</td>
<td>Deviation analysis: ANOVA methods (Student’s test, Fisher’s dissociation, one way and multiple-way ANOVA designs)</td>
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<tr>
<td>5</td>
<td>Regression analysis: correlation coefficient, one and multiple variable regression models, GLM models, logistic model</td>
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<td>6</td>
<td>Taxonomy: clusters, factorial analysis</td>
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<td>7</td>
<td>Final test: solution of data processing problem</td>
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BIOORGANIC CHEMISTRY
Institute of Organic Chemistry

Organic compounds are produced by nature in inexhaustible richness. One of the basic sources of therapeutically useful compounds is the molecular storage of the pharmacy of nature. Natural products are generally environment friendly. Their chemistry is in rapid development in our days, too.

What are the most important steps of molecular evolution in the cosmos and on our Earth? What is the origin of the chirality of life? How can natural products be isolated from the sources? How can their structure be elucidated? How can the ingenious synthetic methods of nature be imitated in laboratory? How can the chirality of natural products be transferred to synthetic drug molecules? How can the complete base sequence of the human genom be determined? These are some questions of the many others, which are tried to be answered in the special collegium.
Programme

1. Isolation of natural products (e.g., iridoids, peptides).
3. Application of NMR spectroscopy for the stereostructure of organic micromolecules (e.g., alkaloids, iridoids).
4. Sequence determination of natural polymers (polypeptides, polynucleotides, e.g., the human genom).
5. The role of the isoprene unit in the construction of terpenes carotenoids and steroids.
6. Biomimetic transformation in the chemistry of iridoid compounds.
7. Chemistry of alkaloids derived from the coupling of biogenic amines (phenylethylamine and tryptamine) with secoliganin.
8. Total synthesis of natural products (e.g., vitamin B12, gingkolide).
10. Total synthesis of saccharides, sascharides in total synthesis.

BIOINORGANIC CHEMISTRY

Institute of Inorganic Chemistry (ELTE)

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

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

In order to understand all aspects of the material discussed in the course a brief summary is given on metal coordination compounds: on their stereochemistry, equilibria and kinetics.

A rather fascinating problem is how certain metal ions have been selected during a long evolutionary process for biological purposes, and how the various metal containing systems developed due to the change of the geoenvironment.

The biosystems take up metals and non-metals from the geosphere. The entry of an element into the living system and its incorporation into a specific site of a biomolecule is a multistep process controlled both by thermodynamic and kinetic factors. This will be demonstrated on many examples including metal ions, anions, and neutral molecules.

In the following topics the roles of bioessential metals are dealt with. Many physiological phenomena are connected to the biochemistry of sodium, potassium, magnesium, and calcium, e.g., the conduction of nerve impulses, muscle contraction, and blood clotting.
Zinc metalloenzymes are most abundant in the living organism and catalyze a large number of 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 deseases (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 rheumathoid arthritis.

Metal ion toxicity, an increasing hazard due to the contaminated environment, and chelate therapy are the topics that also deserve attention.

A look into the future closes the course.

**BIOTECHNOLOGY**

Department of Plant Anatomy (ELTE)

**Topics**

1. **Introduction to biotechnology**

2. **Applied genetics**

3. **Introduction to genetic engineering**
   - The emergence of recombinant DNA technology. Regulation and control of recombinant DNA experimentation. Basic recombinant DNA techniques. Restriction endonucleases and other DNA and RNA modification enzymes.

4. **Gene cloning**

5. **Expression of foreign DNA in bacteria**

6. **Cloning in higher organisms**

7. **Application of molecular biology in medicine**
   - Diagnosis of genetic disorders. DNA fingerprinting. Case applications.

8. **Genetic engineering and the pharmaceutical industry**

9. **Fermentation technology**

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10. Enzyme technology

11. Biosensors
   Principle and structure of biosensors. Application in clinical chemistry and medicine. Application in fermentation industries.

PHYSICAL ORGANIC CHEMISTRY
Institute of Organic Chemistry

The number of registered organic compounds is well over 15 million. Innumerable basic reactions contact them. How can we find an order in this jungle of compounds and cavalcade of reactions? How can the reactions be oriented? How can they be used for synthesis of drugs and many other practically important compounds (polymers, dyestuffs, etc.)? How do energy changes direct organic reactions? How can we control the factors influencing them? Organic reactions take place in the interaction of atomic and molecular orbitals. These changes are the molecular base of life, too. Is it possible to get an insight into them by simple mathematical methods? All these questions concern physical organic chemistry, i.e. the study of organic reaction mechanism.

Programme
1. Systematics of organic reaction mechanism according to the notation system of IUPAC.
2. The basic concepts and applications of perturbational molecular orbital (PMO) method for interpretation of reaction mechanism.
3. Energetics or organic reactions.
4. Experimental methods for investigation of reaction mechanism.
5. Factors which influence the reaction (reagents, concentration, solvent, catalyst, temperature, etc.).
6. Analysis of the basic organic reaction types on selected examples.
7. Symmetry principles in organic reactions.
8. Orbital interactions as the molecular base of life processes.

COMPUTATIONAL CHEMISTRY AND QSAR METHODS
Institute of Organic Chemistry

1. Computational chemistry and molecular modeling: topics, scope and limits.
2. Quantum chemistry: basic principles and methods.
3. Molecular mechanics and dynamics.
5. Secondary interactions: molecular basis of receptor-ligand interactions.
6. QSAR methods: prediction of biological activity.
7. Applications and practice.

ENVIRONMENT PROTECTION – ECOLOGY
Institute of Public Health

“... One of the fundamental human rights is to live in a healthy environment appropriate to the dignity of man ... But the man is responsible for this environment not only to the contemporary society but to the rising generations too…”

(Proclamation of the UNO conference on Environmental Protection, Stockholm, 16. June, 1972.)

Aim of the training:
Teaching of general and profession-orientated subjects of environment protection based on the studies of human ecology and environmental hygiene/epidemiology, which are obligatory for all students in the course of Hygiene and Epidemiology in the first semester of the fourth study-year.

PROGRAMME
A) General relations
I Environmental conditions of living, Biosphere. Adaptation to the environment.
   Self regulating systems in (global and local) ecosystems. “Nourishment chains” (systems) – ability for maintaining.
   The “environment” as a unified system.
II Regenerating and non-regenerating resources for the humans (thesis of the “Roman Club”).
   Influences of human activities on biogeochemical circulation.
   Anthropogenic pollution of the environment – indirect and direct dangers.
   Possibilities of protection: environment – spare technological procedures; biodegradability; technical development; waste materials: reduction of its quantity, reutilization, neutralization of toxic and radioactive materials.
III Primary prevention of actual environmental damages, hygienic standardization.

B) Professional knowledge
I Environmental pollution due to sanitary activities – prophylaxis, protection.
II Environmental pollution due to pharmaceutical activities-prophylaxis, protection:
   a) production and preparation of drugs biotechnology,
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 (Formule Normales)
Pharmaceutical substances, synonyms.
Dose calculations.
Functional excipients in the formulation.
Practical problems of incompatibilities in combined preparations.
PHARMACOINFORMATICS
Director: Dr. András Jávor
3 hours/week

1. Aims:
to present state of art computing and telecommunication techniques including the INTERNET and
to illustrate how these techniques are applied in drug industry, pharmacies and clinical patent
management.
to discuss various data base and knowledge base management systems, health care information
systems, decision support tools for pharmacotherapeutic problem solving, educational programs
and telemedicine techniques as they are applied in drug research and development, and in
evidence based pharmacotherapy
to teach pharmacy students how to rely on informatics tools when making cost effective decisions
and trying to improve patient compliance.

2. Organization of the course:
The course consists of lectures and practices. Lectures provide theoretical foundations as well as
examples of the use of various technologies and methods in research and pharmacy practice.
Practices allow students to work with different medical databases, information systems, and
decision support tools that address various drug related problems

<table>
<thead>
<tr>
<th>Lectures</th>
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<th>Hour</th>
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<tr>
<td>1. MEDICAL INFORMATICS AS A DISCIPLINE</td>
<td>HEALTH INFORMATICS IN THE 21st CENTURY</td>
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<td>Dr. András Jávor</td>
<td>by John Mantas, Document 506</td>
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<td>GLOBAL INFORMATION SOCIETY AND</td>
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<td>HEALTHCARE by Jean ROBERTS Document 508</td>
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<tr>
<td>2. DATA TYPES, CLINICAL DATA-BASES, DATA BASE MODELS, AND MEDICAL</td>
<td>TERMING, CODING AND GROUPING SYSTEMS IN HEALTH</td>
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<td>IMAGES</td>
<td>by Rudiger KLAR, Document 416</td>
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<td>Dr. György Suján</td>
<td>DATABASES, SPREADSHEETS AND WORD PROCESSING IN</td>
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<td>HEALTH by Francesco PINGRORLI, Luisa PORTONI</td>
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<td>Document 401</td>
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<td>3. THE THERAPEUTIC PROCESS AND THE MEDICAL RECORD</td>
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<td>Dr. András Jávor</td>
<td>by Jos AARTS Document 407</td>
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<tr>
<td>4. HEALTH CARE INFORMATION SYSTEMS</td>
<td>OPERATIONAL USES OF HOSPITAL INFORMATION</td>
<td>2</td>
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<tr>
<td>Dr. András Jávor</td>
<td>SYSTEMS by Marie-Christine JAULENT, Document</td>
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<td></td>
<td>405 ARCHITECTURES IN HEALTH by Sergio TORRES,</td>
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<td></td>
<td>Jose TORRES Document 422</td>
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<tr>
<td>5. COMPUTER-BASED SUPPORT FOR PHARMACISTS (AN OVERVIEW)</td>
<td>EH Shortliffe and LE Perrault Medical Informatics,</td>
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<tr>
<td>Dr. Tibor Deutsch</td>
<td>Reading MA Addison Wesley, 1990</td>
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<tr>
<td>6. REPRESENTING DRUG-RELATED KNOWLEDGE (classification of drugs,</td>
<td>EH Shortliffe and LE Perrault Medical Informatics,</td>
<td>2</td>
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<tr>
<td>describing drug properties, drug information systems, examples</td>
<td>Reading MA Addison Wesley, 1990</td>
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<tr>
<td>Dr. Tibor Deutsch</td>
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</tbody>
</table>
7. HOSPITAL PHARMACY AND DRUG-USE MONITORING SYSTEMS (informatics of public and hospital pharmacies, patient education)
   Dr. Tibor Deutsch
   EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990
   Hour

8. INFORMATION RESOURCES AND THE INTERNET, KNOWLEDGE COUPLES, EVIDENCE-BASED DRUG THERAPY (pharmacoeconomics and outcome research planning, therapeutic protocols)
   Dr. Tibor Deutsch
   REFERENCE SOURCES IN HEALTH by Jean ROBERTS, UK Document 412 ELECTRONIC COMMUNICATIONS IN HEALTH by Enrique GOMEZ AGUILERA, Francisco DEL POZO GUERRERO, Teresa ARREDONDO WALDMeyer, Andres MARTINEZ FERNANDEZ, Document 403
   Hour

9. INFORMATICS OF DRUG PRESCRIPTION
   Dr. Tibor Deutsch
   EXPERT SYSTEMS AND ARTIFICIAL INTELLIGENCE IN HEALTH by Jana ZVAROVA, Jan TALMON Document 424 COMPUTER-AIDED DIAGNOSTIC SUPPORT by Ann OOSTENDORP, Document 408
   Hour

10. COMPUTER SUPPORT FOR PLANNING DRUG THERAPY (Watchdog, focusing, critiquing and advisory systems, patient-centred pharmacotherapy), PLANNING DRUG DOSAGE
    Dr. Tibor Deutsch
    EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990
    Van Bemmel and M.Musen: Handbook of Medical Informatics, Springer, 197
    (www.mihandbook.stanford.edu)
    Hour

Total: 20

PRACTICES:

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

Total: 10
EVALUATION OF PROGRESS

Grading system

a) Five-scale

5 (jeles) Excellent
4 (jó) Good
3 (közepes) Fair
2 (elégséges) Passing
1 (elégtelen) Failure

b) Three-scale

igen szorgalmas Excellent
szorgalmas Satisfactory
nem felelt meg Unsatisfactory

Types of evaluation

1. Practical course grade (gyakorlati jegy) (according to either the 5-scale or the 3-scale grading system)
2. Semi-final examination (kollokvium) Evaluation of a one-semester subject matter (1–5 grading system)
3. Final examination (szigorlat) Evaluation of the whole subject matter (1–5 grading system)
4. Obligatory practice at hospital (3-scale grading system)

Average Results

When the student has taken all the compulsory examinations and fulfilled every other obligation during the examination period, the semester will be validated in the student’s lecture book by the Dean’s signature.

The student’s average results are:

<table>
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<tr>
<th>Category</th>
<th>Description</th>
<th>Grade Range</th>
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<tbody>
<tr>
<td>Outstanding</td>
<td>(kitûnõ)</td>
<td>if the average is 5.00</td>
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<tr>
<td>Excellent</td>
<td>(jeles)</td>
<td>if the average is 4.51–4.99</td>
</tr>
<tr>
<td>Good</td>
<td>(jó)</td>
<td>if the average is 3.51–4.50</td>
</tr>
<tr>
<td>Fair</td>
<td>(közepes)</td>
<td>if the average is 2.51–3.50</td>
</tr>
<tr>
<td>Passing</td>
<td>(elégséges)</td>
<td>if the average is 2.00–2.50</td>
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</table>
EXEMPTION

Exemption from examinations can be granted on the basis of the student’s previous documented studies and the additional examinations prescribed by the Departments of Semmelweis University. The student has to hand in all the documents (study programs, examination grades) at the Department concerned. The exemption is granted by the director of the Foreign Language Programs on the basis of the Department’s opinion.

Application deadline: October 1st – first semester
March 1st – second semester

No reduction of tuition fee is granted in case of exemptions.
DIPLOMA WORK (Thesis)

Faculty of Medicine

1. In all kinds of programs the student is required to prepare a thesis for the diploma. The aim of the thesis 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 thesis 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 thesis 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 thesis:
The length of the thesis 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 thesis 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 thesis and the name/workplace of the consultant. The student may write the thesis 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 thesis so prepared will be submitted at the department by 15 January in 2 copies.

7. The thesis 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 thesis (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 thesis 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 thesis may only be corrected once.
9. The head of the unit hands over a copy of the thesis after the defense and the other copy along with minutes of the defense will be kept by the unit. The thesis 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 thesis may be waived by the dean or the director upon the recommendation of the unit for the following students:
    – For students that prepared a rector paper as one of a maximum of two authors and receive a first or second prize,
    – 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 thesis 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 form 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” 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 (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 markbook 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.; M.Sc.)

1. The credit value of subjects accepted by the university through a credit transfer process or the credit value of a diploma issued by another institute of higher education may not exceed 50% of the credit value required by the qualification requirements.
2. A condition of issuing the diploma is a Hungarian basic level state language exam type C (or an equivalent exam).
3. The rector of the university may transfer the right of signing the degree on the relevant Dean of the Faculty.
5. The diploma must indicate the grade of the diploma.
7. The Appendix of the diploma is the obligation of the relevant Dean’s Office.
8. The basis of the grade is the general cumulated and weighted average of grades rounded to the hundredth.

In case of a five-scale evaluation:
4.51-5.00: excellent
3.51-4.50: good
2.51-3.50: fair
2.00-2.50: pass

In case of a three-scale evaluation:
4.51-5.00: summa cum laude
3.51-4.50: cum laude
2.00-3.50: rite
The relevant Faculty’s curriculum defines the list of subjects not ending with a comprehensive exam to be taken into consideration when grading the diploma.

9. The method of calculation:

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

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

10. By request of the student (and in case the related costs are paid) the university issues a more elegant honorary diploma signed by the rector, the dean and the head of the final examination committee.
COST OF THE PROGRAM FOR TWO SEMESTERS

Tuition fee for the 2008/2009 academic year

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>USD 6,100</td>
<td></td>
</tr>
<tr>
<td>Dentistry</td>
<td>USD 6,600</td>
<td>USD 6,750</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>USD 5,400</td>
<td>USD 5,550</td>
</tr>
</tbody>
</table>

The first year tuition fee (+ the registration fee – USD 150 payable in the 1st semester) should be paid in two installments (unless the Hungarian Visa regulations have different conditions):

- Within two weeks after receipt of the Letter of Acceptance
  - Medicine USD 6,250
  - Dentistry USD 6,750
  - Pharmacy USD 5,550

- Before February 1
  - Medicine USD 6,100
  - Dentistry USD 6,600
  - Pharmacy USD 5,400

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, 2008.)

Dentistry students pay additional material fee,

- years 3, 4 & 5: USD 2,200
- (first semester: USD 1,100)
- (second semester: USD 1,100)

Please note that this fee is subject to change!

Transfer students pay the highest tuition fee in force in the actual academic year and pay the same sum during their studies.

All faculties:
Compulsory summer practice when in Hungary: USD 330/month.
At the Faculty of Dentistry: HUF 31,000/week

International Studies
IBAN: HU 86-1030-0002-5011-7173-4101-4014
MKB Bank
H-1051 Budapest, Szent István tér 11, Hungary
(main branch: H-1056 Budapest, Váci u. 38)
Swift code: MKKBHUHB
REDUCTION OF TUITION FEE

Students may apply for a reduction after completing the first academic year if, from the end of the second semester, all their semester average (the average of the grades) results were continuously above 4.51. The reduction is 10% of the tuition fee with average results above 4.51 and 15% with average result of 5.00.

Students may apply for a reduction after completing each semester on condition they meet the above requirements, and in case they have completed all compulsory semester subjects.

Students eligible for the tuition fee reduction pay with 10-15% reduced tuition fee in the next semester.

Application deadlines:
- October 15th – first semester
- March 1st – second semester

Students taking only one course (“FM” course) or one exam (“CV” exam) in a semester pay 50% of their semester tuition fee.

No reduction is given in case of exemption from one or more subjects.

No reduction is given during retaken semesters on account of subjects already completed.

Tuition fee for the 6th year:

1. In case the student completes more than the compulsory 6 weeks of clinical rotations at Semmelweis University, he/she has to pay 100% of the tuition fee valid in that academic year.
2. In case the student completes the 4 weeks compulsory Neurology rotation and the 2 weeks compulsory Pediatrics rotation at Semmelweis University and completes the remaining of the rotations abroad, he/she has to pay 80% of the tuition fee valid in that academic year. The relevant acceptance letters should be handed in latest until December 15, 2008. 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.
EXTRA CURRICULAR FEES

1. First retake of a semi-final or final examination free
   Second and third retakes 1,500 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
   (also the second and third retakes) 2,500 HUF
   Retake of the defense of the diploma work 6,400 HUF
   Second and third retakes double price
4. Default charges: a) delay of registration (when the tuition fee is paid) 5,000 HUF
   – read more details about the registration requirements below under title “Important”
   b) failing to apply for a diploma work thesis until the deadline 800 HUF
   c) failing to report the compulsory elective subject 800 HUF
5. Failing to fulfill the obligations listed under point 4.b and 4.c after the first notice 2,000 HUF
6. Failing to sign up for subjects/courses in the Neptun System until the beginning of the semester 2,000 HUF/subject
7. Copy of the diploma (per number of copies and languages) 4,000 HUF/each
8. Copy of lecture book (index) 10,000 HUF
9. Official transcript 2,000 HUF/each
   (the old type: 500 HUF/page)
10. Failing to keep any deadlines: 5,000 HUF

Important

Registration requirements

Please note that the date of registration for the first semester is between 1–5 September, 2008
and for the second semester is between 26–30 January, 2009. 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 12 September, 2008 and 6 February, 2009 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 5 September, 2008 and 30 January, 2009, but
you have already paid your tuition fee, you will have to pay HUF 5,000 for late registration.

All costs listed are subject to change
EXTRA CURRICULAR FEES
AFTER GRADUATION

1. Diploma
duplicates (copies) 4,000 HUF/each

2. Diploma supplement
first copy free
second or more for students graduating from Medicine 3,500 HUF
second or more for students graduating from Dentistry and Pharmacy 3,000 HUF

3. List of final examination grades
first copy 1,500 HUF
second or more 1,000 HUF/each

4. Other certificate(s), letter of recommendation
first copy 2,500 HUF
second or more 1,000 HUF/each

5. Postal charges
postal order available at the secretariat

All costs listed are subject to change.
THE UNION OF RESEARCH STUDENTS

General Information

The student applying for membership in the Union of Research Students is supposed to inform the tutor/student advisor of the department. It is the department head’s duty to report on the new members to the Council of the Union of Research Students.

Those students can apply for a membership,
– who have special interest in the given field,
– who have good or excellent grade in the related subject and whose average result is at least good,
– whose conduct is good,
– who have taken a course in the given field.

Those who have not taken a course still may become members with the department head’s permission.

The membership of the student is to be suspended if the department head or the Union of Research Students propose so, based on the following:
– his/her average result became strikingly worse or fails the course,
– he/she is negligent in his/her work,
– his/her conduct does not fulfill the Union of Research Student’s requirements.

A student himself/herself can initiate the suspension of membership. The Council of the Union of Research Students needs to be informed about the suspension.
FACULTY OF HEALTH SCIENCES
Brief History of the Faculty of Health Sciences

The Faculty of Health Sciences was founded in 1975 with the aim of training highly qualified professionals for Hungarian health care. The Faculty started working with 7 departments, 58 lecturers and 465 students. 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 18 departments, with about 200 highly-qualified lecturers and 3000 students.

The Hungarian Accreditation Committee (HAC) qualified the Optometrist, Physiotherapist and Dietician departments as ones that are doing training at international level. (According to the report of the special committee of the HAC in 2003, all the programs of the Faculty meet the prescribed educational requirements.)

It was an important event in the life of the Faculty that in 2000 it became an integrated part of the famous and well-known Semmelweis University. Furthermore, it can also be regarded as a step of historical significance that the dismemberment of the Faculty came to an end three years ago. Until then, teaching had been done in three different places, but from the beginning of 2004 on, all educational and organizational units of the Faculty can be found in one place, in the building of the former Pajor Sanatorium at 17 Vas street.

Our latest development was the introduction of courses in English and German. Students of Physiotherapy and Nursing can study in English, while students of Midwifery can take part in the German training.
Government, Dean’s Office, Staff

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Home Page: http://www.se-etk.hu

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Vice Deans  Assoc. Prof. István Vingender Ph.D. - Educational Affairs
Prof. István Szabolcs, M.D., Ph.D., D.Sc. – Scientific Affairs

Directors of the Programmes in English
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Katalin Zöldi Kovács Phone +36-1: 486-4892 zoldikovacsik@se-etk.hu
SCHEDULE FOR THE ACADEMIC YEAR 2008/2009

Autumn semester

Registration for the 1st year students  
for 2nd 3rd and 4th year students  
Opening Ceremony  
First day of the term  
Last day of the term  
Examination period  
Extension period (only for re-examination)  
Final examination period  
National/Public holidays  

Spring semester

Registration  
First day of the term  
Last day of the term  
Spring holiday  
Examination period  
for graduating students  
for all other students  
Extension period (only for re-examination)  
Final examination period (March)  
Final examination period (June)  
National/Public holidays  


<table>
<thead>
<tr>
<th>Event</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration for the 1st year</td>
<td>August 28, 2008</td>
</tr>
<tr>
<td>students</td>
<td></td>
</tr>
<tr>
<td>for 2nd 3rd and 4th year students</td>
<td>September 1-12, 2008</td>
</tr>
<tr>
<td>Opening Ceremony</td>
<td>September 7, 2008</td>
</tr>
<tr>
<td>First day of the term</td>
<td>September 1, 2008</td>
</tr>
<tr>
<td>Last day of the term</td>
<td>December 12, 2008</td>
</tr>
<tr>
<td>Examination period</td>
<td>December 15, 2008 – January 23, 2009</td>
</tr>
<tr>
<td>Extension period (only for re-examination)</td>
<td>January 26 – January 30, 2009</td>
</tr>
<tr>
<td>Final examination period</td>
<td>October 13 – 18, 2008</td>
</tr>
<tr>
<td>National/Public holidays</td>
<td>October 23, 2008</td>
</tr>
<tr>
<td>Spring semester</td>
<td></td>
</tr>
<tr>
<td>Registration</td>
<td>February 2-13, 2009</td>
</tr>
<tr>
<td>First day of the term</td>
<td>February 2, 2009</td>
</tr>
<tr>
<td>Last day of the term</td>
<td>May 22, 2009</td>
</tr>
<tr>
<td>Spring holiday</td>
<td>April 14 – 17, 2009</td>
</tr>
<tr>
<td>Examination period</td>
<td></td>
</tr>
<tr>
<td>for graduating students</td>
<td>March 30 – May 8, 2009</td>
</tr>
<tr>
<td>for all other students</td>
<td>May 25 – July 3, 2009</td>
</tr>
<tr>
<td>Extension period (only for re-examination)</td>
<td>July 6-17, 2009</td>
</tr>
<tr>
<td>Final examination period (March)</td>
<td>February 23 – March 6, 2009</td>
</tr>
<tr>
<td>Oral part</td>
<td>March 9 – 20, 2009</td>
</tr>
<tr>
<td>Final examination period (June)</td>
<td>May 18 – 29, 2009</td>
</tr>
<tr>
<td>Oral part</td>
<td>June 1 - 12, 2009</td>
</tr>
<tr>
<td>National/Public holidays</td>
<td>March 15, 2009</td>
</tr>
<tr>
<td></td>
<td>April 13, 2009 (Easter Monday)</td>
</tr>
<tr>
<td></td>
<td>May 1, 2009</td>
</tr>
<tr>
<td></td>
<td>June 1, 2009 (Whit Monday)</td>
</tr>
</tbody>
</table>
Most important deadlines for students

Registration according to the academic calendar

Withdrawal of registration within a month after the beginning of the term
- Autumn semester: October 1, 2008
- Spring semester: March 2, 2009

Signing up for courses/subjects till the beginning of the 2nd week of the term
- Autumn semester: September 8, 2008
- Spring semester: February 9, 2009

Changing of courses/subjects till the end of the 2nd week of the term
- September 12, 2008
- February 13, 2009

Taking an exam in a subject studied longer than one semester according to permission during the last 3 weeks of the term
- Autumn semester: November 24 – December 12, 2008
- Spring semester: May 4 – 22, 2009

Getting a signature after term time till the end of the 2nd week of the exam period
- Autumn semester: December 23, 2008
- Spring semester: June 5, 2009

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 2 days (48 hours) before the actual date of the exam

Handing in the thesis and signing up for a final exam
- for final examination in October: August 21, 2008
- for final examination in March: January 8, 2009
- for final examination in June: April 2, 2009

Handing in requests to the Credit Committee
- for the spring semester of 2008/09: January 15, 2009
- for the autumn semester of 2009/10: July 17, 2009

Handing in requests to the Study Committee: the week following the examination period

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Paying the tuition fee till the end of the registration period

Students who pay the tuition fee within one week after the last day of the registration period (September 12, 2008 / February 13, 2009) have to pay a default charge, which is the counter value of USD 100 in HUF.

No payment will be accepted after September 19, 2008 / February 20, 2009. 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>Description</th>
<th>Fee (HUF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third or further retake of an examination</td>
<td>1,500</td>
</tr>
<tr>
<td>Signing up for a course for the third time</td>
<td>5,000</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>5,000</td>
</tr>
<tr>
<td>Retake of the final examination</td>
<td>5,000</td>
</tr>
<tr>
<td>Replica of the lecture book</td>
<td>5,000</td>
</tr>
<tr>
<td>Lost student card</td>
<td></td>
</tr>
<tr>
<td>first time</td>
<td>500</td>
</tr>
<tr>
<td>every other occasion</td>
<td>1,500</td>
</tr>
<tr>
<td>Official transcript of the grades</td>
<td>500 HUF/page</td>
</tr>
</tbody>
</table>

Information about the B.Sc. and M.Sc. programs

Hungary has joined the united higher educational area of Europe (based on the Bologna Declaration of 1999), and in accordance with this a new higher educational system was introduced at our Faculty in 2006. This system includes the following changes:

1. The Faculty of Health Sciences is part of Semmelweis University.
2. Qualification and Profession are closely related.
3. Higher Educational Vocational Training is part of the Faculty’s training programs, and progress into B.Sc. programs is guaranteed.
4. The length of study is set in credits:
   - B.Sc.: 180-240 ECTS
   - M.Sc.: 90-120 ECTS
5. B.Sc. programs can only be launched if there is a possibility of continuing them in an M.Sc. program, which is also possible in intra- or inter-institutional forms.
7. Issuing an EU Diploma Supplement.
In order to meet the objectives set out in the Bologna Declaration, Semmelweis University Faculty of Health Sciences has restructured its training system. Programs leading to a Bachelor’s Degree are based on a one-year core curriculum, followed by three years of study in specialist programs (major). This grants students an additional year to select a specialist program (major). These are as follows:

1. **Specialty:** Nursing and Patient Care  
   **Specialized programs:** Nurse (in English), Dietician, Physiotherapist (in English), Midwife (in English/German), Paramedic
2. **Specialty:** Health Care and Prevention  
   **Specialized programs:** Health Visitor, Public Health Inspector
3. **Specialty:** Medical Laboratory and Diagnostic Imaging Analyst  
   **Specialized programs:** Optometrist (in English), Medical Laboratory and Diagnostic Imaging Analyst

The training experience of 30 years and the valuable assets of the Faculty of Health Sciences have been incorporated in the new system.

Qualifications are defined in terms of learning outcomes and not the length of years. B.Sc. programs require the completion of 180 to 240 ECTS credits and can only be launched if there is a subsequent Master’s program. There is a possibility for students to proceed to graduate programs in inter- or intra-institutional forms.

M.Sc. programs require the completion of 90 to 120 ECTS credits.

Introducing the possibilities of a master training system (MA, M.Sc.) based on the undergraduate program to be launched and the introduction of the conditions of launching it in our institution.

The preparation of the M.Sc. training system has already begun in the form of supplementary university-level undergraduate programs. The present situation of this process is as follows:

- M.Sc. in Nursing and Patient Care (specialized in Nursing)
- M.Sc. in Health Care Education
- M.Sc. in Nutrition and Food Sciences
- M.Sc. in Public Health (specialized in Public Health)
- M.Sc. in Social Health Work

**Training offer**

**Within the Specialty of Nursing and Patient Care**
- Nurse (in English)
- Physiotherapist (in English)
- Midwife (in English and German)

**Within the Specialty of Medical Laboratory and Diagnostic Imaging Analyst**
- Optometrist (in English)

**Nursing partial training (full time) in English or Hungarian**
- Short courses (English)
- Preparatory course (English or Hungarian)
Nursing and Patient Care Programme

What is the aim of training?
We aim to train nurses and patient-care professionals who are able to participate with full responsibility, at all levels of social care, in the work related to prevention, medication, nursing care and rehabilitation—not necessarily belonging to the physician’s competence—relying on their knowledge about protecting the health of the individual, the family, the community and society and about restoring health in general. They are also expected to possess the knowledge to continue studies in the second cycle of training (at master’s level).

Length of study
8 terms, 240 credits

Degree
BSc (basic degree)

NURSE
Graduates in the specialist nursing programme are able to
– render help in patients using the services available to them in health and social care,
– explore the special needs of the sick person, make the nursing diagnosis and perform their tasks professionally on the basis of priorities,
– cooperate in planning, developing and implementing health care and social services,
– select models of nursing and apply them,
– explore information and resources necessary to perform the nursing process.

Qualification
Nurse and patient-care professional in the specialist Nursing Programme

Job opportunities
– primary care
– out-patient clinic network
– in-patient care
– visitor of surgeries, chemists and hospitals
– transplantation coordinator
– clinics
– hospitals

PHYSIOTHERAPIST
Graduates in the specialist Physiotherapy Programme are able to perform physiotherapy activity on their own on the basis of medical diagnosis in the field of prevention, medical treatment and rehabilitation:
– register the status of a locomotor disease and documentate it,
– make plans for physiotherapy and rehabilitation, implement rehabilitation programmes in various clinical areas,
– apply therapeutical procedures in the treatment of locomotor diseases (rheumatology, orthopedics, traumatology),
– apply the curative and preventive procedures in the treatment of cardiovascular diseases,
apply the curative procedures in the treatment of neurological diseases,
apply physiotherapy in other clinical areas such as oncology, psychiatry, obstetrics, gynaecology, general surgery.

Qualification
Nurse and patient-care professional in the specialist Physiotherapy Programme

Job opportunities
– hospitals, clinics (intensive care, acute and subacute units)
– out-patient clinics
– rehabilitation centres
– nursing and social institutions
– primary and home care
– special educational institutions
– hospice
– health care centres
– institutions concerned with health tourism
– sports centres

MIDWIFE

Graduates in the specialist Midwife Programme are able to
– conduct the process of delivery by: registering the data of the woman to deliver a child, preparing her for the delivery, noticing signs of delivery and documenting them, examining her externally and internally, making CTG and evaluating it, conducting the delivery on their own, giving local anaesthetic, performing episiotomy, protecting the perineum, examining the placenta, making sutures (ie. sewing up the wound), examining vital signs of the newborn child after birth, defining the Apgar scale, looking after and observing the newborn child after birth (postnatal & postoperative observation), recognising signs indicating complicated delivery, providing for the early direct relationship between mother and newborn baby, taking the newborn child to the neonatal unit,
– monitor mother and newborn child in childbed, look after them, help with breastfeeding,
– look after female patients,
– perform task of prenatal care, examine the psychic state and the environment of the expectant mother, prepare her for examinations, interventions, monitor and evaluate the vital signs of the foetus, recognise any sign of a complicated delivery, take the necessary steps in case it happens, prepare the mother-to-be for delivery and receiving her newborn baby and breastfeeding,
– perform general nursing tasks, meet the needs for hygiene, monitor the patient, evaluate parameters, insert and remove a bladder catheter, give irrigation, administer medicine enterally and parenterally.

Qualification
Nurse and patient-care professional in the specialist Midwife Programme

Job opportunities
– obstetric-gynaecological clinics
– obstetric-gynaecological wards in hospitals
– gynaecological specialist in out-patient clinics
– specialised out-patient clinics
– antenatal clinics
– private gynaecological clinics
Medical laboratory and diagnostic imaging analyst programme

What is the aim of training?
To train those health care professionals who give high priority to their knowledge of natural sciences, technology and information technology to be able to practise their profession. The specialists trained in this programme are able to perform and organise diagnostic imaging analytical or optometrist activity, direct the analytical work of image-based, radiological diagnostic units or optometrist laboratories and shops. They are skilled in using up-to-date methods of data processing and are experienced in practising economy. They have the necessary skills in the use of modern equipment and measurement technology, informatics and information technology in optometrist laboratories and in diagnostic imaging. Also they have the required skills to continue their studies in the master cycle.

Length of study
8 terms, 240 credits

Qualification
BSc (basic degree)

Optometrist

Graduates in the specialist Optometrist Programme are able to
– recognize and evaluate disorders of the eye, and disturbances of growth concerning the eye
– determine visual acuity objectively and subjectively, estimate refractive medium, refractive ability, errors of refraction, the way eye muscles function, the ability of heterophoria and convergence and examine binocular vision, examine the chamber of the eye, crystalline lens, vitreous humour and the eye fundus with the help of a slit lamp, estimate ocular tension
– prescribe the necessary lens or contact lenses after having done the appropriate examination to correct ocular refraction
– use their clinical and nursing knowledge during their daily activities
– actively participate in improving the culture of vision for the individuals, communities and the population
– conduct and evaluate screening tests
– conduct business or be engaged in commercial jobs relying on legal measures

Qualification
Clinical laboratory diagnostic imaging specialist with optometrist specialisation

Requirements for applicants
Optician qualification (employment is not a condition)

Recommended subject
Basics of optometry and its place in the health service system

Job opportunities
Those who complete this course can find employment in business as practicing optometrists. They are capable of starting an enterprise or running it. They can also find employment as optometrists working independently or working as eye specialist assistants or may be employed in eye diagnostic laboratories. They can successfully work in these positions relying on their knowledge of health science and clinical practice. As project and product managers, they can be engaged in trade and research in their field of specialisation.
Nursing partial training (full time) in English or Hungarian

Basic training
Duration: 3+1 years
Qualification: B.Sc. (basic degree) – EU diploma
In the frame of the partial training (3+1) students perform the first 3 years of their studies in the home institution, and the last 1 year in Hungary. Students successfully graduating from the program get a diploma accepted in the European Union.

Conditions of participating in the partial training:
– three successfully finished years of Nursing training;
– adequate level – at least intermediate – knowledge of English or Hungarian;
– students have to be able to accomplish the difference between the curricula of the two partner universities during the last 1 year.

Short-term courses (in English)

Duration: 50 hours
Its aim is that participants acquire and widen their special professional knowledge in different specialist fields (clinical subjects, health care management, environment-health etc.), and to continually enhance their expertise according to the prevailing demands of society. Participants successfully graduating from the programme receive a certificate.

Principal condition of participating in the courses:
– appropriate qualification in health care (BSc., MSc., PhD.)
– adequate – at least intermediate – level of English

Preparatory course (in English or in Hungarian)

Duration: 1 year
The aim of the course is to prepare applicants to successfully start their basic training in English or Hungarian. This program principally serves the raising of the level of the language knowledge of applicants; by providing intensive courses for them to reach the adequate knowledge of the language. It also includes professional preparation.

The programme of the preparatory course:
– intensive language course (English or Hungarian): 2 x 15 weeks, 20 hours/week (total 600 hours)
– professional preparation (Anatomy, Chemistry, Medical Latin, Study Methodology, Library): 3 weeks, 20 hours/week (total 60 hours)
Participants successfully graduating from the course can continue their studies in a basic training (B.Sc.) in the chosen language (English or Hungarian).
Possibilities of continuing studies after graduation

Those completing the basic programme can continue their studies in the master training system, which gives a possibility of specialising in the area of science chosen. We offer a range of further training specialist programmes which make it possible for students to establish their professional career. 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.
### Curriculum

Semmelweis University Specialty: nursing and patient care
Faculty of Health Sciences Full-time course

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Contact hours per semester</th>
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<td>Basics of Social Sciences</td>
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<td>Basics of Sociology</td>
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<td>Medical and Health Sociology</td>
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<td>Social Policy</td>
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<td>Introduction to Management</td>
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<tr>
<td>Health Care Management</td>
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<td>Basic Skills</td>
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<td>Safety at Work and Fire Prevention</td>
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<tr>
<td>Physical Education</td>
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Accepted by the Faculty Board with the number of regulation # 3/2007.ETK.KT. (May 24, 2007)
Modified by the Faculty Board with the number of regulation # 7/2008.ETK.KT. (March 13, 2008)
### CURRICULUM
(differentiated specialized material)

**Semmelweis University**

**Faculty of Health Sciences**

**Specialty: nursing and patient care**

**Specialist program: physiotherapist**

**Full-time course**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Contact hours per semester (theory + practice)</th>
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<th>Individual contact hours</th>
<th>Requirements</th>
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<tr>
<td></td>
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<td>V.</td>
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<tr>
<td>Psychology of the Sick</td>
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<tr>
<td>Health Pedagogy</td>
<td>15+15</td>
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<td>Basics of Physiotherapy</td>
<td>15+0</td>
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<td></td>
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<tr>
<td>Body Awareness</td>
<td>0+15</td>
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<td>Functional Analysis of the Musculoskeletal System</td>
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<td>Biomechanics</td>
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<td>Foreign Language for Health Care Purposes</td>
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### Basics of Physiotherapy Module

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### Basic Methods of Physiotherapy Module

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<td>120</td>
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<tr>
<td>Orthopedics</td>
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<td>30+0</td>
<td>60</td>
<td>120</td>
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<tr>
<td>Physiotherapy in Orthopedics</td>
<td>15+30</td>
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<tr>
<td>Traumatology</td>
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### Clinical Physiotherapy Module

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<tr>
<td>Internal Medicine</td>
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<td>120</td>
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<tr>
<td>Cardiopulmonary Physiotherapy</td>
<td>30+30</td>
<td></td>
<td>60</td>
<td>120</td>
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<tr>
<td>Orthopedics</td>
<td>30+0</td>
<td>30+0</td>
<td>60</td>
<td>120</td>
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<tr>
<td>Physiotherapy in Orthopedics</td>
<td>15+30</td>
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<tr>
<td>Traumatology</td>
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</table>
### Specialist program: physiotherapist

<table>
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<th>ECTS</th>
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<td>IV</td>
<td>V</td>
<td>VI</td>
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<tr>
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**Clinical Demonstration and Practice**

- **Cardiorespiratory Physiotherapy**: 0+60
- **Traumatological Physiotherapy**: 0+30
### Specialist program: physiotherapist

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Contact hours per semester (theory + practice)</th>
<th>Total contact hours</th>
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<td>V.</td>
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<td>Orthopedic Physiotherapy</td>
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<td>Pediatric Physiotherapy</td>
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<tr>
<td>Neurological Physiotherapy</td>
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**Rehabilitation Physiotherapy Module**

| Musculoskeletal Rehabilitation | 10+110 | 10 | 110 | 120 | 240 |     |       |       |     |        | VIII. 8 |
| Cardiopulmonary Rehabilitation | 10+80  | 10 | 80  | 90  | 180 |     |       |       |     |        | VIII. 6  |
| Rehabilitation in Neurology    | 10+110 | 10 | 110 | 120 | 240 |     |       |       |     |        | VIII. 8  |

**Electives**

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<tr>
<th>Elective Courses</th>
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<td>300</td>
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**Total**

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<th>185+300</th>
<th>195+253</th>
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**ECTS**

|     | 8 | 30 | 32 | 30 | 30 | 28 |       |       |     |        |---|

Accepted by the Faculty Board with the number of regulation # 3/2007.ETK.KT. (May 24, 2007)
Modified by the Faculty Board with the number of regulation # 7/2008.ETK.KT. (March 13, 2008)
System of Preliminary Studies

Specialty: nursing and patient care
(basic knowledge, specialized core material)

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<tr>
<th>Code</th>
<th>Subject</th>
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System of Preliminary Studies (B.Sc.)
Specialty: nursing and patient care
(differentiated specialized material)  
Specialist program: Physiotherapist

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**SEMMELEWEIS UNIVERSITY / FACULTY OF HEALTH SCIENCES**

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**Clinical Demonstration and Practice**

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**Rehabilitation Physiotherapy Module**

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* „p” in front of the code means that the subject has to be studied in parallel with its prerequisite(s), i.e. the subjects have to be studied in the same term.
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 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 larger organizations called Doctoral Schools (the Hungarian abbreviation is TDI). The programs have retained their independence, however, the councils of the doctoral schools became the real administrative centres of the doctoral training.

Currently the School of Ph.D. Studies at Semmelweis University has eight Doctoral Schools. Basic Medicine, Clinical Medicine, Pharmaceutical Sciences, Mental Health Sciences, Sport Sciences, Neurosciences, Molecular Medicine and Pathological Sciences. Each School comprises of 2 to 12 study programs, the total number of which is above 40 (see detailed information on programs and Doctoral Schools).

By involving the greatest authorities from within, as well as from outside the university, the School of Ph.D. Studies has from the beginning been able to preserve the quality and prestige of the degree. By the end of December 2006, altogether 765 Ph.D. theses had been defended at the School of Ph.D. Studies. The number of enrolled students at that time was 356 and 300 were about to defend their dissertation.

The largest faculty, the Faculty of Medicine is represented in almost all Doctoral Schools, the Faculty of Dentistry has its own study program, the Faculty of Pharmacy as well as the Faculty of Physical Education and Sport Sciences is represented by individual Doctoral Schools. The Faculty of Health Care as a Higher Education Institute of college level does not issue doctoral diplomas degrees, its teachers however are taking part in the study programs organized by the other faculties.

The activity of the School of Ph.D. is divided into two parts:

– Part I: educational phase - program courses and research activity

– Part II: qualification phase - examination, writing and defending dissertations
Although the educational and qualification phases can be continuous, each contains features that provide greater flexibility in obtaining a degree. Basically, anybody holding a university diploma degree (not necessarily a medical one) can join either Phase I or II. The aim of Phase I is to train students to become scientists by providing them courses. Credit points can be accumulated upon completion of a course. The selected scientific topic will become the core of the thesis. A qualified tutor supervises each student.

Phase II provides an opportunity to evaluate the results of the experiments and to publish them in acknowledged scientific journals. Obviously, this is, or can be an on-going activity in Phase I as well. The student is required to pass a comprehensive examination and to write and defend a dissertation.

Phase II follows Phase I, but one may join Phase II without completing Phase I, providing the necessary prerequisites have been fulfilled. However, if one joins the School of Ph.D. Studies directly in Phase II it is necessary to be accepted by a tutor within a program.

The School of Ph.D. Studies offers three forms of education:
- Full-time for scholarship holders (scholarship obtained from state, agency, foundation etc.) entering Phase I as students
- Part-time students, entering Phase I as students
- Individual studies, entering Phase II as candidates

Both full-time and part-time students must meet the same requirements. The main difference between those with and without scholarship is that the latter have jobs and are combining studies and work. Individuals who join only Phase II will not be students with record-book and student identity card, but they will be candidates for the doctoral degree.

The total number of candidates at present is about 700. Certain costs of education, scientific training and official procedures are covered for students and candidates. Most of the fees are equal to or close to what is ordinarily paid by undergraduate students.

The actual decision-making body of the School of Ph.D. Studies is the Doctoral Council. Its work is supported by the Education Committee and Quality Assurance Committee. The former is responsible for organizing the study courses and all matters related to the training. The latter evaluates topic accreditation applications, dissertations prior to submitting them to opponents. Recently another Committee has been established to run disciplinary procedures.

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President of the Doctoral Council
President of the Doctoral Council

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E-mail: szel@ana2.sote.hu

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President of the Doctoral Student’s Union

Zoltán Cserháti
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Tel: +(36-1) 210-2930
E-mail: csirzol@yahoo.com

Doctoral Secretariat

Phone: (36-1) 266-2343, (36-1) 266-7483
Fax: (36-1) 317-4888

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Timea Rab Adviser timea@phd.sote.hu (36-1) 459-1500/5242
Károly Altdorfer Webmaster altdorf@ana.sote.hu (36-1) 459-1500/3639

Office hours:
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Tuesday: 8.30 a.m. - 12.00 a.m.
Wednesday: 13.00 p.m. - 16.00 p.m.
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Vice-President, President of the Educational Board

Dr. Veronika Ádám  
Vice-Rector of Scientific and International Affairs

Dr. László Rosivall  
Ph.D. School of Basic Medical Sciences

Dr. Zsolt Tulassay  
Ph.D. School for Clinical Science in Medicine

Dr. Éva Szőke  
Ph.D. School of Pharmaceutical and Pharmacological Sciences

Dr. István Bitter  
Ph.D. School Mental Health Sciences

Dr. József Tihanyi  
Ph.D. School of Sport Sciences

Dr. Miklós Réthelyi  
JánosSzentágothai Neurosciences Ph.D. School

Dr. József Mandl  
Ph.D. School of Molecular Medical Sciences

Dr. László Kopper  
Ph.D. School of Pathology (former President)

Dr. Pál Magyar  
Representative of Faculty of Medicine

Dr. Gábor Varga  
Representative of Faculty of Dentistry

Dr. Kálmán Magyar  
Representative of Faculty of Pharmacy

Dr. Zsolt Radák  
Representative of Sport Sciences

Dr. János Rigó  
President of the Quality Control and Evaluation Board

Dr. Károly Rácz  
Ph.D. School for Clinical Science in Medicine

Dr. György Nagy  
János Szentágothai Neurosciences Ph.D. School

Dr. Iván Forgács  
College of Health Care

Zoltán Cserháti  
President of the Doctoral Students’ Union

Dr. Éva Csákvári  
Ministry of Education

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E-mail: rigo@noi1.sote.hu  
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President: Dr. László Rosivall
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E-mail: roslasz@net.sote.hu
Sótonyi Péter Tamás

Committee of Disciplinary Procedures

President: Dr. Árpád Fazekas
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Tel: +(36) 1 318-0959
E-mail: fazekas@konfog.sote.hu

University School of Ph. D. Studies

President: Prof. Ágoston Szél MD, PhD, DSc

BRANCHES:

I. BASIC MEDICINE

Chairman: Prof. László Rosivall MD, PhD, DSc
E-mail: rosivall@net.sote.hu

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<td>Prof. Györgyi Rontó MD, PhD, D.Sc</td>
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<td>Cardiovascular Disorders: Physiology and Clinic of Ischaemic Circulatory Diseases</td>
<td>Dr. Béla Merkely MSc, PhD</td>
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<td>Clinical and Experimental Cardiology/Atherosclerosis</td>
<td>Prof. Lajos Szollár MD, PhD, D.Sc</td>
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<td>The Mechanisms of Normal and Pathologic Functions of the Circulatory System</td>
<td>Prof. Emil Monos MD, PhD, DSc</td>
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<td>Physiology and Pathophysiology of the Regulation of Fluids and Electrolyte Homeostasis</td>
<td>Prof. László Rosivall MD, PhD, DSc</td>
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# II. CLINICAL MEDICINE

Chairman: **Prof. Zsolt Tulassay** MD, PhD, DSc  
E-mail: tulassay@bel2.sote.hu

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<td>Prof. Lidia Sréter MD, PhD, DSc</td>
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<td>Fetal and Neonatal Medicine</td>
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<td>Ophthalmology</td>
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<td>Oxidative Stress and Immunological Reaction in Liver Diseases</td>
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<td>Prof. Miklós Szendrői MD, PhD, DSc</td>
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<td>Molecular Genetics, Pathomechanism and Clinical Aspects of Metabolic Disorders</td>
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# III. PHARMACEUTICAL SCIENCES

Chairwoman: **Prof. Éva Szőke** MSc, PhD  
E-mail: szokee@drog.sote.hu

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<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>
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<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>
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V. SPORT SCIENCES

Chairman: **Prof. József Tihanyi** MD, DSc, PhD  
E-mail: tihanyi@mail.hupe.hu

<table>
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<tr>
<th>Programs</th>
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<tr>
<td>Training and Adaption</td>
<td>Prof. Gábor Pavlik MD, PhD, DSc</td>
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<tr>
<td>Physical Training, Regulation, Metabolism</td>
<td>Prof. Róbert Frenkl MD, PhD, DSc</td>
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<tr>
<td>Sport and Social Sciences</td>
<td>Prof. Gyöngyi Szabó MD, PhD, DSc</td>
</tr>
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VI. NEUROSCIENCES

Chairman: **Prof. Miklós Réthelyi** MD, PhD, DSc  
E-mail: rethelyi@ana.sote.hu

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<thead>
<tr>
<th>Programs</th>
<th>Co-ordinators</th>
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<tbody>
<tr>
<td>Neumorphology and Cell Biology</td>
<td>Prof. Miklós Palkovits MD, PhD, DSc</td>
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<tr>
<td>Neuroendocrinology</td>
<td>Prof. Zsolt Liposits MD, PhD, DSc</td>
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<tr>
<td>Functional Neurosciences</td>
<td>Prof. E. Szilveszter Vizi MD, PhD, DSc</td>
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<tr>
<td>Clinical Neurosciences</td>
<td>Prof. Zoltán Nagy MD, PhD, DSc</td>
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<tr>
<td>Clinical Neurological Research</td>
<td>Prof. Imre Szirmai MD, PhD, DSc</td>
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<tr>
<td>Biological Psychiatry</td>
<td>Prof. Gábor Faludi MD, PhD, DSc</td>
</tr>
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### 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>
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<tbody>
<tr>
<td>Basis of Human Molecular Genetics and Gene Diagnostics</td>
<td>Prof. András Falus MD, PhD, DSc</td>
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<tr>
<td>Cellular and Molecular Physiology</td>
<td>Prof. András Spät MD, PhD, DSc</td>
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<tr>
<td>Embryology, Theoretical, Experimental and Clinical Developmental Biology</td>
<td>Prof. Imre Oláh MD, PhD, DSc</td>
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<td>Immunology</td>
<td>Prof. Péter Gergely MD, PhD, DSc</td>
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<tr>
<td>Pathobiochemistry</td>
<td>Prof. József Mandl MD, PhD, DSc</td>
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### VIII. PATHOLOGICAL SCIENCES

**Chairman:** Prof. László Kopper MD, PhD, DSc  
E-mail: kopper@korb1.sote.hu

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<tr>
<th>Programs</th>
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<tbody>
<tr>
<td>Alterations of Cells, Fibres and Extracellular and Diagnostic Pathomorphological Studies Matrix in the Course of Heart and Vascular Diseases and in Certain Tumours Experimental and Diagnostic Pathomorphological Studies</td>
<td>Prof. Zsuzsanna Schaff MD, PhD, DSc</td>
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<tr>
<td>Experimental Oncology</td>
<td>Prof. László Kopper MD, PhD, DSc</td>
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<tr>
<td>Public Health Science</td>
<td>Prof. Péter Sótonyi MD, PhD, DSc</td>
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<tr>
<td>Study of the Immunobiological Effects of Micro-organisms and of their Components at Molecular and Cellular Level and in the Microorganisms</td>
<td>Prof. Károly Nagy MSc, PhD</td>
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<tr>
<td>Clinical and experimental transplantation Health Sciences</td>
<td>Prof. Jenő Járay MD, PhD, DSc</td>
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<td>Prof. István Szabolcs MD, PhD, DSc</td>
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