

C A L E N D A R

---

**SEMMELWEIS UNIVERSITY**

**2 0 0 8 / 2 0 0 9**

---

**B u d a p e s t**

[www.semmelweis-univ.hu](http://www.semmelweis-univ.hu)

LEGAL SUPERVISING  
AUTHORITY OF THE UNIVERSITY

Ministry of Education and Culture  
1055 Budapest V., Szalay u. 10-14.  
Phone: 473-7000

IN THE FIELD OF HEALTH SERVICE,  
SPECIALTY TRAINING AND  
POSTGRADUATION

Ministry of Health  
1051 Budapest V., Arany János u. 6-8.  
Phone: 332-3100

PUBLISHER:

***Prof. Dr. Tivadar Tulassay***  
***Rector***



Designed and prepared for press by Semmelweis Press and Multimedia Studio  
Compiled by Olga Ványi Head of the English Secretariat  
SKD: 194  
Print and cover by Mester Press Ltd.

# Contents

Government of the University . . . . .	7
The Academic Program Committee . . . . .	7
The English Secretariat . . . . .	8
The Schedule of the 2008/2009 academic year . . . . .	9
The Examination and Studies Regulations . . . . .	11
The Departments of Semmelweis University (English Program) . . . . .	26
Academic Staff . . . . .	33
Faculty of Medicine . . . . .	33
Faculty of Dentistry . . . . .	44
Faculty of Pharmacy . . . . .	46
The Central Library . . . . .	48
Information about the language courses . . . . .	49
Study Programs (The Study Programs contain the curricula, the lists of books and the tutors)	
<b>Faculty of Medicine . . . . .</b>	<b>51</b>
Year 1 . . . . .	51
Year 2 . . . . .	75
Year 3 . . . . .	95
Year 4 . . . . .	145
Year 5 . . . . .	167
Year 6 . . . . .	211
<b>Faculty of Dentistry . . . . .</b>	<b>231</b>
Year 1 . . . . .	231
Year 2 . . . . .	243
Year 3 . . . . .	253
Year 4 . . . . .	275
Year 5 . . . . .	303
<b>Faculty of Pharmacy . . . . .</b>	<b>321</b>
Year 1 . . . . .	321
Year 2 . . . . .	341
Year 3 . . . . .	357
Year 4 . . . . .	375
Year 5 . . . . .	391
Evaluation of Progress . . . . .	407
Exemptions . . . . .	408
Diploma work . . . . .	409
General Board Examinations . . . . .	411
The Diploma. . . . .	412
Cost of the Program, Reduction. . . . .	413
The words of the freshmen's solemn vow, the words of oaths at the graduation ceremony . . . . .	415
Fees . . . . .	416
Union of Research Students . . . . .	418

<b>Faculty of Health Sciences</b> . . . . .	419
Brief History of the Faculty of Health Sciences . . . . .	420
Government, Dean's Office, Staff . . . . .	421
Departments . . . . .	421
Schedule for the Academic Year 2008/2009 . . . . .	423
Information about the new B.Sc. and M.Sc. programs . . . . .	425
Nursing and Patient Care Program . . . . .	427
Study Programs (Curricula) . . . . .	432
<b>School of Ph.D. Studies</b> . . . . .	441
History and basic information . . . . .	442
Doctorial Secretariat . . . . .	444
Members of the Doctoral Council . . . . .	445
Programs . . . . .	446

# SEMMELWEIS UNIVERSITY





**GOVERNMENT SEMMELWEIS UNIVERSITY**

RECTOR:	<b>Prof. Dr. Tivadar Tulassay</b> M. D., Ph.D., D. Sc.
VICE RECTORS:	<b>Prof. Dr. Márk Kollai</b> M. D., Ph.D, D. Sc. General Affairs <b>Prof. Dr. Veronika Ádám</b> M. D., Ph.D., D. Sc. Scientific Affairs <b>Prof. Dr. Pál Fejérdy</b> D. M. D., Ph. D. Educational Affairs
DEANS:	<b>Prof. Dr. István Karádi</b> M. D., Ph.D., D. Sc. Faculty of Medicine <b>Prof. Dr. István Gera</b> D. M. D., Ph. D. Faculty of Dentistry <b>Prof. Dr. Béla Noszál</b> Ph.D., D. Sc. Faculty of Pharmacy <b>Prof. Dr. József Tihanyi</b> M.D., Ph.D., D.Sc. Faculty of Physical Education and Sports Sciences <b>Dr. Judit Mészáros</b> Ph.D. College of Health Sciences
PRESIDENT OF THE DOCTORAL COUNCIL:	<b>Prof. Dr. Ágoston Szél</b> M.D., Ph.D., D. Sc.
DIRECTOR GENERAL FOR FINANCE, INVESTMENT AND OPERATION:	<b>Dr. Vilmos Ivády</b>
DIRECTOR GENERAL FOR STRATEGIC AND DEVELOPMENT AFFAIRS:	<b>Dr. Gusztáv Stubnya</b>
DIRECTOR OF THE FOREIGN STUDENTS' SECRETARIAT	<b>Prof. Dr. Márk Kollai</b> M. D., Ph.D, D. Sc. Budapest VIII., Üllői út 26. Fax: (36-1) 266-6734 Phone: (36-1) 266-0452; 317-0932 e-mail: engsec@rekhiv.sote.hu
Joint Director	<b>Prof. Dr. Erzsébet Ligeti</b> M.D., Ph.D., D.Sc.
Academic Program Director for Medicine, Dentistry and Pharmacy in English:	<b>Prof. Dr. Márk Kollai</b> M.D., Ph.D., D.Sc.
Academic Program Committee Faculty of Medicine:	<b>Prof. Dr. András Csillag</b> M. D., Ph. D., D. Sc. <b>Prof. Dr. József Mandl</b> M. D., Ph.D., D. Sc. <b>Prof. Dr. László Kalabay</b> M.D., Ph.D.

Faculty of Dentistry:

**Prof. Dr. István Gera** D. M. D., Ph. D.

Faculty of Pharmacy:

**Prof. Dr. Ágnes Kéry** Ph. D.

English Secretariat

Office: Budapest VIII., Üllői út 26. groundfloor 4.  
Phone: (36-1) 266-0452  
Fax: (36-1) 266-6734  
e-mail: engsec@rekhiv.sote.hu

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

Head of Secretariat:

**Mrs. Olga Ványi B. A.** (459-1500/ ext 5372;  
engsec@rekhiv.sote.hu)

Staff:

**Mrs. Orsolya Sajtos** (459-1500/ ext 5378;  
borsi@rekhiv.sote.hu) On Leave

**Mrs. Márta Reményi** (459-1500/ ext 5382;  
remart@rekhiv.sote.hu)

**Mrs. Zsuzsa Galambos** (459-1500/ ext 5376  
galzsu@rekhiv.sote.hu)

**Ms. Adrienn Bácskai** (459-1500/ ext 5377;  
adri@rekhiv.sote.hu)

**Ms. Tímea Kapisinszky** (459-1500/ ext 5422;  
kapitimi@rekhiv.sote.hu)

**Ms. Gyöngyi Böhm** (459-1500/ ext 5378;  
gybohm@rekhiv.sote.hu)

**Ms. Jurászik Tímea** (459-1500 / ext 5373;  
dinotimi@rekhiv.sote.hu)

**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)

<b>Opening Ceremony</b>	September 7, 2008
<b>First Semester</b>	
<b>Date of registration</b>	September 1–5, 2008
<b>Place of registration</b>	Department of Dermatology
<b>First day of the semester</b>	
Faculty of Medicine (1 <sup>st</sup> – 5 <sup>th</sup> years)	September 8, 2008
Faculty of Dentistry	September 8, 2008
Faculty of Pharmacy (1 <sup>st</sup> – 4 <sup>th</sup> years)	September 8, 2008
<b>Last day of the semester</b>	
Faculty of Medicine (1 <sup>st</sup> – 5 <sup>th</sup> years)	December 12, 2008
Faculty of Dentistry	December 12, 2008
Faculty of Pharmacy (1 <sup>st</sup> – 4 <sup>th</sup> years)	December 12, 2008
5th year Pharmacy: Practical training	August 1, 2008– September 26, 2008
<b>The semester lasts for</b> 5 <sup>th</sup> year Pharmacy (12 weeks)	September 29 – December 19, 2008
<b>Examination period</b>	
Faculty of Medicine (1 <sup>st</sup> – 5 <sup>th</sup> years)	December 15, 2008–January 23, 2009
Faculty of Dentistry	December 15, 2008 – January 23, 2009
Faculty of Pharmacy (1 <sup>st</sup> – 4 <sup>th</sup> years)	December 15, 2008 – January 23, 2009
<b>Examination period for</b> 5 <sup>th</sup> year Pharmacy	December 22, 2008 – January 30, 2009
<b>Extension period</b>	
Medicine, Dentistry, Pharmacy (1 <sup>st</sup> – 5 <sup>th</sup> years)	January 26, 2009 – January 30, 2009
<b>Second Semester</b>	
<b>Date of registration</b> (1 <sup>st</sup> – 5 <sup>th</sup> years)	January 26, 2009 – January 30, 2009
<b>Place of registration</b>	English Secretariat
<b>First day of the semester for 1<sup>st</sup>– 5<sup>th</sup> years</b>	
Medicine and Dentistry	February 2, 2009
<b>Last day of the semester</b> for 1 <sup>st</sup> – 5 <sup>th</sup> years	
Medicine and 1 <sup>st</sup> – 4 <sup>th</sup> years Dentistry	May 15, 2009
<b>Last day of the semester for</b> 5 <sup>th</sup> year Dentistry	April 30, 2009
<b>Faculty of Pharmacy</b>	
<b>First day of the semester</b> (1 <sup>st</sup> – 5 <sup>th</sup> years)	February 2, 2009
<b>Last day of the semester</b> (1 <sup>st</sup> – 4 <sup>th</sup> years)	May 15, 2009
<b>Last day of the semester (practice)</b> for 5 <sup>th</sup> year	May 22, 2009

**Examination period for Faculty of Medicine, Faculty of Dentistry**

1 <sup>st</sup> – 5 <sup>th</sup> year Medicine	May 18 – June 30, 2009
1 <sup>st</sup> – 4 <sup>th</sup> year Dentistry	May 18 – June 26, 2009
5 <sup>th</sup> year Dentistry	May 4 – June 12, 2009

**Faculty of Pharmacy**

1 <sup>st</sup> – 3 <sup>rd</sup> year	May 18 – June 26, 2009
4 <sup>th</sup> year	May 18 – July 10, 2009

**Autumn examination period for**

1 <sup>st</sup> – 4 <sup>th</sup> year Medicine	August 17 – August 28, 2009
5 <sup>th</sup> year Medicine	July 1 – July 10, 2009
1 <sup>st</sup> – 4 <sup>th</sup> year Dentistry	August 17 – August 28, 2009
1 <sup>st</sup> – 3 <sup>rd</sup> year Pharmacy	August 17 – August 28, 2009

**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!**

---

**Extension period** August 31–September 4, 2009

**Schedule for 6<sup>th</sup> year Medicine** July 14, 2008 – May 8, 2009

**General Board Examination Period**

Faculty of Medicine	June 8 – June 19, 2009 August 31 – September 4, 2009
Faculty of Dentistry	June 15 – June 18, 2009
Faculty of Pharmacy	May 25 – June 12, 2009

---

**Holidays**

**Spring (including Eastern) holidays** April 6 –April 13, 2009

No lectures or seminars

**National/Public holidays:** October 23, 2008 (Thursday)  
May 1, 2009 (Friday)

**Research Students' Conference:**

February 11-12, 2009  
for the 2<sup>nd</sup>-6<sup>th</sup> year students  
On February 13 due to the Conference  
no lectures or seminars will be held in the  
NET building!

## 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,
  - b) the student card of the student may not be validated
3. By request the person admitted may be allowed to delay the commencement of his/her studies by a maximum of 2 years. The student is obliged to declare such an intention in a written form addressed to the English Secretariat. When the period of delay expires, the student is obliged to register even if he or she receives no reminder. In case he/she misses this registration, he/she will lose the right to commence studies.

## **Article 9**

---

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

Article 76 of the AHE

- (1) The legal relationship terminates if
- a. the student is transferred to another institute of higher education (as of the day of transfer)
  - b. the student declares that he/she wishes to terminate the legal relationship (as of the day of such declaration)
  - d. following the entire period of studies (as of the day of the first final exam period)
  - h. the student is excluded by a disciplinary resolution (as of the day the resolution becomes final and non-appealable)
- (2) The University may terminate the legal relationship of the student by unilateral declaration if
- a) the student fails to perform his or her obligations as specified in the Examination and Studies Regulations and the curriculum regarding the progress of studies,
  - b) fails to report for two consecutive semesters,
  - c) following the suspension of studies the student fails to resume studies

provided always that the student is warned at least twice in writing to fulfill the obligation by the specified deadline and the student has been informed on the legal consequences.

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

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

- 1. The number of credits obtained by the student from mandatory and elective courses is lower than 50% of all obtainable credits by the end of the 4<sup>th</sup> 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 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.



## Article 16

---

### *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.

## Article 17

---

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

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

3. The examination of knowledge and practical skills may take the following forms:
  - a. in the regular period of the semester by written and oral assignments, written classroom tests, 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  
– solely based on exam performance  
... 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 3<sup>rd</sup> 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 members are the head of the unit (or the deputy), the consultant and an instructor of the unit. The unit may invite an external instructor of the university as a third member. In case of a fail, the head of the unit notifies the student and informs him or her about the possibilities of correction.  
A failed 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:

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

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

Xn=the sum of required comprehensive exam grades

n=the number of required comprehensive exams

D=the five-scale grade of the thesis

(part of the complex final exam)

I=the result of the written part

(part of the complex final exam)

Sz=the result of the oral part

(part of the complex final exam)

Gy=the result of the practical part

(part of the complex final exam)

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

## **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 SEMMEIWEIS 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., corner of Túzóltó and Thaly Kálmán str.

#### **Department of Anatomy, Histology and Embryology**

1094 Budapest IX., Túzóltó u. 58.  
Phone: 215-6920 / ext 3706 Prof. Réthelyi  
Head of the Department: Prof. Dr. András Csillag

#### **Department of Human Morphology and Developmental Biology**

1094 Budapest IX., Túzóltó u. 58.  
Phone: 215-6920 / ext 3610 Dr. Kiss, 3652 Dr. Csáki (Pharm.)  
Head of the Department: Prof. Dr. Ágoston Szél

#### **Department of Biophysics and Radiation Biology**

1088 Budapest VIII., Puskin u. 9.  
Phone: 266-2755 / ext 4063 Dr. Voszka, 4073 Dr. Módos (Pharm.)  
Head of the Department: Dr. Miklós Kellermayer

#### **Department of Genetics, Cell- and Immunobiology**

1089 Budapest VIII., Nagyvárad tér 4.  
Phone: 210-2940 / ext 6236 Dr. Fülöp, 6326 Dr. László  
Head of the Department: Prof. Dr. András Falus

#### **Department of Pharmacology and Pharmacotherapy**

1089 Budapest VIII., Nagyvárad tér 4.  
Phone: 210-2930 / ext 6277 Dr. Tímár, 6247 Dr. Gyarmati  
Head of the Department: Prof. Dr. Klára Gyires

#### **Department of Forensic Medicine**

1091 Budapest IX., Üllői út 93.  
Phone: 215-7300 / ext 3411 Dr. Hubay  
Head of the Department: Prof. Dr. Éva Keller

#### **Department of Medical Biochemistry**

1088 Budapest VIII., Puskin u. 9.  
Phone: 266-2755 / ext 4030 Dr. Léránt, 4060 Dr. Maróthy-Tóth, 4089 Dr. Hrabák  
Head of the Department: Prof. Dr. Veronika Ádám

#### **Department of Medical Chemistry, Molecularbiology and Pathobiochemistry**

1088 Budapest VIII., Puskin u. 9.  
Phone: 266-2755 / ext 4089 Dr. Hrabák  
Head of the Department: Prof. Dr. József Mandl

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

1082 Budapest VIII., Üllői út 78/A  
 Phone: 210-0306 / ext 3202 Dr. Ivanics  
 Head of the Institute: Prof. Dr. Márk Kollai

**Department of Pathophysiology**

1089 Budapest VIII., Nagyvárad tér 4.  
 Phone: 210-2940 / ext 6357 Dr. Molnár, ext 6180 Dr. Kriston  
 Head of the Department: Prof. Dr. Lajos Szollár

**Institute of Public Health**

1089 Budapest VIII., Nagyvárad tér 4.  
 Phone: 210-2930 / ext 6313 Dr. Terebessy  
 Head of the Institute: Prof. Dr. Anna Tompa

**Institute of Behavioral Sciences**

1089 Budapest VIII., Nagyvárad tér 4.  
 Phone: 210-2930 / ext 6350 Dr. Kovács, 6403 Dr. Balog  
 Head of the Institute: Dr. Ferenc Túry

**Institute of Medical Microbiology**

1089 Budapest VIII., Nagyvárad tér 4.  
 Phone: 210-2959 / ext 6225 Dr. Berek, 6364 Dr. Csukás  
 Head of the Institute: Prof. Dr. Károly Nagy

**I. Department of Pathology and Experimental Cancer Research**

1085 Budapest VIII., Üllői út 26.  
 Phone: 266-1638 / ext 4420 Dr. Zalatnai, ext 4425 Dr. Rác  
 Head of the Department: Prof. Dr. András Matolcsy

**II. Department of Pathology**

1091 Budapest IX., Üllői út 93.  
 Phone: 215-7300 / ext 3454 or 3456 Dr. Kiss  
 Head of the Department: Prof. Dr. József Tímár

**Department of Anesthesiology and Intensive Therapy**

1125 Budapest XII., Kútvölgyi út 14.  
 Phone: 355-6565, 325-1100; / ext 7222, 7223 Dr. Lox; 7210, 7218 Dr. Hauser  
 Head of the Department: Dr. János Gál

**I. Department of Internal Medicine**

1083 Budapest VIII., Korányi Sándor u. 2/A  
 Phone: 459-1500 / ext 1554 Prof. Szalay, 1554 Dr. Abonyi  
 Head of the Department: Dr. Miklós Szathmári

**II. Department of Internal Medicine**

1088 Budapest VIII., Szentkirályi u. 46.  
 Phone: 266-0926 ext 5599, 5524 Prof. Sréter  
 Head of the Department: Prof. Dr. Zsolt Tulassay

### **III. Department of Internal Medicine**

1125 Budapest XII., Kútvölgyi út 4.

Phone: 325-1100 ext 291 Dr. Keltai, 216 Dr. Jakab

Head of the Department: Prof. Dr. István Karádi

### **Department of Dermatology, Dermatooncology and Venerology**

1085 Budapest VIII., Mária u. 41.

Phone: 266-0465 / ext 5763 Dr. Ottó (Med.), 5757, 5759 Dr. Erős (Dent.)

Head of the Department: Prof. Dr. Sarolta Kárpáti

### **Department of Family Medicine**

1125 Budapest XII., Kútvölgyi út 4.

Phone: 325-1100 / ext 7125, 355-8530 Dr. Torzsa

Head of the Department: Prof. Dr. László Kalabay

### **Department of Otorhinolaryngology, Head and Neck Surgery**

1083 Budapest VIII., Szigony u. 36.

Phone: 334-2384 / ext 2350 Dr. Noszek

Head of the Department: Prof. Dr. Gábor Répássy

### **I. Department of Pediatrics**

1083 Budapest VIII., Bókay J. u. 53.

Phone: 334-3186/ ext 2728 Dr. Horváth

Head of Department: Prof Dr. Tivadar Tulassay

### **II. Department of Pediatrics**

1094 Budapest IX., Tűzoltó. u. 7-9.

Phone: 215-1380 ext 2958; 2926; 2976 Dr. Hauser, Dr. Bánsági,

9285 Dr. Kelecsényi, 9243 Dr. Bense

Head of the Department: Prof. Dr. György Fekete

### **Heart Center**

#### **Department of Cardiology**

1122 Budapest XII., Városmajor. u. 68.

Phone: 458-6847; 458-6810 Dr. Bárczi

Head of the Department: Dr. Béla Merkely

#### **Department of Neurology**

1088 Budapest VIII., Balassa u. 6.

Phone: 210-0330 / ext 1123 Prof. Kamondi

Head of the Department: Prof. Dr. Dániel Bereczki

#### **Department of Orthopedics**

1113 Budapest XI., Karolina út 27.

Phone: 466-6059, Fax: 466-8747 Dr. Holnapy

Head of the Department: Prof. Dr. Miklós Szendrői

**Department of Psychiatry and Psychotherapy**

1083 Budapest VIII., Balassa u. 6.

Phone: 210-0330 / ext 1264 Dr. Unoka, 1243 Dr. Rihmer, 1217 Dr. Hidasi

Head of the Department: Prof. Dr. István Bitter

**Department of Pulmonology**

1125 Budapest XII., Diósárok u. 1/C

Phone: 355-9733 ext 7055 Dr. Orosz

Head of the Department: Prof. Dr. György Losonczy

**Department of Diagnostic Radiology and Oncotherapy**

1082 Budapest VIII., Üllői út 78/A

Phone: 210-0300 / ext 3303 Dr. Mester

Head of the Department: Dr. Viktor Bérczi

**I. Department of Surgery**

1082 Budapest VIII., Üllői út 78.

Phone: 313-5216 / ext 2167 Dr. Kokas

Head of the Department: Prof. Dr. Péter Kupcsulik

**I. Department of Surgery Department Section of Surgery**

1096 Budapest IX., Nagyvárad tér 1.

Phone: 215-1489 / ext 5864 Prof. Sándor

Head of the Department: Prof. Dr. János Regöly-Mérei

**Department of Ophthalmology**

1085 Budapest VIII., Mária u. 39.

Phone: 266-0513 / ext 4500 Dr. Tóth, Dr. Récsán

Head of the Department: Prof. Dr. János Németh

**I. Department of Obstetrics and Gynecology**

1082 Budapest VIII., Baross u. 27.

Phone: 266-0473 / ext 4332 Dr. Joó, 4250 Dr. Nagy

Head of the Department: Dr. János Rigó

**II. Department of Obstetrics and Gynecology**

1082 Budapest VIII., Üllői út 78/A

Phone: 210-0290 / ext 3106 Dr. Ács

Head of the Department: Prof. Dr. Attila Pajor

**Department of Traumatology**

1076 Budapest, VII. Péterfy Sándor u. 14.

Phone: 461-4723/ ext 218 Dr. Szebeny

Head of the Department: Prof. Dr. András Sárváry

**Department of Urology**

1082 Budapest VIII., Üllői út 78/B

Phone: 210-0280 / ext 1158 Dr. Nyirády

Head of the Department: Prof. Dr. Imre Romics

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

1082 Budapest VIII., Üllői út 78/b.  
Phone/fax: 210-0328 / ext 1835 Dr. Dinya  
Director: Dr. András Jávör

**Center of Physical Education and Sport Sciences**

1094 Budapest IX., Ferenc tér 15.  
Phone: 215-9337 or 459-1500/ ext 3823 or 3822  
Director and tutor: Kálmán Kiss

**Semmelweis University, Faculty of Dentistry**

---

**Department of Prosthodontics**

1088 Budapest VIII., Szentkirályi u. 47.  
Phone: 318-0011 ext 9374 Dr. Nemes  
Head of the Department: Prof. Dr. Pál Fejérdy

**Independent Section of Radiology**

1088 Budapest VIII., Szentkirályi u. 47.  
Phone: 459-1500 ext 9128; 9374 Dr. Nemes  
Head of the Department: Dr. Csaba Dobó Nagy

**Department of Pedodontics and Orthodontics**

1088 Budapest VIII., Szentkirályi u. 47.  
Phone: 318-0011 ext 9374 Dr. Nemes  
Head of the Department: Prof. Dr. Ildikó Tarján

**Department of Conservative Dentistry**

1088 Budapest VIII., Szentkirályi u. 47.  
Phone: 318-0011 ext 9374 Dr. Nemes  
Head of the Department: Prof. Dr. Ida Nyárasdy

**Department of Oral Biology**

1089 Budapest VIII., Nagyvárád tér 4.  
Phone: 210-4415 / ext 6420 Dr. Nagy  
Head of the Department: Prof. Dr. Gábor Varga

**Section of Oral Diagnostics**

1088 Budapest VIII., Szentkirályi u. 47.  
Phone: 459-1500/9161; 317-1044 ext 9374 Dr. Nemes  
Head of the Department: Prof. Dr. Gábor Nagy

**Department of Oral and Maxillofacial Surgery and Dentistry**

1085 Budapest VIII., Mária u. 52.  
Phone: 266-0457/ ext 5866, 5867 Dr. Szűcs, ext 5861 Dr. Németh  
Head of the Department: Prof. Dr. József Barabás

**Department of Periodontology**

1085 Budapest VIII., Szentkirályi u. 47.  
Phone: 318-00-11 ext 9374 Dr. Nemes  
Head of the Department: Prof. Dr. István Gera

**Semmelweis University, Faculty of Pharmacy****University Pharmacy, Department of Pharmacy Administration**

1092 Budapest IX., Hőgyes Endre u. 9.  
Phone: 476-3600 / ext 3010 Dr. Mesko, 3049 Dr. Mészáros  
Head of the Institute: Dr. Romána Zelkó

**Institute of Pharmacognosy**

1085 Budapest VIII., Üllői út 26.  
Phone: 317-2979 / ext 5307 Dr. Balázs  
Head of the Institute: Prof. Dr. Éva Szőke

**Department of Pharmaceutics**

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

**Institute of Pharmaceutical Chemistry**

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

**Department of Pharmacodynamics**

1089 Budapest VIII., Nagyváradi tér 4.  
Phone: 210-4411, 210-2927 / ext 6108 Prof. Tekes, 6413 Dr. Szökő,  
6413 Dr. Tóthfalusi, 6280 Dr. Tábi  
Head of the Department: Prof. Dr. György Bagdy

**Institute of Organic Chemistry**

1092 Budapest IX., Hőgyes Endre u. 7.  
Phone: 476-3600 / ext 138 Dr. Tétényi  
Head of the Institute: Prof. Dr. Péter Mátyus

**Departments of Loránd Eötvös University of Natural Sciences – Institute of Chemistry****Department of Analytical Chemistry**

1117 Budapest XI., Pázmány Péter sétány 1/A  
Phone: 372-2548; 372-2500 / ext 1241 Dr. Kurin-Csörgei  
Fax: 372-2592  
Head of the Department: Prof. Dr. Gyula Záray

**Department of Biology, Plant Anatomy**

1117 Budapest XI., Pázmány Péter sétány 1/A

Phone: 381-2179 Dr. Dános

Head of the Department: Prof. Dr. Béla Böddi

**Department of Physical Chemistry**

1117 Budapest XI., Pázmány Péter sétány 1/A

Phone: 372-2548 Dr. Takács

Fax: 372-2592

Head of the Department: Prof. Dr. András Baranyai D.Sc.

**National Ambulance Service**

1134 Budapest XIII., Róbert Károly krt. 77.

Phone: 350-3737, Dr. Gorove, Dr. Márton; 350-6931, Dr. Engelbrecht; 311-9850/ ext 113

Director-General: Dr. Gábor Göbl M. D.

**Department of Foreign Languages – Faculty of Health Sciences**

1088 Budapest VIII., Vas u. 17.

Head of the Department: Assoc. Prof. Margit Orbán

Phone: 486-4890 Fax: 486-4895



## Academic Staff

### Faculty of Medicine

#### Department of Anatomy, Histology and Embriology

1094 Budapest, IX. Tűzoltó u. 58.

☎: 215-6920

Head of the Department:	<b>Prof. Dr. András Csillag</b> M.D., Ph. D., D.Sc.
Full professor:	Prof. Dr. Miklós Réthelyi (tutor)
Professor emeritus:	Prof. Dr. Kálmán Majorossy, Prof. Dr. Miklós Palkovits, Prof. Dr. Teréz Tömböl
Associate professor:	Dr. Gábor Gerber, Dr. Mihály Kálmán, Dr Árpád Kiss, Dr. György Somogyi,
Assistant professor:	Dr. Alán Alpár, Dr. Károly Altdorfer, Dr. Katalin Gallatz, Dr. Andrea Székely, Dr. Géza Tótpál,
Assistant lecturer:	Dr. Viktória Vereczki
Scientific advisor:	Dr. Magda Madarász, Dr. László Simon, Dr. János Barna

#### Department of Human Morphology and Developmental Biology

IX. Tűzoltó u. 58, H-1094 Budapest, Hungary)

☎: 361-215-6920, Fax: 361-215-3064

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

#### Department of Biophysics and Radiation Biology

1088 Budapest, VIII. Puskin u. 9.,

☎: 266-2755

Head of the Department:	<b>Dr. Miklós Kellermayer</b> M.D., Ph.D.
Full Professor:	Prof. Dr. Judit Fidy
Associate professor:	Dr. Andrea Fekete, Dr. Katalin Blaskó, Dr. Gabriella Csík, Dr. Levente Herényi
Assistant professor:	Dr. István Voszka (tutor), Dr. Károly Módos (tutor), Dr. Irén Nagy, Dr. Szabolcs Osváth, Dr. Erika Balog

## Department of Genetics, Cell- and Immunobiology

1089 Budapest, VIII. Nagyvárad tér 4.

☎: 210-2940, 210-2929

Head of the Department:

Professor Emeritus:

Associate professor:

Assistant professor:

Lecturer:

**Prof. Dr. András Falus** Ph.D., D.Sc.

Prof. Dr. György Csaba

Dr. Edit Buzás, Dr. Zsuzsanna Darvas,

Dr. András K. Fülöp (tutor for immunology), Dr. László Kóhidai,

Dr. Valéria László (tutor for biology), Dr. Sára Tóth

Dr. Marianna Holub, Dr. Erna Pap, Dr. Viola Tamási

Dr. Orsolya Láng

## Department of Pharmacology and Pharmacotherapy

1089 Budapest, VIII. Nagyvárad tér 4.

☎: 210-2930, 210-4416

Head of the Department:

Full professor:

Professor emeritus:

Associate professor:

Assistant professor:

Assistant lecturer:

**Prof. Dr. Klára Gyires** M. D., Ph.D., D.Sc.

Prof. Dr. Sándor Kerpel-Fronius

Prof. Dr. Zsuzsanna Fürst, Prof. Dr. Valéria Kecskeméti

Dr. Júlia Tímár (tutor)

Dr. Zsuzsanna Gyarmati (tutor), Dr. András Rónai,

Dr. László Köles

Dr. Andrea Szebeni

## Department of Forensic Medicine

1091 Budapest, IX. Üllői út 93.

☎: 218-0437, 215-7300

Head of the Department:

Professor emeritus:

Associate professor:

Assistant professor:

**Prof. Dr. Éva Keller** M. D., Ph. D., D.Sc.

Prof. Dr. Péter Sótónyi

Dr. Klára Törő, Dr. László Szabó

Dr. Márta Hubay (tutor)

## Department of Medical Biochemistry

1088 Budapest, VIII. Puskin u. 9.

☎: +36-1-2662755

Head of the Department:

Full professor:

Associate professor:

Senior lecturer:

Assistant professor:

Pharmacist:

**Prof. Dr. Veronika Ádám** M.D.,

Member of Hungarian Academy of Sciences

Prof. Dr. Raymund Machovich

Dr. Pál Bauer, Dr. László Tretter

Dr. István Léránt (teaching secretary)

Dr. Christos Chinopoulos, Dr. László Csanády, Dr. Kraszimir Kolev

Dr. Erzsébet Maróthy-Tóth (tutor for Pharmacy  
of 2<sup>nd</sup> and 3<sup>rd</sup> years)

## Department of Medical Chemistry, Molecular Biology and Pathobiochemistry

1088 Budapest, VIII. Puskin u. 9.

☎: 266-2755

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

## Institute of Human Physiology and Clinical Experimental Research

1082 Budapest, VIII. Üllői út 78/A

☎: 210-0306

Head of the Department:	<b>Prof. Dr. Márk Kollai</b> M.D, Ph.D., D.Sc.
Full professor:	Prof. Dr. Péter Sándor
Professor emeritus:	Prof. Dr. Emil Monos
Associate professor:	Dr. András Eke, Dr. György Nádasy, Dr. Tamás Ivanics (tutor), Dr. Zoltán Benyó
Assistant professor:	Dr. Kornélia Ikrényi, Dr. Péter Hermán
Assistant lecturer:	Gábor Raffai, Dr. Zsombor Lacza

## Department of Pathophysiology

1089 Budapest, VIII. Nagyvárad tér 4.

☎: 210-2940

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

## Institute of Public Health

1089 Budapest, VIII. Nagyvárad tér 4.

☎: 210-2930

Homepage: [www.kozegeszsegtan.sote.hu](http://www.kozegeszsegtan.sote.hu)

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

## Institute of Behavioral Sciences

1089 Budapest, VIII. Nagyvárád tér 4.

☎: 210-2930

Head of the Department:	<b>Dr. Ferenc Túry M.D.</b>
Full professor:	Prof. Dr. Mária Kopp
Associate professor:	Dr. József Kovács (tutor)
Assistant professor:	Dr. Ágnes Dósa, Dr. Jenő Lőrincz, Dr. Zsuzsa Szántó (tutor), Dr. Márta Novák, Dr. Adrienne Stauder, Dr. István Mucsi
Assistant lecturer:	Dr. Piroska Balog (tutor), Dr. Mónika Kovács, Dr. György Pürebi

## Institute of Medical Microbiology

1089 Budapest, VIII. Nagyvárád tér 4

☎: 210-2959, 210-2930, 210-2940

Head of the Department:	Prof. <b>Dr. Károly Nagy</b> M.D., Ph. D., D.Sc.
Full professor:	Prof. Dr. Ferenc Rozgonyi, Prof. Dr. Éva Ádám
Professor emeritus:	Prof. Dr. Piroska Anderlik
Scientific advisor:	Dr. Zsuzsanna Csukás (tutor for Dentistry and Pharmacy) Dr. Zsuzsanna Bános
Assistant professor:	Dr. Csaba Jeney, Dr. Dóra Szabó
Assistant lecturer:	Dr. Csaba Maródi, Dr. Irén Budai, Dr. Katalin Kristóf
Tutor:	Dr. Zsuzsanna Berek (tutor for Medicine)

## I. Department of Pathology and Experimental Cancer Research

1085 Budapest, VIII. Üllői út 26.

☎: 459-1500, 266-1638

Head of the Department:	<b>Prof. Dr. András Matolcsy</b> M.D., Ph.D, D.Sc.
Full professor:	Prof. Dr. Ilona Kovalszky, Prof. Dr. László Kopper, Prof. Dr. Péter Nagy
Professor emeritus:	Prof. Dr. Károly Lapis, Prof. Dr. Béla Szende, Prof. Dr. András Jeney
Associate professor:	Dr. Attila Zalatnai (tutor)
Assistant professor:	Dr. Lajos Berczi, Dr. Judit Pápay, Dr. Ágota Szepesi
Assistant lecturer:	Dr. Csaba Diczházi, Dr. Anita Mohos, Dr. Gergely Rácz (tutor) Dr. Anita Mohos

## II. Department of Pathology

1091 Budapest, IX. Üllői út 93.

☎: 215-7300

Head of the Department:	<b>Prof. Dr. József Tímár</b> M.D., Ph.D., D.Sc.
Full Professor:	Prof. Dr. Zsuzsa Schaff
Professor emeritus:	Prof. Dr. Anna Kádár

Scientific advisor: Prof. Dr. Tibor Kerényi, Dr. Margit Kovács  
 Associate professor: Dr. György Illyés, Dr. Janina Kulka,  
 Dr. Tibor Glasz  
 Assistant professor: Dr. Balázs Járay, Dr. András Kiss (tutor),  
 Dr. Eszter Székely  
 Assistant lecturer: Dr. Hajnalka Győrffy, Dr. Magdolna Kardos, Dr. Lilla Madaras

## Department of Anesthesiology and Intensive Therapy

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

Head of the Department: **Dr. János Gál** M.D.  
 Full Professor: Prof. Dr. István Péntzes  
 Assistant professor: Dr. Gábor Élő, Dr. Balázs Hauser (tutor)  
 Assistant lecturer: Dr. András Lox (tutor), Dr. László Zubek

## I. Department of Internal Medicine

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

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


## II. Department of Internal Medicine

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

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

### III. Department of Internal Medicine

1125 Budapest, XII. Kútvölgyi út. 4.

: 325-1100

Head of the Department:	<b>Prof. Dr. István Karádi</b> M.D., Ph.D., D.Sc.
Full professor:	Prof. Dr. László Romics, Prof. Dr. Béla Fekete, Prof. Dr. György Füst,
Associate professor:	Dr. Lívia Jánoskúti, Dr. Pál Pánczél, Dr. Teréz Pozsonyi, Dr. Gábor Tarkovács, Dr. András Verecke
Assistant professor:	Dr. Nóra Hosszúfalusi, Dr. Gábor Pálos, Dr. Pál Sárman, Dr. Judit Várkonyi, Dr. Katalin Keltai (tutor), Dr. András Zsáry
Assistant lecturer:	Dr. Zoltán Böröcz, Dr. Péter Farkas, Dr. László Jakab (tutor), Dr. Judit Kocsis, Dr. Ágnes Nagy, Dr. Zsuzsa Nébenführer, Dr. Éva Palik,

### Department of Dermatology, Dermatocology and Venerology


1085 Budapest, VIII. Mária u 41.

: 266-0465

Head of the Department:	<b>Prof. Dr. Sarolta Kárpáti</b> M.D., Ph. D., D.Sc.
Full professor:	Prof. Dr. Erzsébet Temesvári
Professor emeritus:	Prof. Dr. Attila Horváth
Associate professor:	Dr. Márta Marschalkó, Dr. Beáta Somlai, Dr. Norbert Wikonkál
Senior lecturer:	Dr. Krisztina Becker, Dr. Judit Hársing, Dr. Péter Holló, Dr. Klaudia Preisz
Assistant professor:	Dr. Nóra Erős (tutor), Dr. Márta Medvecz, Dr. Györgyi Pónyai
Clinical doctors:	Dr. Bernadett Hídvégi, Dr. Csilla Kaszab, Dr. Andrea Lukács, Dr. Ágnes I. Ottó (tutor), Dr. Katinka Pónyai, Dr. Andrea Sas, Dr. Pálma Silló, Dr. Réka Tabák, Dr. Béla Tóth, Dr. Veronika Tóth

### Department of Family Medicine


1125 Budapest, XII. Kútvölgyi út. 4.

: 325-1100

Head of the Department:	<b>Prof. Dr. László Kalabay</b> M.D., Ph.D., D.Sc.
Assistant lecturer:	Dr. Péter Torzsa (tutor)

### Department of Otorhinolaryngology, Head and Neck Surgery

1083 Budapest, VIII. Szigony u.36.

: 334-2384

Head of the Department:	<b>Prof. Dr. Gábor Répássy</b> M.D., Ph.D., D.Sc.
Professor emeritus:	Prof. Dr. Ottó Ribári
Associate professor:	Dr. Marianna Küstel, Dr. Ágnes Szirmai
Assistant professor:	Dr. László Noszek (tutor), Dr. Zoltán Fent

Assistant lecturer: Dr. Beáta Bencsik, Dr. Magdolna Szonyi, Dr. Balázs Szabó,  
Dr. Helga Kraxner, Dr. Anita Gáborján, Dr. Gábor Polony,  
Dr. Szabolcs Horvai, Dr. Attila Óvári

## I. Department of Pediatrics

1083 Budapest, VIII. Bókay János u. 53.

☎: 334-3186

Head of the Department: **Prof. Dr. Tivadar Tulassay** M.D., Ph.D., D.Sc.  
Full professor: Prof. Dr. András Arató, Prof. Dr. Tamás Machay,  
Prof. Dr. László Madácsy, Prof. Dr. Tibor Verebély,  
Prof. Dr. Reusz György, Prof. Dr. Antal Szabó  
Professor emeritus: Prof. Dr. Miklós Miltényi  
Associate professor: Dr. Éva Kís, Dr. András Szabó, Dr. Anna Köner  
Assistant professor: Dr. Lídia Balogh, Dr. János Bókay,  
Dr. Péter Sallay, Dr. Zsóka Horváth (tutor)  
Assistant lecturer: Dr. Beáta Dérfalvi, Dr. Gábor Benyó

## II. Department of Pediatrics

1094 Budapest, IX. Tűzoltó u. 7-9.

☎: 218-6844, 215-1380

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

## Heart Center

### Department of Cardiology

1122 Budapest, XII. Városmajor u. 68.

☎: +36-1-458-6847; +36-1-458-6810 Fax: +36-1-458-6818

E-mail: [cvc.oktatas@gmail.com](mailto:cvc.oktatas@gmail.com)

Head of the Department: Béla Merkely MD, PhD, DSc  
Professor Emeritus: Károly Lozsádi MD  
Full professor: Ferenc Horkay MD, PhD, DSc  
Mátyás Keltai MD, PhD  
István Préda MD, PhD

Assistant professor:	Dávid Becker MD, László Gellér MD, PhD Margit György MD
Assistant lecturer:	Astrid Apor MD, György Bárczi MD (tutor), Gábor Fülöp MD Zoltán Jambrik MD, Levente Molnár MD, Dóra Paprika MD György Szabó MD, Endre Zima MD, PhD
Clinical fellow:	Elektra Bartha MD (consultant) Krisztina Hosszú MD, Orsolya Kiss MD, PhD Ibolya Marozsán MD (consultant) Andrea Nagy MD, Attila Róka MD, Pál Soós MD, PhD Boglárka Szabó MD, Zsolt Szelíd MD Szablocs Szilágyi MD, Andrea Szűcs MD, PhD Gábor Szucs MD, Hajnalka Vágó MD, PhD Vince Wagner MD
Scientific advisor:	Miklós Tóth MD, PhD, DSc Péter Vargha
PhD students:	Balázs Berta MD, Pál Maurovich Horvat MD Valentina Kuttyifa MD, Gabriella Veress MD

## Department of Neurology

1083 Budapest, VIII. Balassa u. 6.

☎: 210-0330, 210-0337

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

## Department of Orthopedics

1113 Budapest, XI. Karolina út 27.

☎: 466-6059 Fax: 466-8747

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



## Department of Psychiatry and Psychotherapy

1083 Budapest, VIII. Balassa u. 6.

☎: 210-0330

Head of the Department:	<b>Prof. Dr. István Bitter</b> M.D., Ph.D., D.Sc.
Full professor:	Prof. Dr. Péter Rajna
Professor emeritus:	Prof. Dr. László Tringer
Associate professor:	Dr. Lajos Simon
Assistant professor:	Dr. Judit Harangozó, Dr. Zsolt Unoka (tutor)
Assistant lecturer:	Dr. Zoltán Hidas (tutor), Dr. Zoltán Kovács, Dr. Annamária Rihmer (tutor)

## Department of Pulmonology

1125 Budapest, XII. Diósárok u. 1/C.

☎: 355-9733

Head of the Department:	<b>Prof. Dr. György Losonczy</b> M.D., Ph.D., D.Sc.
Full professor:	Prof. Dr. Pál Magyar
Professor emeritus:	Prof. Dr. Imre Hutás, Prof. Dr. Endre Vastag
Associate professor:	Dr. Ákos Somoskövi, Dr. Márta Orosz (tutor)
Assistant professor:	Dr. Zoltán Bártfai, Dr. Gabriella Gálffy, Dr. Gábor Horváth, Dr. Zoltán Süttő, Dr. Klára Szondy, Dr. Erika Vajda, Dr. Katalin Várdi Visy, Dr. András Wollák, Dr. Gabriella Zsámboki
Assistant lecturer:	Dr. Anikó Bohács, Dr. Judit Füzy, Dr. Ildikó Géczy, Dr. Tamás Komáromi, Dr. Csaba Máthé, Dr. Gabriella Muraközy, Dr. Veronika Müller, Dr. Andrea Nagy, Dr. Zsuzsanna Orosz, Dr. Lilla Tamási

## Department of Diagnostic Radiology and Oncotherapy

1082 Budapest, VIII. Üllői út 78/A.

☎: 210-0300

Head of the Department:	<b>Dr. Viktor Bérczi</b> M.D.
Full Professor:	Dr. Kálmán Hüttl
Associate professor:	Dr. Zoltán Vígváry, Dr. Zsolt Tarján, Dr. Magdolna Dank, Dr. Kinga Karlinger, Dr. Ádám Mester (tutor)
Assistant professor:	Dr. Zsuzsa Dömötöri, Dr. Katalin Kiss, Dr. Géza Tóth, Dr. Klára Szalai, Dr. László Duffek, Dr. Béla Kári, Dr. László Torgyik
Assistant lecturer:	Dr. Erika Borbényi, Dr. Szabolcs Farkas, Dr. Péter Magyar, Dr. Tamás Györke, Dr. Gyöngyvér Szentmártoni, Dr. Júlia Szilvási, Dr. Éva Zergényi
Senior resident:	Dr. Pál Batta, Dr. Anikó Bógér, Dr. Gábor Erdei, Dr. Ernő Frank, Dr. Ágnes Stefán, Dr. Andrea Vágó

## I. Department of Surgery

1082 Budapest, VIII. Üllői út 78.

☎: 313-5216

Head of the Department:

Full professor:

Professor emeritus:

Associate professor:

Assistant professor::

Assistant lecturer:

**Prof. Dr. Péter Kupcsulik** M.D., Ph.D., D.Sc.

Prof. Dr. Katalin Darvas,

Prof. Dr. Tibor Tihanyi

Prof. Dr. Lajos Flautner

Dr. László Harsányi, Dr. Péter Kokas (tutor), Dr. István Pulay,

Dr. Mária Tarjányi, Dr. Ambrus Magyar, Dr. János Horányi

Dr. Krisztina Pinkola, Dr. Marianna Borsodi, Dr. Zsolt Csapó,

Dr. Péter Lukovich

Dr. Bálint Hargítai, Dr. András Nagy, Dr. Edina Nagy,

Dr. András Papp, Dr. László Regáli, Dr. Hedvig Sas

## I. Department of Surgery Department Section of Surgery

1096 Budapest, IX. Nagyváradi tér 1.

☎: 215-1489

Head of the Department:

Full professor:

Associate professor:

**Prof. Dr. János Regöly-Mérei** M.D., Ph.D., D.Sc.

Prof. Dr. József Sándor (tutor)

Dr. Tihamér Tóth, Dr. András Bálint

## Department of Ophthalmology

1085 Budapest, VIII. Mária u. 39.

☎: 266-0513

Head of the Department:

Full professor:

Associate professor:

Assistant professor:

Assistant lecturer:

**Prof. Dr. János Németh** M.D., Ph.D., D.Sc.

Prof. Dr. Ildikó Süveges, Prof. Dr. György Salacz,

Dr. Ágnes Farkas, Dr. Zoltán Zsolt Nagy, Dr. Gábor Holló

Dr. Rita Vámos, Dr. Mária Bausz, Dr. Olga Lukáts,

Dr. Jeannette Tóth (tutor for Medicine). Dr. Ágnes Füst,

Dr. Zsuzsa Récsán (Program Director for Dentistry)

Dr. Orsolya Fiedler, Dr. Ágnes Borbándy,

Dr. Béla Csákány, Dr. Attila Nagymihály, Dr. András Papp,

Dr. András Seres, Dr. Antal Szabó, Dr. János Hargítai,

Dr. Illés Kovács,

Dr. Zsófia Hargítai (tutor for Dentistry)

## I. Department of Obstetrics and Gynecology

1088 Budapest, VIII. Baross u. 27.

☎: 266-0473

Head of the Department:

Full professor:

Professor emeritus:

**Dr. János Rigó** M.D., Ph.D

Prof. Dr. Zoltán Papp

Prof. Dr. Sándor Csömör

Associate professor:	Dr. Péter Patkós (Deputy Director), Dr. András Szánthó (Deputy Director), Dr. Zsolt Csapó, Dr. Emma C. Molnár, Dr. Éva Görbe, Dr. Júlia Hajdú, Dr. János Urbancsek, Dr. Anna Beke, Dr. Csaba Papp, Dr. István Sziller, Dr. István Szabó, Dr. Ernő Tóth-Pál, Dr. Bálint Nagy, Dr. Petronella Hupuczi
Assistant professor:	Dr. Sándor Konrád, Dr. János Hidvégi, Dr. Márta Lipták, Dr. Péter Somos, Dr. István Varga, Dr. László Csabay, Dr. Mihály Silhavy, Dr. György Szendei, Dr. Márta Gávai, Dr. Ágnes Harmath, Dr. Péterné Sembery, Dr. Nóra Dévényi, Dr. Katalin Szirmai, Dr. Zoltán Magyar, Dr. Artúr Beke, Dr. László Fedák, Dr. Attila Demeter, Dr. Zsolt Ádám, Dr. Ervin Hruby, dr. Judit Jeager
Assistant lecturer:	Dr. András Újházy, Dr. Zorán Belics, Dr. Ákos Csaba, Dr. József Gábor Joó (tutor), Dr. Barbara Kóhalmi, Dr. Norbert Sipos, Dr. Tamás Bóze, Dr. Zoltán Bán, Dr. Anikó Boda, Dr. Éva Csatlós, Dr. Zoltán Garamvölgyi, Dr. István Karasznai, Dr. Péter Fancsovits, Dr. Tibor Fekete, Dr. Gábor Mezei, Dr. Ákos Murber, Dr. Levente Lázár, Dr. Nándor Than, Dr. Adrienn Horváth, Dr. Attila Rab, Dr. Gabriella Demeter, Dr. Lilla Sassi, Dr. Amrita Halmos, Dr. Szabolcs Máté, Dr. Gyula Richárd Nagy (tutor), Dr. Zsanett Szigeti, Dr. Zoltán Derzsy, Dr. Erik Hauzman, Dr. Barbara Pete

## II. Department of Obstetrics and Gynecology

1082 Budapest, VIII. Üllői út 78/a.

☎: 210-0290

Head of the Department: **Prof. Dr. Attila Pajor** M.D., Ph.D., D.Sc.  
Associate professor: Dr. Nándor Ács (tutor)

## Department of Traumatology

1076 Budapest, VII. Péterfy Sándor u. 14.

☎: 461-4723

Head of the Department: **Prof. Dr. András Sárváry** M.D., Ph.D., D.Sc.  
Full professor: Prof. Dr. Tibor Mózes  
Assistant professor: Dr. Miklós Szebeny (tutor), Dr. István Baráth

## Department of Urology

1082 Budapest, VIII. Üllői út 78/B.

☎: 210-0330

Head of the Department: **Prof. Dr. Imre Romics** M.D., Ph.D., D.Sc.  
Full professor: Prof. Dr. Zsolt Kelemen  
Associate professor: Dr. Antal 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 Péntzes, 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 Kóbor, Dr. Melinda Madléna, Dr. Péter Hermann,  
Dr. Tibor Károly Fábián  
Assistant professor: Dr. János Gerle, Dr. László Kádár, Dr. Endre Somogyi  
Assistant lecturer: Dr. Péter Faluhelyi, Dr. Marianna Jáhn, 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 Deseő

## Department of Conservative Dentistry

1088 Budapest, VIII. Szentkirályi u. 47.

☎: 318-0011

Head of the Department:	<b>Prof. Dr. Ida Nyárasdy</b> 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. Márta Bernáth, Dr. Júlia Nemes (tutor), Dr. János Vág
Assistant lecturer:	Dr. Anna Herczegh, Dr. Zsuzsanna Csabai, Dr. Mária Csillag, Dr. Ágnes Grigár, Dr. Ádám Gombos, Dr. Milán Gyurkovics, Dr. Eszter Veszprémi

## Department of Oral Biology

1089 Budapest, VIII. Nagyvárad tér 4.

☎: 210-4415 ext 6420 Dr. Nagy

Head of the Department:	<b>Prof. Dr. Gábor Varga</b> 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.

☎: 459-1500/9161, 317-1044, fax: 459-1500/9165

Email: [oral@fok.usn.hu](mailto:oral@fok.usn.hu)

Head of the Department:	<b>Prof. Dr. Gábor Nagy</b> D. M. D., Ph.D.
-------------------------	---

## Department of Oral and Maxillofacial Surgery and Dentistry


1085 Budapest, VIII. Mária u. 52.

☎: 266-0457

Head of the Department:	<b>Prof. Dr. József Barabás</b> 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 Szűcs (tutor for Dentistry), Dr. Tamás Vízkelety, Dr. Szabolcs Gyulai-Gaál, Dr. Márta Ujpál, 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

1085 Budapest, VIII. Üllői út 26.

: 266-0120, 317-2979

Head of the Department:

**Prof. Dr. Éva Szóke** Ph.D.

Full professor:

Prof. Dr. Éva Lemberkovic

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 5<sup>th</sup> year),

Associate professor:

Dr. István Antal (tutor of the 4<sup>th</sup> year), Dr. János Plachy

Assistant professor:

Dr. Veronika Benedek-Vajda, Dr. Gabriella Csóka,  
Dr. Judit Dredán, Dr. Mária Hajdú (tutor of the 3<sup>rd</sup> year),  
Dr. Edit Farkas

Assistant lecturer:

Dr. Emese Balogh, Dr. Miléna Lengyel

## Institute of Pharmaceutical Chemistry

1092 Budapest, IX. Hőgyes Endre u. 7.

☎: 217-0891

Head of the Department:	<b>Prof. Dr. Béla Noszál</b> D. Sc.
Full professor:	Prof. Dr. Krisztina Takács-Novák (tutor)
Associate professor:	Dr. Miklós Józán (tutor), Dr. András Gergely, Dr. Péter Horváth, Dr. László Órfi
Assistant lecturer:	Dr. Károly Mazák, Dr. Márta Mazák-Kraszni, Ákos Rác

## Department of Pharmacodynamics

1089 Budapest, VIII. Nagyvárad tér 4.

☎: 210-2930

Head of the Department:	<b>Prof. Dr. György Bagdy</b> 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 Szökő (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:	<b>Prof. Dr. Péter Mátyus</b> Ph. D.
Professor emeritus:	Prof. Dr. László Szabó
Assistant professor:	Dr. Péter Tétényi (tutor), Dr. Pál Tapolcsányi
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:	<b>Dr. András Jávor</b> 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

Budapest, X. Zágrábi út 14.

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 Góbi M. D.**

Dr. László Gorove (tutor), Dr. Erzsébet Márton (tutor),

Dr. Imre Engelbrecht (tutor)

## Department of Foreign Languages – Faculty of Health Sciences

1088 Budapest, VIII. Vas u. 17.

☎: 486-4890; 486-4895

Head of the Department: **Assoc. Prof. Margit Orbán**

## Central Library

1085 Budapest, VIII. Üllői út 26.

☎: 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 **1<sup>st</sup> semester** of the **1<sup>st</sup> 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 (4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup>), according to the new regulations a **Hungarian "A" type Basic Language Examination** will be required by the **end of the 3<sup>rd</sup> year**. Without this qualification no student will be allowed to start the 4<sup>th</sup> year.
2. For students of Medicine and Pharmacy who will be in their **3<sup>rd</sup> 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 3<sup>rd</sup> 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 **3<sup>rd</sup> 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 **1<sup>st</sup> semester of the 1<sup>st</sup> 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



# FACULTY OF MEDICINE



*Faculty of Medicine*  
*1<sup>st</sup> year*

**STUDY PROGRAMME**

First year

1st semester						
Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOFIZFIZ_1A	Medical Physics and Statistics I.	2.5	2.5	5	semi-final	-
AOOBKEM_1A	Medical Chemistry I.	4	5	6	semi-final	-
AOGENBIO_1A	Medical Biology I.	2	2	3	semi-final	-
AOANTANA11A <sup>1</sup> AOHUMANANA21A <sup>2</sup>	Anatomy, Histology, Embryology I.	3	6	9	semi-final	-
AOLEKAMSZ_1A	Hungarian Medical Terminology I.	-	4	4	pract. mark	-
AOTSITSN_1A	Physical Education I.	-	1	0	signature	-
<b>Total Number of Credit Points from Compulsory Subjects</b>				<b>27</b>		
<b>Obligatory elective / Elective subjects:</b>						
AOLEKOTR_1A	Medical Terminology	-	2	2	pract. mark	-
<b>Total Number of Credit Points from Obligatory elective / Elective Subjects</b>				<b>2</b>		

1. Department of Anatomy, Histology and Embryology

2. Department of Human Morphology and Developmental Biology

## First year

2nd semester						
Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOFIZFZ_2A	Medical Physics and Statistics II.	2.5	2.5	5	final #	Medical Physics and Statistics I.
AOBIKEM_2A	Medical Chemistry II.	4	4	5	final #	Medical Chemistry I.
AOGENBIO_2A	Medical Biology II.	1.5	2	3	semi-final #	Medical Biology I.
AOGENIMM_1A	Basic Immunology	2	-	2	semi-final	Medical Biology I.
AOANTANA12A <sup>1</sup> AOHUMANAZ2A <sup>2</sup>	Anatomy, Histology, Embryology II.	3	6 <sup>1</sup>	9	semi-final	Anatomy, Histology, Embryology I.
AOOMSELS_1A	First Aid	-	1	0	signature	-
AOTSITSN_2A	Physical Education II.	-	1	0	signature	Physical Education I.
<b>Total Number of Credit Points from Compulsory Subjects</b>				<b>24</b>		
<b>Obligatory elective / Elective subjects:</b>						
AOINFINF_1A	Introduction to Medical Informatics	-	1	1	pract. mark	-
AOCSAOKI_1A	Medical Profession	0.67	1.33	2	pract. mark	-
<b>Total Number of Credit Points from Obligatory elective / Elective Subjects</b>				<b>3</b>		

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

- 1 G.J.Romanes: Cunningham's Textbook of Anatomy. Oxford. 1981. ISBN 0-19-2631319
- 2 J. Staubesand: Sobotta Atlas of Human Anatomy. Lippincott, Williams and Wilkins, 2001.
- 3 T.Tömböl-S.Kubik-B.Csillik: Regional Anatomy. Medicina Publishing House Co. Bp. 1998.
- 4 J.A.Kiernan: Barr's The Human Nervous System. J.B.Lippincott Co. 1998.
- 5 L.C.Junqueira-J.Carneiro-R.O.Kelley: Basic Histology. Prentice-Hall International Inc. 1989.
- 6 P.R.Wheater-H.G.Burkitt-V.G.Daniels: Functional Histology. Churchill Livingstone, 1987.
- 7 K.M.Moore: The Developing Human. Saunders Company W.B. 1988.
- 8 Alberts et al.: Essential Cell Biology. Garland Publ. Inc. 2004. ISBN 0-8153-3481-8
- 9 Thompson & Thompson: Genetics in Medicine. 6<sup>th</sup> ed. Saunders. ISBN 0721602444
- 10 Falus A.: Immunology. Bp. Semmelweis Publ. House. 2001. ISBN 963-9214-12-4
- 11 Rontó-Tarján: An Introduction to Biophysics with Medical Orientation. 3<sup>rd</sup> ed. Akadémiai K. Bp. 1999. ISBN 963 05 7607 4
- 12 Laboratory Manual of Medical Physics and Statistics. Bp. (Semmelweis University) 2005.
- 13 Ebbing,D-Grammon,S: General Chemistry. 6<sup>th</sup> ed. 1999. Houghton Mifflin Co. ISBN 0-395-90222-3
- 14 Lehninger: Principles of Biochemistry. 4<sup>th</sup> ed. 2004. ISBN 0716743396
- 15 Tóth: Concise Inorganic Chemistry for Medical Students. Bp. SOTE
- 16 Laboratory Manual I-II. (Bp.)
- 17 Csermely-Hrabák: Principles of Organic Chemistry. Bp. SOTE
- 18 Hrabák: Selected Collection of Chemical calculations. (Bp.) SOTE.
- 19 Sasvári: Bioorganic Compounds. (Bp.) (SOTE)

## Recommended textbooks:

- 1 Stryer: Biochemistry. 4<sup>th</sup> ed. 1995. ISBN 0-7167-2009-4
- 2 Zumdahl: Chemical Principles. 3<sup>rd</sup> ed. 1998. Houghton-Mifflin Co. Boston. ISBN 0-395-83995-5
- 3 Maróti-Berkes-Tölgyesi: Biophysics Problems. A Textbook with Answers. Bp. Akadémiai K. 1998. ISBN 963-05-7526-4
- 4 Alberts et al: Molecular Biology of the Cell. 4<sup>th</sup> ed. Garland Publ. Inc. ISBN 0-8153-4072-9
- 5 Csaba Gy.-Madarász B.: A sejt szerkezete. The structure of the cell. Bp. Semmelweis K. 1999. ISBN 963-8154-950
- 6 First Aid Manual. St Andrews' Ambulance Association and the British Red Cross St.John Ambulance. (Ed.) Dorling Kindersley 2002. ISBN 0751337048

# ANATOMY, HISTOLOGY AND EMBRYOLOGY

## 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

LECTURE	LAB	
	Anatomy	Histology
1. Significance of the subject in the medical training.	Anatomical nomenclature, body axes, terms of orientation.	Microscope. Simple epithelia I.
2. General osteology.	Bones of the upper limb.	
3. Origin of germ cells. Structure of the spermium. Spermiogenesis.		
4. General syndesmology and myology	Bones of the upper limb.	Simple epithelia II.
5. Characterization and classification of the epithelial tissue. Membrane specialization of epithelial cells.	Joints of the upper limb	Stratified epithelia.
6. Oocyte, oogenesis.		
7. Glandular epithelium.	Joints of the upper limb. Muscles of the ventral surface of the upper limb.	Glandular epithelia I.
8. Connective tissue, connective tissue cells and ground substance.		
9. Fertilization.		
10. Connective tissue fibers.	Muscles of the ventral and dorsal surface of the upper limb. Joints of the upper limb.	Glandular epithelia II.
11. Classification of connective tissue. Adipose, chordoid tissue.		
12. Morula, blastula, implantation.		
13. Molecules of adhesion.	Muscles on the ventral and dorsal surface of the upper limb. Cross sections of the upper limb. (except for vessels and nerves).	Connective tissue I.
14. Cartilage.		
15. Molecular bases of gastrulation. Homeobox genes.		

LECTURE	LAB	
	Topic	Anatomy
16. Bone tissue. 17. Ossification, bone growth. 18. Axes of the body, right-left asymmetry.	<b>MID-TERM TEST.</b>  Bones of the trunk and lower limb.	Connective tissue II.
19. Muscle tissue, smooth muscle, cardiac muscle, conducting system. 20. Striated muscle. 21. Formation of the placenta. Fetal membranes.	Bones and joints of the trunk and lower limb. Atlanto-occipital and atlanto-axial joints.	Cartilage, bone tissue.
22. Vertebral column, axial musculature of the trunk. 23. Diaphragm. 24. Germinal layers. Neurulation.	Joints of the trunk and lower limb. Muscles of the back and the dorsal surface of the lower limb.	Ossification.
25. Histology of blood vessels. 26. Blood, blood cells. 27. Formation of primary tissues.	Muscles on the dorsal surface of the trunk and the lower limb. Demonstration of the diaphragm.	Muscle tissue.
28. Bone marrow, hemopoiesis. 29. Granulopoiesis. 30. Congenital anomalies and inductive factors.	Muscles on the dorsal surface of the trunk and the lower limb.	Blood smear, bone marrow.
31. Pelvic diaphragm. 32. Thoracic cavity. Respiratoric movements. 33. Development of the limbs and muscles.	Muscles on the ventral surface of the lower limb. Muscles on the ventral surface of the trunk. Demonstration of the pelvic diaphragm.	Review.
34. Lymphatic tissue. Thymus. Mucosal lymphatic tissue, tonsils. <b>35. MID-TERM TEST.</b> 36. Development of the vertebral column and the trunk.	Muscles on the ventral surface of the trunk and the lower limb. Cross sections of the lower limb. (except for vessels and nerves).	Blood vessels.
37. Histology and circulation of the spleen and the lymph nodes. 38. Abdominal wall, inguinal canal. 39. Anatomy and development of the skull.	Bones of the skull. Base of the skull. Cranial fossae.	Tonsils, thymus.
40. Subinguinal hiatus, hernial canals. 41. Pelvis. Statics of the pelvis. 42. Structure of the foot. Mechanism of walking.	Facial skeleton, orbit, nasal cavity, pterygopalatine fossa.	Lymph node, spleen.
43. Clinical anatomy. 44. Clinical anatomy. 45. Clinical anatomy.	Joints and muscles of the head. Review.	Review.



## 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

LECTURE	LAB	
	Anatomy	Histology
1. Histology of the skin. 2. Derivatives of the skin and their development. Histology and embryology of the mammary gland. 3. Development of the face.	Muscles and fasciae of the neck. Demonstration of the nasal cavity.	Skin, mammary gland.
4. Larynx. 5. Trachea, lung, pleura. 6. Branchial apparatus, branchial pouches and derivatives, development of the lung.	Pharynx, larynx. Oral cavity, teeth, salivary glands.	Review of the basic tissues. General structure of the organs. Respiratory system I.
7. Histology of the respiratory tract and lung. 8. Oral cavity, pharynx, oesophagus. 9. Branchial arches and derivatives.	Tongue, isthmus faucium, soft palate. Pectoral and abdominal muscles. Diaphragm, pleura.	Respiratory system II.
10. Tongue, teeth. 11. Cardiac wall, anulus fibrosus, cardiac valves. 12. Development of branchial arteries.	Surface projection of thoracic viscera. Opening of the thoracic cavity. Mediastinum. Lung (bronchi, segments).	Lip. Salivary glands.
13. Conducting system, innervation and blood supply of the heart. 14. Pericardium, surface projection of the heart. 15. Development of great veins. Early development of the heart.	Opening of the pericardium. Dissection of cardiac vessels and cardiac chambers.	Tooth. Tooth development. Tongue.
16. Stomach - parts, topography, peritoneal relations, blood supply. 17. Histology of the stomach. 18. Development of the heart, partitioning of cardiac chambers.	Mediastinum. Heart.	Esophagus, stomach, duodenum.

LECTURE	LAB	
	Anatomy	Histology
19. Small intestine – gross anatomy and histology.	Cervical and thoracic organs. Review.  <b>MID-TERM TEST.</b>	Ileum. Colon. Appendix. Rectum (presentation).
20. Large intestine and rectum - gross anatomy and histology.		
21. Development and congenital anomalies of the heart and great blood vessels.		
22. Gross anatomy of the liver, peritoneal relations, portal circulation.	Surface projection of abdominal viscera, topography of the stomach, pancreas, spleen, small and large intestine, and the liver. Opening of the abdominal cavity. Peritoneum.	Liver. Gall bladder. Pancreas.
23. Histology of the liver.		
24. Fetal circulation, perinatal changes in circulation.		
25. Gross anatomy of the kidney (capsules, blood supply, renal hilus) and the ureter.	Hepatoduodenal ligament, coeliac trunk. Liver.	Kidney, urether, urinary bladder.
26. Histology of the kidney.		
27. Division of the embryonic body cavity. Septum transversum.		
28. Male reproductive organs -overview. Gross anatomy of the testis and its coverings.	Superior and inferior mesenteric artery. Porto-caval anastomoses. Opening of the stomach and duodenum. Common bile duct.	Testis, epididymis, spermatic cord.
29. Histology of the testis and the epididymis.		
30. Development of the digestive tract, development of the foregut, hindgut, the liver and the pancreas.		
31. Male urethra, penis, erection.	Retroperitoneum, abdominal aorta and its branches. Kidney, adrenal gland, ureter, urinary bladder. Peritoneal relations of the posterior abdominal wall.	Seminal vesicle, prostate, penis.
32. Female reproductive tract - overview, histology of the ovary.		
33. Development of the peritoneum.		
34. Uterus - parts, topography, blood supply.	Retroperitoneum.	Review.
35. Histology of the uterus, uterine cycle.		
36. Pronephros, mesonephros, and metanephros.		
37. Lymphatic drainage of the head, neck and chest cavity.	Female reproductive organs. Pelvic organs. Blood vessels and nerves of the pelvis.	Ovary, uterine tube, Uterus.
38. Lymphatic drainage of the abdomen and pelvis. <b>MID-TERM TEST.</b>		
39. Development of the urinary bladder, ureter, urethra. Congenital anomalies of the kidney and urinary bladder.		
40. Clinical anatomy.	Male reproductive organs. Pelvic organs.	Umbilical cord. Placenta. Vagina, labium minus.
41. Clinical anatomy.		
42. Migration of germ cells, sex determination, development of the gonads.		
43. Development of the reproductive organs.	Pelvic organs. Pelvic and urogenital diaphragm, external genitalia. Review.	Review.
44. Congenital anomalies of the reproductive system.		
45. Pregnancy, delivery.		

# ANATOMY, HISTOLOGY AND EMBRYOLOGY

Department of Anatomy, Histology & Embryology

Tutor: **Prof. Dr. Miklós Réthelyi**

## First Semester

**Lectures:** 3 hours per week

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

### Lectures

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

### Dissecting room

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

Bones of the shoulder girdle and the upper extremity. Rules of the dissection (prevention of accidents). Dissection of the shoulder and elbow joints. Dissection of the joints of the upper extremity. Dissecting of the upper extremity: removal of the skin, fascia brachii and antebrachii

Muscles of the shoulder region, flexor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles. Palmar aponeurosis.

Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles. Muscles, vessels and nerves

TEST. Upper extremity

Vertebrae, ribs, sternum

### Histology lab.

Behaviour in the histology lab. Use of the microscope.

Preparation of the histological specimens. Stains. Study of a solid and a hollow organs: surfaces, homogenous structure, layered structure.

SIMPLE EPITHELIA: Simple squamous (mesothel, pleura); simple cuboidal (kid simple columnar (gallbladder);

pseudostratified (trachea) STRATIFIED EPITHELIA: squamous, non-ceratinizing (esophagus); squamous ceratinizing (skin); columnar male urethra); transitional epithel (urinary bladder)

GLANDULAR EPITHEL. Goblet cells (colon); merocrine gland (salivary gland); apocrine gland (prostate); holocrine gland (sebaceous gland). PIGMENT EPITHEL (retina)

CONNECTIVE TISSUE, FIBERS. Collagen fibers (tendon); elastic fibers (vessel wall); reticular fibers (liver); differential staining of the fibers (skin); ground substance (umbilical cord)

CONNECTIVE TISSUE, CELLS. Various types of cells (scar tissue); mast cells peritoneum); fat cells (tongue, skin). CONNECTIVE TISSUE, TYPES. Mesenchyme umbilical cord); dense connective tissue (tendon); reticular tissue (lymph node); cell rich tissue (uterus).

**Lectures**

- 19. Bones and ligaments of the pelvis
- 20. Abdominal muscles, rectus sheath
- 21. Diaphragm
  
- 22. Gametogenesis, fertilization
- 23. Implantation, germ layers, embryonic disc
- 24. Development and differentiation of
  
- 25. Hip joint and the muscles acting upon it
- 26. Knee joint and the muscles acting upon it
- 27. Foot
- 28. Neurulation. Folding of the embryo.  
Fetal membranes
  
- 29. Early embryonic and placental circulation.  
Structure of the placenta  
The motor system
- 31. Muscle tissue I.
- 32. Muscle tissue II.
- 33. Herniae
- 34. Neuronal tissue: neurons and supporting cells derived from the neural tube
- 35. Neuronal tissue: neurons and supporting cells derived from the neural crest
- 36. Neuronal tissue: synapses, effectors, Receptors
- 37. Sphenoid and ethmoid bones
- 38. Temporal bone
- 39. Calvaria, base and interior of the skull
  
- 40. Facial skeleton, orbit
- 41. Nasal cavity, paranasal sinuses
- 42. Oral cavity, pterygopalatine and infratemporal fossae
- 43. Mandible, temporomandibular joint
- 44. Atlantooccipital and atlantoaxial joints.  
Suboccipital muscles
- 45. Development of the skull. Fontanelles

**Dissecting room**

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

**Histology lab.**

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

# ANATOMY, HISTOLOGY AND EMBRYOLOGY

## Second Semester

Lectures	Dissecting room	Histology lab.
1. Introduction. Significance of the vascular and lymphatic organs in the medical curriculum and in the medical practice	Heart: surface structure, vessels, myocard	VESSELS. Elastic artery (carotid artery); middle size artery and vein, arterioles, venules, capillaries (tongue)
2. Histology of the vessel wall		
3. Lymphatic organs: lymph node, spleen		
4. Lymphatic organs: thymus, tonsils	Chambers of the heart, valves	LYMPHATIC ORGANS. Lymph node, spleen
5. Surface structures of the heart, anulus fibrosus, myocard		
6. Chambers of the heart, valves		
7. Vessels of the heart, conducting system, topography. Pericard	Pericard. In situ heart dissection. Demonstration of unfixed heart.	LYMPHATIC ORGANS. Thymus, palatine tonsil, lingual tonsil.
8. Development of the heart and the pericard I.		HEART. Wall structure, conducting system.
9. Development of the heart and the pericard II. Malformations.		DIGESTIVE SYSTEM. Lip, tongue, filiforme, fungiform and vallate papillae.
10. Viscera, introduction. Histological structure of the solid and hollow viscera	TEST. Heart, anatomy and embryology	Foliate papilla (demonstration)
11. Suprahyoid muscles. Muscles of facial expression. Oral cavity.	Muscles of the face (demonstration)	DIGESTIVE SYSTEM. Salivary glands (parotid, submandibular, sublingual); tooth (demonstration)
12. Muscles of mastication. Tongue	Tongue, cervical organs on the visceral complex	DIGESTIVE SYSTEM. Tooth development, esophagus
13. Salivary glands. Anatomy of the teeth		
14. Development and histology of the teeth		
15. Development of the face, malformations		
16. Pharynx, structure of the wall, soft palate	Esophagus, aorta	
17. Infrahyoid muscles, cervical fascia, para- and retropharyngeal space		
18. Esophagus, stomach: anatomy and histology		
19. Development of the foregut	Abdominal organs, peritoneum.	DIGESTIVE SYSTEM. Stomach, cardia, pylorus
20. Small intestine: anatomy and histology	Hepatoduodenal ligament, mesentery	
21. Colon, rectum: anatomy and histology	Unpaired branches of the abdominal aorta, tributaries of the portal vein	DIGESTIVE SYSTEM. Duodenum, jejunum, ileum, colon, appendix
22. Liver and biliary apparatus: anatomy		
23. Liver and biliary apparatus: histology		
24. Pancreas: anatomy and histology. Portal vein and tributaries		
25. Development of the middle and hindgut	Demonstration of the abdominal visceral topography in the cadaver of the second year and in unfixed cadaver. Larynx, trachea	DIGESTIVE SYSTEM. Liver, gallbladder, pancreas
26. Peritoneum	Pleura. Mediastinum.	
27. Cartilages, joints and muscles of the larynx		TEST. Lymphatic organs, vessels, heart, digestive system
28. Skeleton of the larynx, laryngeal inlet, rima glottidis		
29. Trachea, lung: anatomy. Pleura		
30. Histology of the lung. Development of the respiratory system		
31. Kidney, ureter: anatomy	TEST. Anatomy and embryology of the digestive and respiratory systems.	RESPIRATORY SYSTEM. Larynx, trachea, lung.
32. Histology and vascular structure of the kidney	Capsules of the kidney, components of the renal hilum.	Demonstration: embryonal lung
33. Urinary bladder: anatomy and histology. Female urethra	Aorta, inferior vena cava, ureter; pelvic organs.	UROPOETIC SYSTEM. Kidney, urinary bladder.
34. Development of the uropoetic system, malformations		

**Lectures**

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

**Dissecting room**

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

**Histology lab.**

- Demonstration: ureter
- MALE GENITAL SYSTEM.  
Testis, epididymis, spermatic cord, seminal vesicle, prostate
- MALE GENITAL SYSTEM.
- Penis.  
FEMALE GENITAL SYSTEM.  
Ovary, uterine tube  
FEMALE GENITAL SYSTEM.  
Uterus, vagina, mammary gland

Semester examination (semi-final)

**MEDICAL BIOLOGY I.**

Tutor: *Dr. Valéria László*

**First Semester**

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

## MEDICAL BIOLOGY II.

### Second Semester

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

## 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](http://www.dgci.sote.hu)

## MEDICAL PHYSICS AND STATISTICS

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

### First Semester

---

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



## MEDICAL PHYSICS AND STATISTICS

### Second Semester

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

## MEDICAL CHEMISTRY

Tutor: **Dr. András Hrabák**

### First Semester

<b>Week</b>	<b>Lectures Topic</b> (Introduction to Medical Chemistry)
1–4	Chemical equilibrium (electrolytes, acids and bases, ionization equilibrium of water, buffers, solubility product) (Mortimer, pp 412–517)
4–5	Solutions, osmosis, gases dissolved in water (Mortimer, pp 302–328)
5–7	Thermochemistry, chemical thermodynamics, chemical kinetics (Mortimer pp 87–114, pp 364–412, pp 517–542)
7	Complexes (Mortimer 723–730)
8	Inorganic chemistry, nomenclature
8–9	Electrochemistry (Mortimer pp 542–584)
10–14	Organic chemistry (Erdői: manuscript)

**Week Practice**

- 1 Introduction, safety rules
- 2 Acid-base titrations I,
- 3 Acid-base titrations II.
- 4 Acid-base titrations III.
- 5 Conductometric determination of NaCl concentration.  
Titrations based on precipitation.
- 6 1<sup>st</sup> Midterm exam.
- 7 Titration based on complex formation. Double and complex salts.
- 8 Conductometry. \*
- 9 Spectrophotometry. \*
- 10 Electrochemistry. \*
- 11 Discussion. \*
- 12 2<sup>nd</sup> 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
- 2 Organic chemistry – Erdő: Organic chemistry for medical students, Debrecen, 1989., manuscript.
- 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:** 30<sup>th</sup> January

**Precondition:** Only for students in the 1<sup>st</sup> 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"	<b>E. Ludwig</b>
Diagnosis of infectious diseases: clinical relevance of the various diagnostic tests	<b>S. Meszner</b>
Optimisation of antimicrobial therapy. The pk/pd approach, correlation of dosage and clinical efficacy.	<b>E. Ludwig</b>
Infectious diseases with exanthemas	<b>S. Meszner</b>
Upper respiratory tract infections (common cold, acute and chronic rhinosinusitis, acute otitis, tonsillitis, pharyngitis). Epidemiology, the influence of age. Theoretical considerations and practice.	<b>S. Meszner</b>
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	<b>E. Ludwig</b>
The nosocomial infections. Nosocomial pneumonia, difficulties of etiological diagnosis. Antimicrobial treatment. Iv catheter-associated infections.	<b>E. Ludwig</b>
Intraabdominal infections (primary and secondary peritonitis, cholecystitis). Urinary tract infections.	<b>E. Ludwig</b>
Central nervous system infections. Meningitis, etiological diagnosis, antimicrobial treatment.	<b>Z. Liptai</b>
Infections of the immunocompromised hosts. Diagnosis, and the principles of treatment. Invasive fungal infections. Colonisation and infection. Treatment of Candida and aspergillus infections.	<b>J. Sinkó</b>
Tropical diseases. HIV and AIDS.	<b>D. Bánhegyi</b>
The modern concept of sepsis. The basis of antimicrobial therapy. Indication of antibiotic combinations. The toxic shock syndrome.	<b>E. Ludwig</b>

## MEDICAL INFORMATICS

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

Director : Dr. *András Jávör*

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

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

2. (3 hours) Web based publication using HTML  
Creation of a html page (about the medical topic), definition of the structure of the page, adding some HTML objects (hyperlinks, images).
3. (3 hours) Web based publication using HTML and CSS  
Finalizing the content, personalizing the page appearance with CSS style definitions.
4. (3 hours) Presentation  
Preparation of the final presentation.
5. (3 hours) Delivering the presentation.

## 2. STATISTICS course

1. (3 hours) Statistical concepts, introduction to the built-in functions of Excel and Statistical Module (program installation, usage of Stat Menu)  
Descriptive statistics by built-in functions (means, indicators of dispersion, moments, normality, confidence interval), graphical representations
2. (3 hours) Parametrical methods by Excel (Student's tests, F-test)  
ANOVA methods (clinical trials, Fisher's dissociation, one way and two-way ANOVA without replication and replication)
3. (3 hours) Correlation and regression analysis (correlation coefficient and its limitations, one and more variable linear regressions by Excel)
4. (3 hours) Usage of SPSS statistical program package I.
5. (3 hours) Usage of SPSS statistical program package II.  
Final test: clinical data processing by Excel program

## 3. DATABASES course

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

#### 4. MULTIMEDIA course

1. (3 hours) Concepts of acoustics (frequency, sound pressure, sound as a mechanical wave), properties of human hearing (frequency and dynamic range). The basics of sound processing (principles of the microphones and speaker), the digitalizing (sampling, Shannon-theory, quantization).  
**Exercises:** sound recording with the computer, modification of the recorded sound.
2. (3 hours) Analysis of a phonocardiogram (heart sound, calculation of the pulse, murmurs).
3. (3 hours) (Optional) Basics of sound compression (simultaneous and temporal masking, Fletcher-Munson curves). The MP3 compression.  
**Exercises:** Comparison of different compressed sound files.
4. (3 hours) Basics of image processing (principles of the CRT and LCD displays and CCD cameras, black and white and color images).  
**Exercises:** Image processing with computer (modify of the resolution by different kind of filtering, color depth, Gamma-correction, color balance, etc.)
5. (3 hours) Movie edition.  
**Exam:** theoretical and practical

## FIRST AID

Tutor: **Dr. Erzsébet Márton**

### Topics

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

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

Heart attack. Sudden death. Chain of survival. Assessment of vital signs.

BLS (Basic Life Support)

BLS

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

BLS + AED (management of situations)

BLS + AED (Management of situations)

Chocking. Drowning. Electrocutation.

Injuries. Extrication of the patient: Rautek maneuvers. Helmet removal. Mobilization and immobilization of injured patients.

Bleeding control. Bandages. Burns. Shock.

Fractures, dislocation, sprain. Slings.

Stroke. Convulsions. Diabetes mellitus: Hypoglycaemia. Shortness of breath. BLS

Poisoning. Drugs. Drunkenness.

BLS

**Note:** Participation at 75% of practices is necessary. Compensation of absences is possible in subsequent practices.



Development in learning skills will be controlled all the time during the practices in the semester.

Mode of certifying absences: oral – referring to practices

Requirements: The student should be able to

- recognize emergencies, and call for help
- start with BLS + AED
- provide airway management in unconscious patients
- provide first aid for patients complaining for chest-pain, shortness of breath, signs for hypoglycaemia and having suffered from fainting, shock condition, convulsion, injuries.

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

## **HUNGARIAN LANGUAGE, TERMINOLOGY – See information before the Study Programs**

### **COMPULSORY SUMMER PRACTICE**

Nursing Course

#### **Week 1**

An introduction to the structure of a hospital as an institution for attending patients.

1. In-patient department
2. Out-patient department
3. Auxiliary departments (X-ray, labs, physiotherapy, etc.)
4. Departments of Administration (warden’s office, cashier’s office, etc.)
5. Service departments (kitchen, storeroom, laundry, etc.)

Getting acquainted with the ward and its connected parts

The structure and hygiene of the ward

Daily active participation in keeping order in the ward

Getting acquainted with the equipment of the ward

Cleaning beds and bedside tables after discharging of patients (cleaning, disinfection)

Making beds with help and alone (for walking cases)

Helping with discharging patients

#### **Week 2**

(practicing the things learnt in the previous week)

Making beds with turnable bedcase (first with nurse’s help)

Use of comfort equipment (under supervision)

Disinfectants in the ward

Cleaning and sterilization of bedpans, urinals and spittoons

Helping with taking temperatures, sterilization of thermometers

Helping with serving food

Helping with feeding bed patients

**Week 3**

(practicing the things learnt in the previous two weeks)

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

**Week 4**

(practicing the things learnt in the previous 3 weeks)

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

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



*Faculty of Medicine  
2<sup>nd</sup> year*

**STUDY PROGRAMME****Second Year**

<b>1st semester</b>						
<b>Subject code</b>	<b>Compulsory Subjects</b>	<b>Lectures</b>	<b>Practicals</b>	<b>Credit Points</b>	<b>Examination</b>	<b>Prerequisite</b>
AOANTANA13A <sup>1</sup> AOHUMANAZ3A <sup>2</sup>	Anatomy, Histology, Embryology III.	3	5	8	semi-final	Anatomy, Histology, Embryology II.
AOKIKELT_1A	Medical Physiology I.	6	5	11	semi-final	Anatomy, Histology, Embryology II. Medical Physics and Statistics II. Medical Chemistry II.
AOOBIBKM_1A	Medical Biochemistry, Molecular Biology I.	4	3	6	semi-final	Medical Chemistry II. Medical Chemistry II.
AOMAGSZO_1A	Medical Sociology*	1	1	2	semi-final	–
AOTSITSN_3A	Physical Education III.	–	1	0	signature	Physical Education II.
<b>Total Number of Credit Points from Compulsory Subjects</b>				<b>27</b>		
<b>Obligatory elective / Elective subjects</b>						
AOCSABKO_1A	Introduction to Clinical Medicine	–	2	2	pract. mark	Medical Profession
4 credit points must be collected each semester. See the table after the third year.						
<b>Total Number of Credit Points from Obligatory elective / Elective Subjects</b>				<b>4</b>		

<sup>1</sup> Department of Anatomy, Histology and Embryology

<sup>2</sup> Department of Human Morphology and Developmental Biology



## LIST OF TEXTBOOKS

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

### Recommended textbooks:

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

# ANATOMY, HISTOLOGY AND EMBRYOLOGY

Department of Anatomy, Histology & Embryology

Tutor: **Prof. Dr. Miklós Réthelyi**

## First Semester

**Lectures:** 3 hours per week

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

### Lectures

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

### Dissecting room

- Divisions of the brain meninges, arteries and veins of the brain, surface structure of the hemispheres basis cerebris.
- Demonstration: dura maters, Sinuses  
Lateral ventricles, third ventricle  
Fourth ventricle
- Spinal cord, brain stem.  
Brain stem, fourth ventricle, cerebellum
- Cross sections of the brain stem.  
Demonstration: spinal cord
- Coronal and horizontal sections
- Test. Anatomy of the brain and the spinal cord; nuclei, pathways (tracts), embryology. Regio (r.) frontalis, r. infraorbitalis et buccalis,
- R. frontalis, r. infraorbitalis et buccalis, r. Supraclavicularis, r. Axillaris  
R. parotideomasseterica, r. mediana colli, r. infraclavicularis, r. Deltoida hypoglossal nerves  
R. parotideomasseterica, r. mediana colli, r. infraclavicularis, r. Deltoida.  
Dissection of the eye
- R. submandibularis, trigonum caroticum, fossa scalenotrachealis. Demonstration: middle and inner ear

### Histology lab.

- 
- Spinal cord, spinal ganglion, medulla oblongata,
- Cerebellum, cerebral cortex

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

## ANATOMY, HISTOLOGY AND EMBRYOLOGY

### Second Semester

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



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

## ANATOMY, HISTOLOGY AND EMBRYOLOGY

### Third Semester

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

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

**Credits:** 8

**Lecture:** 3 hours/week

**Laboratory:** 5 hours/week (5 hrs/week anatomy, or 2.5 hrs anatomy and 2.5 hrs histology)

## Detailed weekly curriculum

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

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

## Fourth Semester

### Department of Human Morphology and Developmental Biology

#### Faculty of Medicine, Semmelweis University

#### English Language Course

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

**Credits:** 5

**Lecture:** 1 hour/week

**Laboratory:** 4 hours anatomy or 2 hours anatomy plus 2 hours histology

**Detailed weekly curriculum**

Topic	LAB	
	Anatomy	Histology
1. Regional and sectional anatomy of the upper limb.	Dorsal regions of the head, neck, chest wall and limbs. Cross section of the arm and forearm. Bones and joints of the upper limb. Topography of radial nerve injury. Dorsal veins of the hand.	
2. Regional and sectional anatomy of the lower limb.	Dorsal regions of the head, neck, chest wall and limbs. Cross section of the thigh and leg. Bones and joints of the lower limb. Medial and lateral malleolar regions. Anastomoses between deep and superficial veins. Topography of cistern puncture. <i>In situ</i> dissection of the brain.	
3. Vertebral column and its function.	Dorsal regions of the head, neck, chest wall and limbs. <i>In situ</i> dissection of the brain. <i>In situ</i> dissection of the orbit. Cross section of the neck.	
4. Calvaria, face, mimetic muscles - blood supply and innervation.	Ventral regions of the head, neck, limb. Cranial nerves related to these regions. Subclavian artery, external carotid artery and their branches. Subclavian vein, internal jugular vein and their tributaries.	
5. Orbit and pterygopalatine fossa.	Ventral regions of the neck, limbs. Surface projection of thoracic viscera. Thoracic cavity <i>in situ</i> . Pleura, pericardium, cardiac valves. Topography of thoracocentesis and cardiac puncture.	
6. Floor of the oral cavity, topography of the salivary glands.	Ventral regions of the neck, head and limbs. Topography of the stellate ganglion. Mediastinum. Surface projection of abdominal viscera. Abdominal cavity <i>in situ</i> .	
7. Topography of the neck.	Ventral regions of the head, neck, limbs. Lung, opening of the pericardium. Blood vessels of the heart.	
8. Gross anatomy of the mammary gland and armpit.	Ventral regions of the head, neck, limbs. Posterior mediastinum. Removal of intestines. Retroperitoneum. Uropoietic system.	
9. Mediastinum.	Abdominal aorta. Lumbar plexus. Retroperitoneum. Ventral regions of the head, neck, limbs. External and internal male reproductive organs.	Nervous system. Sensory organs. Endocrine glands.
10. Posterior abdominal wall, retroperitoneum.	External and internal female reproductive organs. Perineum.	Lymphatic tissue. Blood vessels, bone marrow.
11. Pelvis, female perineum.	External genitalia, perineum. Pelvis, internal iliac artery, sacral plexus.	Digestive tract. I.
12. Topography and CT of the abdomen.	Topography of the rectum. Pelvis, perineum.	Digestive tract. II.

Topic	LAB	
	Anatomy	Histology
13. Clinical anatomy.	Brain, spinal cord. Review of dissected regions.	Uropoietic system. Male reproductive organs.
14. Clinical anatomy.	Review.	Female reproductive organs. Placenta, umbilical cord.
15. Research activity of the Institute.	Review.	<b>Practical exam.</b>

## MEDICAL PHYSIOLOGY

Institute of Human Physiology and Clinical Experimental Research

Tutor: **Dr. Tamás Ivánics**

### First Semester

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

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

- 12 Regulation of respiration: Neural and chemical control of respiration. Adaptation of cardiorespiratory system and skeletal muscle to physical exercise.
- 13 Whole body metabolism. Gastrointestinal motility and secretions. Innervation of the GI tract. GI hormones. Regulation of GI motility. Regulation of GI secretion: Salivary secretion; Gastric secretion; Exocrine pancreas.
- 14 Liver & biliary system. Digestion & Absorption. Carbohydrates, lipids and proteins. Absorption of water and electrolytes. Absorption of vitamins and minerals.

**Practice** (5 hours weekly)

Introduction. Measurement and processing of data:

Simulation type experiments

„Biopac™ Student Lab”

Investigating the compound action potential in the sciatic nerve of the frog, Sim Nerve

Experiments on the frog nerve-muscle preparation, Sim Muscle

Experiments on isolated rat heart, Sim Heart

Human neuromuscular function I.

Human neuromuscular function II.

Electromyogram

Smooth muscle activity of isolated, superfused muscle strips, Sim Vessel

Electrocardiogram

Indirect measurement of arterial pressure and recording heart sounds

Computer modeling of the cardiovascular system

Cardiovascular case report

Heart rate analysis, respiratory sinus arrhythmia

Respiratory function

Pulmonology case report

## MEDICAL PHYSIOLOGY

### Second Semester

---

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

- 1 Formation and excretion of urine. Physiological functions, their significance in the maintenance of the internal milieu and in healthy functioning of the organism. Renal circulation. Glomerular filtration.
- 2 Tubular functions. Mechanisms adjusting the composition of urine. Fluid compartments. Regulation of extracellular fluid composition and volume. Role of the kidneys in the control of blood pressure. Micturition.
- 3 Regulation of acid-base balance. General principles of endocrine physiology. The pituitary gland. Posterior lobe hormones. Anterior lobe hormones. Growth hormone and physiology of growth.
- 4 The adrenal cortex. Blood supply and its control. Innervation. Structure and biosynthesis of adrenocortical hormones. Effects of glucocorticoids and control of their secretion. Effects of mineralocorticoids and control of their secretion. Effects of adrenal androgens and estrogens. Endocrine regulation of calcium metabolism and the physiology of bone.
- 5 The thyroid gland. Formation and secretion of thyroid hormones. Control of synthesis and secretion. Transport and metabolism of thyroid hormones. Effects of thyroid hormones.

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

**Practice** (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

---

##### Week Topic

- 1 Intermediary metabolism, citric acid cycle, carbohydrate metabolism - overview. Digestion of carbohydrates. Glycolysis I.
- 2 Glycolysis II. Entry of other hexoses into glycolysis. Gluconeogenesis. Regulation of glycolysis and gluconeogenesis.
- 3 Pentose phosphate pathway, generation of NADPH<sub>2</sub>. Metabolism of glycogen. Metabolism of disaccharides. Metabolism of aminosugars
- 4 Metabolism of lipids - overview. Absorption of lipids. Oxidation of fatty acids, ketone bodies. Synthesis of fatty acids.
- 5 Phospholipid metabolism. Lipoprotein metabolism Cholesterol metabolism and transport.
- 6 Biosynthesis of steroid hormones. Biosynthesis and biological role of eicosanoids
- 7 Degradation of proteins. Catabolism of amino acids I.
- 8 Catabolism of amino acids II. Urea cycle Biosynthesis of amino acids
- 9 Metabolism of nucleotides I. Metabolism of nucleotides II.
- 10 Metabolism of porphyrins. Biotransformation I.
- 11 Biotransformation II. Integration of metabolism.
- 12 Intermediary metabolism of tissues I. Intermediary metabolism of tissues II.
- 13 Regulation of intermediary metabolism in fasting and in well-fed state I.
- 14 Regulation of intermediary metabolism in fasting and in well-fed state II. Hormonal effects in the intermediary metabolism

### First Semester

#### Schedule of the practical lessons (experiments and seminars)

---

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



# MEDICAL BIOCHEMISTRY, MOLECULAR BIOLOGY II.

## Second Semester Schedule of the lectures

---

### Week Topic

- 1 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.
- 2 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.
- 3 Protein synthesis in pro and eukaryotes. Initiation, initiation factors. Protein synthesis: elongation. The role of GTP-binding proteins in the speed and fidelity of protein synthesis. Termination. Postsynthetic modification of proteins. Protein sorting into intracellular compartments.
- 4 The regulation of gene expression in prokaryotes and eukaryotes. Molecular biology of cancer. Life cycle of RNA viruses. Retroviruses. Viral oncogenes.
- 5 Protooncogenes, cellular oncogenes. Oncogenic DNA viruses. Tumor suppressor genes. The biology of apoptosis.
- 6 Control of cell cycle
- 7 Basic methods in recombinant DNA technology. PCR as a new tool in medical diagnosis
- 8 Human genome project
- 9 Signal transduction, an overview. Plasma membrane surface receptors, G proteins, and G protein coupled receptors. cAMP in signaling, calcium signaling, protein kinase C, eicosanoids in signal transduction.
- 10 Enzyme linked plasma membrane surface receptors, protein tyrosine kinase receptors, cGMP in signaling. Nuclear receptors, bHLH transcription factors: HIF, Ah receptor
- 11 Membrane transport processes, an overview. Sodium, potassium homeostasis.  $\text{Na}^+$ - $\text{K}^+$ -ATPase. The molecular anatomy of synapses. The cholinergic and adrenergic nerve terminal.
- 12 Glutamic acid as a neurotransmitter. Glutamate receptors under normal and pathological conditions. General properties of ion channels. Methods for studying ion channels. The molecular mechanism of gating and permeation. Structure of the  $\text{K}^+$  channel. Diversity of ion channels. Voltage-gated,  $\text{Ca}^{2+}$ -activated, and ATP-sensitive  $\text{K}^+$  channels. Voltage-gated  $\text{Cl}^-$  channels. The CFTR chloride channel. Nicotinic Ach receptor.
- 13 Blood coagulation. Clotting factors. The regulation of thrombin formation and thrombin activity. The formation of plasmin. Fibrinolysis. Regulation of fibrinolysis.
- 14 The function of the platelets, activation, adhesion and aggregation. The biochemistry of endothelium. Pathological aspects of hemostatic imbalance.

## **Second Semester**

### **Schedule of the practical lesson (experiments and seminars)**

---

- 1 LDH isoenzymes; Acute 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<sup>+</sup> , K<sup>+</sup> ATP-ase activity
- 7 Signal transduction of insulin
- 8 Biochemistry of hemostasis
- 9 Hemostatic abnormalities
- 10 Practice: Induction of  $\beta$ -galactosidase in E. coli
- 11 Midterm examination II.
- 12 Bioinformatics (Electronic database management systems in molecular diagnosis).
- 13 Recombinant DNA techniques I.
- 14 Practice/Seminar: Recombinant DNA techniques II.

## Medical Sociology

### Syllabus.

(Faculty of Medicine)

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

Textbook: Cockerham, William C (2006): Medical Sociology. Prentice Hall, Upper Saddle River

# 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 placods

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

#### Myogenesis

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

#### Teratogenesis

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

#### Primordial germ cells (PGC)

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

#### Fertilization

Acrosome reaction, prevention of polyspermy, activation of egg metabolism

#### Embryonic induction

Spemann organization center, mosaic and regulative zygotes

#### Early embryonic development

Cleavage, neurulation, X-chromosome inactivation, parental imprinting

#### Gastrulation

Differentiation of mesoderm, primary tissue formation

#### Axis formations in birds and mammals

Symmetry breaking, left-right asymmetry formation.

# Organogenesis

2 hours/week, 2 credits

**Prof. Dr. Imre Oláh**

## Department of Human Morphology and Developmental Biology

### **Axial and paraxial mesoderm**

Formation of axial skeleton, somitogenesis, clinical correlations

### **Segmentation and Homeobox genes**

Retinoic acid, gain of function, loss of function

### **Intermediate mesoderm I.**

Development of kidney, clinical correlations

### **Intermediate mesoderm II.**

Development of gonads, sex determination, clinical correlations

### **Lateral plate mesoderm, splanchnopleura I.**

Vasculogenesis, blood formation, hematopoietic stem cell.

### **Lateral plate mesoderm, splanchnopleura II.**

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

### **Lateral plate mesoderm, somatopleura**

Development of the limb, evolutionary and ontogenetic aspects, clinical correlations

### **Branchiogenic arches and their derivatives**

Clinical correlations

### **Prechordal plate as head organizer, AVE-anterior ventral entoderm**

Cranial neural crest and head mesoderm, somatic and visceral head and neck, clinical correlations

### **Development of arteries**

Branchiogenic, parietal and visceral segmental arteries, clinical correlations

### **Epithelio-mesenchymal interactions**

Ecto-entoderm <—> mesoderm, tooth and lung development, clinical correlations

### **Neurogenesis**

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

### **Development of eye**

Retina, lens

### **Entoderm formation**

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

### **Environmental regulation of development**

Developmental symbiosis, seasonality and sex, nutritional contribution





*Faculty of Medicine*  
*3<sup>rd</sup> year*





## Third Year

2nd semester					
Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination
AOKORKOR_2A	Pathophysiology and Clinical Lab. Diagnostics II.	2.5	2.5	5	final #
AOMIKMIK_2A	Medical Microbiology II.	2	3	5	final #
AOPTKPAT12A <sup>1</sup> AOPATPAT22A <sup>2</sup>	Pathology and Histopathology II.	3	4	7	final #
AOBL1BEL12A <sup>3</sup> AOBL2BEL22A <sup>4</sup> AOBL3BEL32A <sup>5</sup>	Internal Medicine II.	3	4	7	semi-final
AOMAGPSZ_2A	Medical Psychology II.	10/sem	20/sem	2	final #
	Medical Ethics (Bioethics)	1	1	2	semi-final
AOFRMFRM_1A	Pharmacology, Pharmacotherapy I.	1.5	0.5	2	pract.mark
<b>Total Number of Credit Points from Compulsory Subjects</b>				<b>30</b>	
<b>Obligatory elective / Elective subjects</b>					
At least 4 credit points must be collected each semester. See the table after the 3rd year.					
<b>Total Number of Credit Points from Obligatory elective / Elective subjects</b>				<b>4</b>	

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

# The grade influences the qualification of the Diploma

## LIST OF TEXTBOOKS

- 1 Cecil's Essentials of Medicine. Ed. Andreoli, Carpenter, etc. 5<sup>th</sup> ed. W.B. Saunders, 2001. ISBN 0-7216-8179-4
- 2 Bickley, L.S.-Hoekelman R.A: Bates' Guide to Physical Examination and History Taking. 7<sup>th</sup> ed. J.B. Lippincott Williams & Wilkins, 1998. ISBN 0-7817-1655-1
- 3 Current Medical Diagnosis and Treatment. Tierney, McPhee, Papadakis, Appleton and Lange McGraw-Hill 2002. ISBN 0-07-136466-8
- 4 Marshall: Illustrated Textbook of Clinical Chemistry. Mosby. 2<sup>nd</sup> ed. Gower Med. 1992
- 5 F.Heckner et al.: Practical Microscopic Hematology. 4<sup>th</sup> ed. 1993. Williams and Wilkins Trade Cldh. ISBN 0-8121-1711-5
- 6 N.Goldschlager: Principles of Clinical Electrocardiography. 3<sup>rd</sup> ed. 1989. Appleton and Lange. ISBN 0-8385-7951-5
- 7 Peter E.S.-Freund-Meredith B.McGuire: Healths, Illness, and the Social Body. (A Critical Sociology). Prentice Hall. Upper Saddle River, New Jersey.
- 8 Erich H. Loewy-Roberta Springer Loewy (2004): Textbook of Health Care Ethics. 2<sup>nd</sup> edition. Dordrecht-Boston-London: Kluwer academic Publishers ISBN: 1-4020-1460-0
- 9 Behavior & Medicine. 3<sup>rd</sup> ed. Danny Wedding. Hogrefe & Huber Publishers, Seattle, 2001. ISBN 0-88937-238-1
- 10 Murray, Rosenthal, Kobayashi, Pfaller: Medical Microbiology. 4<sup>th</sup> ed. 2002. Mosby Inc. ISBN 0-323-01213-2
- 11 Kumar-Abbas-Fausto: Robbins and Cotran Pathologic Basis of Disease (Elsevier Saunders, 2005), ISBN: 0-8089-2302-1
- 12 Cotran-Kumar-Robbins: Robbins Pathologic Basis of Disease (W.B. Saunders, 1999), ISBN: 0-7216-7335-x
- 13 Szende B, Suba Zs.: Introduction to Histopathology. Bp. Medicina, 1999.
- 14 Katzung: Basic and Clinical Pharmacology. Lange 10<sup>th</sup> ed, 2007

### Recommended textbooks:

- 1 Harrison's Principles of Internal Medicine. Companion Handbook. 12/1997 14<sup>th</sup> ed. 096009. Ed. by Anthony Fauci, E.Braunwald, K.J.Isselbacher et al. Paper Text ISBN 0-07-021530-8 LCCN:97-042634
- 2 Harrison's Principles of Internal Medicine. 15<sup>th</sup> ed. McGraw Hill Inc. 2001. ISBN 0-07007272-8 (Combo) 0-07-007273-6 (Vol.1.), 0-07-007274-4 (Vol.2.), 0-07913686-9 (Set)
- 3 Cecil Textbook of Medicine. Ed. Goldmann, L. Bennett, J.C. 21<sup>st</sup> ed. W.B.Saunders 2000. ISBN 0-7216-7995-1 Vol.1-2. ISBN 0-7216-7996-X (Single Vol.)
- 4 Concise Oxford Textbook of Medicine. Ed.Ledingham, Warrell. Oxford. Oxford University Press, Oxford, 2000. ISBN 0192628704
- 5 The Merck Manual. 16<sup>th</sup> ed. Merck Research Laboratories, 1996.
- 6 William J. Marshall, Stephen K.Bangert: Clinical Chemistry. 5<sup>th</sup> ed. Elsevier Health Sciences 2004. ISBN 0723433283.
- 7 Stephen J. McPhee, William F. Ganong: Pathophysiology of Disease: An Introduction to Clinical Medicine, 5<sup>th</sup> ed. McGraw-Hill.2006. ISBN 10: 0-07-144159-X
- 8 H. Thieml, H. Diem, T. Haferlach: Color Atlas of Hematology 2<sup>nd</sup> ed. Georg Thieme Verlag 2004. ISBN: 9783136731024
- 9 Kathryn L. McCance, Sue E. Huether: Pathophysiology: The Biologic Basis for Disease in Adults And Children 5<sup>th</sup> ed. Mosby Inc 2005 ISBN-10: 0323036236
- 10 N. Goldschlager et al.: Principles of Clinical Electrocardiography. 3<sup>rd</sup> ed. 1989. Appleton and Lange ISBN 0-8385-7951-5.
- 11 Mahta, Atul B. Hoffbrand, A. Victor: Haematology at a Glance 2<sup>nd</sup> ed. Blackwell Publishing 2005. ISBN: 1405126663
- 12 Carl A. Burtis: Tietz Textbook of Clinical Chemistry. W.B. Saunders 3<sup>rd</sup> 1999 ISBN 0721656102
- 13 Carl A. Burtis: Tietz Fundamentals of Clinical Chemistry. WB. Saunders 5<sup>th</sup> 2001 ISBN 0721686346
- 14 Davis et al.: Clinical Laboratory Science. (Strategies for Practice.) 1988. Lippincott-Raven Cldh Text. ISBN 0-397-50860-3
- 15 E.Rubin-J.L. Farber: Pathology (J.B. Lippincott 1994). – 3<sup>rd</sup> edition (1999)
- 16 Nemes Z.: Atlas of Histopathology (TEMPUS edition, Debrecen 1998)

- 17 CP.L. Wheater, H.G. Burkitt, Stevens J.S. Lowe: Basic Histopathology, a Colour Atlas and Text. (Churchill Livingstone; 4Rev Ed edition, 2002)
- 18 Zalatnai A.: 500 Practice Questions about Pathology (Semmelweis University of Medicine)
- 19 Illyés Gy.: Path Nebulo 2000. Version 1.0 (English-Hungarian)
- 20 Székely E.: Practice on Histopathology I-II. (Semmelweis University of Medicine) - video
- 21 Alan Stoudemire: Human Behaviour: An Introduction for Medical Students. Lippincott Company, 1994. 2<sup>nd</sup> ed. ISBN 0-397-51337-2.
- 22 Fadem B.: Behavioural Science. Harwal, 2<sup>nd</sup> ed. 1994. ISBN 0-683-02953-3
- 23 Kopp M., Skrabski Á.: Behavioural Sciences. (Applied in a Changing Society) Bp. Corvina. 1996. ISBN 963-7306-307.
- 24 Stoudemire A: Human Behavior: An introduction for Medical Students, Lippincott Co., 1994
- 25 Gatchel R.J.-Baum A.-Krantz D.S.: An Introduction of Health Psychology. McGraw-Hill, 2<sup>nd</sup> ed. 1989. ISBN 0-07-100729-6

## **PATHOPHYSIOLOGY**

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

### **First Semester**

---

#### **Lectures**

##### ***I. Pathophysiology of Circulation***

Heart Failure I  
Heart Failure II

##### ***II. Pathophysiology of Fluid and***

Electrolyte Balance  
Disturbances in Fluid, Na<sup>+</sup> and K<sup>+</sup> Balance

##### ***III. Pathophysiology of Acid-Base Balance***

Respiratory and Metabolic Disturbances

##### ***IV. Pathophysiology of the Kidney***

Acute Renal Failure

Chronic Renal Failure

##### ***V. Pathophysiology of Respiration***

Respiratory Insufficiency

##### ***VI. Pathophysiology of the Peripheral Circulation***

Shock  
Hypertension

##### ***VII. Pathophysiology of Metabolic Disorders***

Metabolic Disturbances in Diabetes

Hepatic Insufficiency  
Nutritional Disorders, Obesity

Disturbances in Protein, Amino Acid and  
Metabolism Purine Metabolism Disorders

##### ***VIII. Pathophysiology of the Gastrointestinal Tract***

Gastric and Duodenal Ulcer

Malabsorption-Maldigestion

#### **Lab**

The normal electrocardiogram  
Arrhythmias I: Disorders of Impulse  
Formation

Arrhythmias II: Disorders of Impulse  
Conduction

Arrhythmias III: Complex Arrhythmias

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

ECG Signs and Laboratory Diagnosis of  
Myocardial Infarction

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

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

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

# PATHOPHYSIOLOGY

## Second Semester

---

### Lecture

#### **IX. Pathophysiology of Hematologic Disorders**

Anemias

Myeloproliferative Diseases

Disturbances in Hemostasis

#### **X. Pathophysiology of Lipid Metabolism, Atherosclerosis**

Lipid Abnormalities, Atherosclerosis

#### **XI. Pathophysiology of the Immune System**

Inflammation

Immunodeficiency and Tumor Immunity

Autoimmunity

XII. Pathophysiology of Endocrine Disorders

Disturbances in Pituitary Function

Disturbances in Thyroid Function

Disturbances in Adrenal Gland and Sexual Function

Metabolic Bone Diseases

#### **XIII. Pathophysiology of the Nervous System**

Motor and Sensory Disturbances

Disturbances in "Higher" CNS Function

Pathophysiology of Pain

### Lab

Evaluation of the Leukocyte-Monocyte System

Evaluation of Erythropoietic System

Evaluation of Anemias

Evaluation of Granulocytopenic Disorders

Hematologic and Immunologic

Evaluation of Lymphoid Disorders

Hematologic and Immunologic

Evaluation of Lymphoproliferative Disorders

Tour in a Routine Clinical Laboratory

Practice, Examples, Exam

Laboratory Evaluation of Plasma Proteins and Enzymes

Laboratory Evaluation of Lipid and Lipoprotein Disorders

Hypothalamic-Pituitary Tests

Thyroid Function Tests

Laboratory Evaluation of Ca<sup>++</sup> 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**

<b>Week</b>	<b>Lectures (2 hours per week)</b>
1.	Introduction. General information about the tuition. The place of Medical Microbiology among natural sciences, its significance, sub-fields and short history. Fundamentals of the morphology, physiology and genetics of bacteria.
2.	Pathogenic nature and virulence of bacteria. Pathomechanism, molecular pathogenesis, virulence factors. Infection and disease.
3.	Defence mechanisms of the host against infections. Active and passive immunisation. Vaccines.
4.	Antibacterial drugs: • Modes of action and interactions of antibacterial drugs. • Principles and practice of the antibacterial chemotherapy. Origin, mechanisms, induction, transfer, spreading, elimination and control of resistance of bacteria against antibacterial drugs
5.	Introduction to the classification of medically important bacteria: fundamentals of taxonomic, epidemiological, nosological, as well as pathogenetical classification. Gram-positive non-spore forming rods: <i>Corynebacterium</i> , <i>Listeria</i> , <i>Erysipelothrix</i> , <i>Lactobacillus</i> Normal flora of the vagina.
6.	Gram-positive aerobic cocci: <i>Streptococcus</i> and <i>Staphylococcus</i> genus. Normal flora of the skin.
7.	Gram-negative aerobic and microaerophilic cocci and coccobacilli: <i>Neisseriaceae</i> , <i>Pasteurellaceae</i> , <i>Haemophilus</i> genus Normal flora of the upper respiratory tract.
8.	Gram-negative aerobic rods and coccobacilli: <i>Pseudomonas</i> , <i>Legionella</i> , <i>Brucella</i> , <i>Bordetella</i> , <i>Francisella</i> genus.
9.	Gram-negative facultative anaerobic rods • Normal flora of the gastrointestinal tract. • Extraintestinal diseases caused by Gram-negative enteral bacteria. • Pathogens of the gastrointestinal tract I: <i>Vibrio</i> , pathogenic <i>Escherichia coli</i> , <i>Campylobacter</i> , <i>Helicobacter</i> .
10.	Pathogens of the gastrointestinal tract II: <i>Yersinia</i> (yersiniosis), <i>Shigella</i> (shigellosis), <i>Salmonella</i> (salmonellosis). The enteral fever ( <i>Salmonella typhi</i> and <i>paratyphi</i> ), as well as <i>Yersinia pestis</i> .
11.	Gram positive aerobic and anaerobic spore-forming bacteria: <i>Bacillus</i> and <i>Clostridium</i> genus Obligate anaerobic bacteria and associated infections: • Gram-positive: <i>Peptostreptococcus</i> , <i>Propionibacterium</i> , <i>Eubacterium</i> , <i>Bifidobacterium</i> , <i>Arachnia</i> , • Gram-negative: <i>Veillonella</i> , <i>Bacteroides</i> , <i>Fusobacterium</i>
12.	Acid-fast bacteria: <i>Mycobacterium</i> , <i>Nocardia</i> . <i>Actinomyces</i>
13.	Spirochaetales: <i>Treponema</i> , <i>Borrelia</i> . <i>Leptospira</i> .
14.	Rickettsiales, Chlamydiales, Mycoplasmatales

## First Semester

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

## MEDICAL MICROBIOLOGY

### Second Semester

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

<b>Week</b>	<b>Practicals (3 hours per week)</b>
1.	Medical Mycology
2.	Medical Parasitology - 1
3.	Medical Parasitology - 2
4.	Medical Parasitology - 3
5.	Midterm exam I. General Virology
6.	DNA viruses
7.	RNA viruses - 1
8.	RNA viruses - 2
9.	Midterm exam II.
10.	<ul style="list-style-type: none"> <li>• Clinical Bacteriological Diagnosis – 1: Skin, wound and eye infections</li> <li>• Clinical Bacteriological Diagnosis – 2: Respiratory tract infections</li> </ul>
11.	<ul style="list-style-type: none"> <li>• Clinical Bacteriological Diagnosis – 3: Infections of the uro-genital tract. Abdominal and Enteral infections. Sexually transmitted diseases</li> </ul>
12.	<ul style="list-style-type: none"> <li>• Clinical Bacteriological Diagnosis – 4: Bacteraemia, sepsis, endocarditis, meningitis</li> </ul>
13.	Summary and review
14.	Practical exam



## PATHOLOGY

1st Dept. of Pathology and Experimental

Cancer Research

Tutor: **Dr. Gergely Rác**

### First Semester

---

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

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

**Lectures** (3 hours per week)

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

**Histopathology** practices

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

**Lectures** (3 hours per week)

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

**Histopathology** practices

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

## **PATHOLOGY**

### **Second Semester**

---

**Lectures** (3 hours per week)

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

**Histopathology** practices

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

**Lectures** (3 hours per week)

33. Kidney
34. Urinary tract
35. Male genital syste
36. Gynecologic pathology
37. Gynecologic pathology
38. Neonatology
39. Breast
40. Blood and lymphoid organs
41. Blood and lymphoid organs
42. Blood and lymphoid organs
43. Blood and lymphoid organs
44. Endocrinology
45. Endocrinology
46. Skin
47. Skin

**Histopathology** practices

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

**Lectures** (3 hours per week)

48. Head and neck

49. Bones and joints

50. Bones and joints

51. Bones and joints

52. Eye

53. Skeletal muscle

54. Nervous system

55. Nervous system

56. Nervous system

57. Clinicopathologic conference

**Histopathology** practices

Non Hodgkin lymphoma (low grade) H&E (107)

Non Hodgkin lymphoma (high grade) H&E (108)

Follicular lymphoma (slide demonstration)

Tonsillar lymphoma (slide demonstration)

MALT lymphoma (slide demonstration)

Hodgkin lymphoma H&E (109)

Hodgkin lymphoma histologic types (slide demonstration)

Colloid goiter H&E(110)

Graves disease H&E (111)

Follicular adenoma of the thyroid gland H&E(112)

Follicular carcinoma (slide demonstration)

Papillary carcinoma of the thyroid gland H&E (113)

Medullary carcinoma (slide demonstration)

Adrenal cortical adenoma H&E(105)

Parathyroid adenoma (slide demonstration)

Osteosarcoma H&E (114)

Rhabdomyosarcoma H&E (115)

Rheumatoid arthritis H&E (116)

Autoimmun diseases (slide demonstration)

Basocellular carcinoma H&E (27)

Verruca vulgaris H&E (100)

Naevus pigmentosus H&E (39)

Malignant melanoma H&E (40)

Metastatic melanoma (slide demonstration)

Bowen's disease (slide demonstration)

Capillary haemangioma of the skin H&E (34)

Purulent meningitis H&E(117)

Encephalitis H&E (118)

Meningeoma H&E (119)

Glioblastoma multiforme H&E(120)

Schwannoma H&E (121)

Neuroblastoma H&E (122)

Ganglioneuroblastoma (slide demonstration)

Paraganglioma (slide demonstration)

Review

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

# Pathology and Histopathology

2<sup>nd</sup> Department of Pathology

Head of Department: **Prof. Dr. József Tímár**

Tutor: Dr. **András Kiss**

## Index

Lectures	3
List of textbooks	8
Histopathology practices	9
Slides for the histopathology exam	14
List of oral questions	17
General information	21
Lectures, practices, competition	21
Consultation, Examinations - Semifinal	22
Examinations - Final	26
Schedule	28
Schedule for the academic year	29

## Lectures

### 1<sup>st</sup> Semester - 2008

09.08. M. 1. lecture <i>Dr. Tímár</i>	<b>Introduction</b> History of pathology, its significance in medicine. Health and sickness. - Clinicopathology – Demonstration of establishing diagnosis from biopsy specimen to the pathological report and therapeutic suggestion.
09.10. W. 2. lecture <i>Dr. Tímár</i>	<b>Cell injury</b> Reversible cell injury (hydropic swelling, atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia, intracellular storage). Irreversible cell injury (necrosis, apoptosis, ischemic cell injury, external agents, calcification, hyaline, aging).
09.15. M.3. lecture <i>Dr. Kádár/ Dr. Schaf</i>	<b>Hemodynamic disorders</b> Basic notions in hemodinamics. Hemorrhage, active and passive hyperemia. Disorders of water and electrolytes. Edema. Thrombosis, embolism. Infarction. Shock
09.17. W. 4. lecture <i>Dr. Kerényi</i>	<b>Environmental and nutritional pathology.</b> Smoking, alcoholism, drugs. Iatrogenic injuries. Environmental chemical and physical factors. Obesity, protein malnutrition, vitamins.
09.22. M. 5. lecture <i>Dr. Tímár</i>	<b>Immunopathology.</b> Constituents of the immune system Hypersensitive reactions. Allergy. Transplantation. Immunodeficiency. AIDS. Infections of immunodeficient individuals.
09.24. W. 6. lecture <i>Dr. Kovács</i>	<b>Immunopathology</b> Autoimmune diseases. Etiology. Monosystemic diseases (e.g. chr. Atrophic gastritis, myasthenia gravism Basedow dis., Hashimoto thyroiditis, Addison dis., insulin dependent diabetes mellitus, sclerosis multiplex) and Oligo- polysystemic diseases (e.g. SLE, Sjögren sy, RA, scleroderma, dermatomyositis)
09.29. M. 7. lecture <i>Dr. Kovács</i>	<b>Infectious diseases I.</b> Diseases caused by viruses( tick-borne viruses, polio, variola, herpes, CMV, EBV, rubella, varicella, mumps, influenza), Rickettsiae, Spirochetes,
10.01. W. 8. lecture <i>Dr. Kovács</i>	<b>Infectious diseases II.</b> Bacteria( tularaemia, pertussis, legionella, brucellosis, listeriosis, clostridial infections (tetanus, botulism), Streptococci) Actinomycosis. Mycobacteria (tbc, leprosy). Protozoa (malaria, toxoplasmosis, amebiasis)

<p>10.06. M. 9. lecture <i>Dr. Tímár</i></p>	<p><b>Inflammation I.</b> Definition. Symptoms. Vascular permeability. Inflammatory mediators and their origin. Cellular recruitment. Acute inflammation. Systemic manifestations of inflammation. Inflammation of avascular tissues. Wound healing, regeneration and repair: Classification of cells and tissues according to their regenerative capability. Extracellular matrix. Regeneration, repair.</p>
<p>10.08. W.10. lecture <i>Dr. Schaff</i></p>	<p><b>Inflammation II:</b> Chronic inflammation. fibrosis, scarring. Granulomatous inflammations (tuberculosis, syphilis. etc.)</p>
<p>10.13. M. 11. lecture <i>Dr. Tímár</i></p>	<p><b>Neoplasia I.</b> Causes of neoplasia. Epidemiology. Prevention. (protooncogenes, oncogenes, tumor suppressor genes, growth factors)</p>
<p>10.15. W. 12. Lecture <i>Dr. Tímár</i></p>	<p><b>Neoplasia II.</b> Tumor progression, metastasis. Inherited genetic defects related to cancer. Classification of tumors. Premalignant lesions. Molecular basis of cancer. Tumor growth and progression.</p>
<p>10.20. M. 13. Lecture <i>Dr. Schaff</i></p>	<p><b>Neoplasia III.</b> Carcinogenesis (physical, chemical, biological). Epidemiology of tumors.</p>
<p>10.22. W. 14. lecture <i>Dr. Schaff</i></p>	<p><b>Neoplasia IV.</b> Histologic types of tumors. Characteristics of benign and malignant tumors.</p>
<p>10.27. Sat. 15. lecture <i>Dr. Kulka</i></p>	<p><b>Neoplasia V.</b> Staging and grading of tumors. Paraneoplasia. Clinical pathology of tumors.</p>
<p>10. 29. W. 16. lecture <i>Dr. Kíss</i></p>	<p><b>Clinical Pathology – Molecular pathology:</b> Diagnostic parameters, requirements, which guide the clinical protocols. Molecular diagnostics of tumors. Targeted therapy.</p>
<p>11.03. M. 17. lecture <i>Dr. Kíss</i></p>	<p><b>Genetic diseases, developmental disorders, storage diseases</b> Chromosomal abnormalities, single-gene abnormalities. Autosomal dominant and recessive inheritance, sex-linked disorders. Morphogenic disorders, malformations, multifactorial inheritance. Prenatal diagnosis.</p>
<p>11.05.W. 18. lecture <i>Dr. Kádár</i></p>	<p><b>Blood vessels I.</b> Structure of vessels. Atherosclerosis. Aneurysms. Hypertensive vascular disease.</p>
<p>11.10. M. 19. lecture <i>Dr. Kádár</i></p>	<p><b>Blood vessels II.</b> Inflammatory disorders of blood vessels. Microvascular disease. Diseases of veins and lymphatic vessels. Tumors of vessels.</p>
<p>11.12. W. 20. lecture <i>Dr. Glasz</i></p>	<p><b>The heart I.</b> Congenital heart diseases. Ischemic heart disease. Heart failure.</p>
<p>11.17. M. 21. lecture <i>Dr. Glasz</i></p>	<p><b>The heart II.</b> Rheumatic heart disease. Inflammatory diseases of the endocardium and myocardium. Cardiomyopathies. Systemic diseases involving the heart.</p>
<p>11.19. W. 22. lecture <i>Dr. Kerényi</i></p>	<p><b>Respiratory system I.</b> Larynx and trachea (developmental abnormalities, infections, trauma, tumors). Conducting airways (congenital abnormalities, infections, bronchial obstructions and aspiration). Lung parenchyma (congenital abnormalities, infections, pneumonia). Diffuse alveolar damage (ARDS, iatrogenic damage, hemorrhage). Chronic obstructive pulmonary diseases (COPD).</p>
<p>11.24. M. 23. lecture <i>Dr. Tímár</i></p>	<p><b>Respiratory system II.</b> Development of lung cancer. Neoplasia (primary cancer of the lung, metastasis, benign tumors). Etiology, genetic abnormalities.</p>

- 11.26. W. 24. lecture  
*Dr. Tímár*
- Respiratory system III.** Diseases unique to lungs (obstruction, bronchitis, asthma, bronchiolitis, emphysema, pneumoconiosis, restrictive diseases, sarcoidosis). Diseases of the pleura.
- 12.01.M. 25. lecture  
*Dr. Tímár*
- Head and neck**  
Oral cavity, lips, tongue, teeth, salivary gland. Nose and sinuses, nasopharynx. Ear. Pathology of the esophagus. Developmental disorders, diverticulum, esophagitis, tumors of the esophagus.
- 12.03.W. 26. lecture  
*Dr. Schaff*
- Gastrointestinal tract I.**  
Esophagus (anatomy and developmental disorders, inflammation, trauma, tumors). Stomach (congenital abnormalities, inflammations, peptic ulcer, neoplasms)
- 12.08. M. 27. lecture  
*Dr. Schaff*
- Gastrointestinal tract II.**  
Small intestine (congenital disorders, infections, vascular disease, Crohn-disease, malabsorption, Whipple's disease, neoplasms, pneumatosis cystoides).
- 12.10. W. 28. lecture  
*Dr. Schaff*
- Gastrointestinal tract III.**  
Colon (congenital disorders, infections, diverticular disease, inflammation, Crohn-disease, ulcerative colitis, vascular diseases, neoplasms, other disorders). Appendix. Peritonitis.

## 2<sup>nd</sup> Semester - 2009

- 02.02. M. 31. lecture  
*Dr. Schaff*
- Liver and biliary system I.**  
Anatomy of the liver, function. Bilirubin-metabolism and jaundice. Hepatic failure. Hepatorenal syndrome. Viral hepatitis. Chronic hepatitis. Cirrhosis. Portal hypertension. Non-viral hepatitis.
02. 04. W. 32. lecture  
*Dr. Schaff*
- Liver and biliary system II.**  
Alcoholic liver disease, toxic liver injury. Hemochromatosis. Vascular disorders. Neoplasms.
- 02.09. M. 33. lecture  
*Dr. Schaff*
- Liver and biliary system III.**  
Gallbladder and bile ducts (congenital anomalies, cholecystitis, cholelithiasis, cholangitis, neoplasms).
- 02.11.W.
- 02.16. W. 34. lecture  
*Dr. Járjay/ Dr. Székely*
- 02.23. M. 35. lecture  
*Dr. Székely*
- 02.25. M. 36. lecture  
*Dr. Székely*
- 02.11.W.
- 02.16. W. 34. lecture  
*Dr. Járjay/ Dr. Székely*
- Pancreas I.**  
Pathology of the exocrine pancreas: Developmental abnormalities, inflammations, tumors of the exocrine pancreas. Diabetes mellitus.
- 02.23. M. 35. lecture  
*Dr. Székely*
- Endocrinology I.**  
Pathology of the endocrine pancreas: Diabetes mellitus.
- 02.25. M. 36. lecture  
*Dr. Székely*
- Endocrinology II.**  
The hypothalamus-hypophysis system. Pathology of the pituitary gland. The thyroid gland: hypo- and hyperfunction, inflammations, tumors. Pathology of the parathyroid gland. Hypo- and hyperfunction and other diseases of the adrenal cortex. Tumors of the adrenal gland. Pineal gland. Ectopic hormone production. Pathology of the thyroid gland.
- 03.02. W. 37. lecture  
*Dr. Kardos*
- Kidney I.**  
Anatomy. Clinical syndromes. Congenital abnormalities. Inflammatory and non-inflammatory lesions. Renal disease and systemic disorders.
- 03.04. M. 38. lecture  
*Dr. Székely*
- Kidney II.**  
Tubulointerstitial diseases. Hydronephrosis. Lithiasis. Tumors of the kidney.
03. 09. W. 39. lecture  
*Dr. Tímár*
- Urinary tract I.**  
Kidney transplantation. Congenital abnormalities of the urinary tract. Inflammations. Urinary bladder (malformations, inflammations, tumors). Urethra
03. 11. M. 40.. lecture  
*Dr. Székely*
- Urinary tract II. / Male genital system**  
Diseases of the epididymis, testis, prostate, penis and scrotum.
- 03.16. W. 41. lecture  
*Dr. Schaff*
- Gynecologic pathology I**  
Precancerous lesions of the cervix. Cervix carcinoma. Endometrial hyperplasias. Benign and malignant tumors of the endometrium.

03.18. W . 42. lecture <i>Dr. Schaff</i>	<b>Gynecologic pathology II.</b> Inflammations of the vulva, vagina and uterus. Tumors of the vulva, vagina and uterus. Pathology of the fallopian tubes. Normal menstrual cycle. Bleeding abnormalities. Pathology of pregnancy. Ovarial diseases.
03.23. M. 43. lecture <i>Dr. Kiss / Dr. Gonda</i>	<b>Neonatology - Pediatric tumors.</b> Premature birth and its complications. Intrauterine infections and their consequences. Twin pregnancy. Diseases of the perinatal period. Sudden infant death. Pediatric Tumors – pathology and diagnosis of pediatric malignancies.
03.25. W. 44. lecture <i>Dr. Kulka</i>	<b>Breast I</b> Symptoms and diagnosis of breast diseases. Malformations. Benign symptomatic lesions (inflammations, fibrocystic disease, epithelial dysplasia and its significance, benign tumors)
03.30. M. 45. lecture <i>Dr. Kulka</i>	<b>Breast II</b> Malignant tumors - epidemiology, risk factors. Histologic types of breast carcinoma. Prognostic factors in breast cancer Non-epithelial breast malignancies Screening: non-palpable breast lesions The male breast.
04.01. W. 46. lecture <i>Dr. Székely / Dr. Járny</i>	<b>Cytodiagnostics – cancer screening - Clinicopathology</b> 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).
04. 15. W. 47. lecture <i>Dr. Székely</i>	<b>Blood and lymphoid organs I.</b> Hemopoetic system. Normal function (bone marrow, lymph nodes, spleen). Morphology and immunologic evaluation. Disorders of platelets and coagulation. Anemias, polycythemia. Neutrophilia. Proliferative disorders of mast cells. Monocytosis. Sinus histiocytosis. Benign disorders of lymphoid cells.
04.20 .M. 48. lecture <i>Dr. Székely</i>	<b>Blood and lymphoid organs II.</b> Chronic myeloproliferative syndromes(CML, myelofibrosis, thrombocytomia). Acute myeloproliferative syndromes (acute leukaemias). Lymphocytic leukaemias. Disorders of the spleen.
04.22. W. 49. lecture <i>Dr. Székely</i>	<b>Blood and lymphoid organs III.</b> Lymphomas (Hodgkin, non-Hodgkin). Metastatic tumors in bone marrow and lymph nodes.
04.27. M. 50. lecture <i>Dr. Arató</i>	<b>Bones and joints</b> The structure of the bone and cartilage. Osteogenesis. Growth and maturation disorders of the skeleton. Aseptic bone necrosis. Reactive osteogenesis. Osteomyelitis and specific inflammations. Metabolic disorders. Tumors and tumor-like lesions of the bones. Joints
04.29. W. 51. Lecture <i>Dr. Schaff</i>	<b>Nervous system I.</b> Trauma, vascular and circulatory disorders. CSF dynamics. Encephalomyelitis, meningitis. Congenital malformations. Metabolic storage.
05.04. M. 52. lecture <i>Dr. Schaff</i>	<b>Nervous system II.</b> Demyelinating diseases. Neurodegenerative diseases. Pathology of the eye and ear. Metabolic diseases
05.06. W. 53. lecture <i>Dr. Schaff</i>	<b>Nervous system III.</b> Neoplasms (neuroectodermal, mesenchymal, embryonic, ectopic tissue, metastasis). Peripheral nervous system (neuropathies, inflammations, trauma, tumors). Skeletal muscle and soft tissue tumors. Muscular dystrophies, myopathies, diseases of neuromuscular junction, fatty tumors, fibrous tumors, fibrohistiocytic tumors, tumors of skeletal muscles.
05.11. M. 54. lecture <i>Dr. Schaff</i>	<b>Skin Basic notions in skin pathology.</b> Diseases of the epidermis and dermo-epidermal junction. Diseases of the dermis: vessels, connective tissue, panniculus. Tumors of the skin. Manifestations of systemic diseases of the skin.
05. 13 W. 55. lecture <i>Dr. Tímár</i>	<b>Childhood Tumors</b>



## List of textbooks

- 1 Kumar-Abbas-Faust: Robbins and Cotran: Pathologic Basis of Disease (Elsevier Saunders, 2005), ISBN: 0-8089-2302-1
- 2 Cotran-Kumar-Robbins: Robbins Pathologic Basis of Disease (W.B.Saunders, 1999), ISBN: 0-7216-7335-x
- 3 Szende B., Suba Zs Introduction to Histopathology (Medicina, 1999)

## Recommended literature

- 1 E.Rubin-J.L.Farber: Pathology (J.B.Lippincott 1994). ? 3rd edition (1999)
- 2 Nemes Z. Atlas of Histopathology (TEMPUS edition, Debrecen 1998)
- 3 CP. L. Wheater, H.G, Burkitt, a Stevens J.S. Lowe.: Basic Histopathology a Colour Atlas and Text. (Churchill Livingstone; 4Rev Ed edition, 2002)
- 4 Zalatnai A 500 Practice Questions about Pathology (Semmelweis Univ. of Medicine)
- 5 Illyés Gy: Path\_Nebulo\_2000. Version 1.0 ( english- hungarian)
- 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**
  - Actinomyces H&E – slide demonstration (98)
  - 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)  
Leiomyosarcoma (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)  
Tuberculous 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)

- 13.practice** Villous atrophy in small intestine (47)  
Ulcerative 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 cirrhosis 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)  
Hydatiform 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)  
    Phylloid 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 thyroiditis (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 demonstrataion)
- 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)  
 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)  
 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)  
 Polyarteriitis nodosa H&E (29)  
 Giant cell arteriitis 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)  
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)  
Nodular hyperplasia of the prostate H&E (67)  
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 vulgaris 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

1. Irreversible cell injury. Cell death. Necrosis.
2. Morphologic reaction to persistent stress (Atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia).
3. Intracellular storage and calcification. Hyalin.
4. Cellular aging.
5. Chemical (vasoactive) mediators in inflammation.
6. The role of neutrophil leukocytes in inflammation.
7. Chronic and granulomatous inflammation.
8. Morphologic patterns of inflammation (origin and types of exsudate).
9. Spread and systemic manifestations of inflammation.
10. Lymphocytes and macrophages in inflammation
11. Extracellular matrix.
12. Repair and wound healing.
13. Regeneration and healing in different tissues.
14. Cellular components of the immune response.
15. Types of hypersensitivity.
16. Immune reaction to transplanted organs.
17. Immunodeficiencies (congenital, aquired).
18. Autoimmunity.
19. Principles of teratology. Errors of morphogenesis.
20. Clinically important malformations.
21. Syndromes linked to chromosomal abnormalities.
22. Autosomal dominant disorders.
23. Autosomal recessive disorders.
24. Sex linked disorders. Multifactorial inheritance.
25. Diseases of infancy and childhood.
26. Hemodynamic disorders of perfusion.
27. Edema and related disorders of water and electrolytes.

28. Embolism and thrombosis.
29. Shock.
30. Smoking.
31. Alcoholism.
32. Drug abuse and iatrogenic drug injury.
33. Environmental chemical agents.
34. Environmental physical agents. Radiation.
35. Nutritional disorders. Avitaminosis.

**2nd Semester**

36. Acute pancreatitis.
37. Chronic pancreatitis.
38. Developmental abnormalities of the kidneys. Cystic disease of the kidney.
39. Inflammatory glomerular lesions of the kidneys.
40. Vascular diseases of the kidneys.
41. Diseases of the urinary bladder and urethra.
42. Non-neoplastic disorders of the testis and epididymis.
43. Infectious disorders of the female genital tract.
44. Pathology of the cervix uteri (except tumors).
45. Pathology of placenta and gestational trophoblastic disease.
46. Non neoplastic diseases of the breast.
47. Anemias and disorders of hemostasis.
48. Pathology of the spleen.
49. Pathology of the pituitary gland and the hypothalamus..
50. Non-neoplastic lesions of the thyroid gland.
51. Pathology of the parathyroid gland.
52. Pathology of the thymus and pineal gland.
53. Diseases affecting the 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.
3. Growth characteristics of cancer. Tumor markers.
4. Invasion and metastasis.
5. Grading and staging of cancer.
6. Physical and chemical carcinogenesis.
7. Viral carcinogenesis.
8. Chromosomal and gene alterations in cancer.
9. Immunological aspects of cancer.
10. Effect of cancer on the host. Paraneoplastic syndromes.
11. Heredity and cancer.



12. Epidemiology of cancer.
13. Premalignant lesions.Screening.
14. Risk factors in cancer.
15. Tumors of blood vessels and heart.
16. Pathology of larynx and trachea.
17. Primary lung cancer.
18. Benign and metastatic lung tumors. Tumors of the pleura.
19. Neoplasms of the esophagus.
20. Neoplasms of the stomach.
21. Neoplasms of small intestine.
22. Neoplasms of colon.
23. Viral diseases.
24. Diseases caused by mycoplasma, chlamidia, rickettsiae and spirochetes.
25. Diseases caused by bacteria (salmonellosis, plague, tularemia, H.influenzae, pertussis, chancroid,legionellosis).
26. Diseases caused by bacteria (cholera, shigellosis, E.coli infection, yersiniosis, campylobacter, brucellosis, listeriosis).
27. Diseases caused by bacteria (clostridial diseases, diphteria, rhinoscleroma, Klebsiella, granuloma inguinale, phagedenic ulcer, noma).
28. Diseases caused by bacteria (staphylococcal, streptococcal infections, filamentous bacteria)
29. Diseases caused by mycobacteria.
30. Diseases caused by protozoans.
31. Diseases caused by fungi.
32. Diseases caused by nematodes.
33. Diseases caused by trematodes, cestodes, athropods.
34. Opportunistic infections.

### **2<sup>nd</sup> Semester**

35. Neoplasms of the exocrine pancreas.
36. Neoplasms of the endocrine pancreas.
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.
49. Non-Hodgkin's malignant lymphomas.
50. Hodgkin' s disease.
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.
3. Inflammatory diseases of blood vessels. Microvascular disease.
4. Aneurysms and diseases of the veins.
5. Ischemic heart disease. Heart failure.
6. Congenital heart disease.
7. Rheumatic and other "hypersensitivity" diseases of the heart.
8. Inflammatory, nutritional, endocrine and metabolic diseases of the heart
9. Cardiomyopathies.
10. Congenital lesions of the lung. Lesions in conducting airways. Diffuse alveolar damage. Idiopathic alveolar filling disease.
11. Infections affecting the lung. Tuberculosis.
12. Chronic airflow obstruction. Chronic bronchitis. Bronchiolitis. Bronchiectasia.
13. Asthma.
14. Emphysema.
15. Pneumoconiosis.
16. Restrictive, infiltrative or interstitial lung disease.
17. Diseases of the pleura.
18. Diseases of the pulmonary vasculature.
19. Congenital disorders of the gastrointestinal tract.
20. Pathology of esophagus (except congenital disorders and tumors).
21. Gastritis.
22. Peptic ulcer disease.
23. Infections and vascular diseases of small intestine. Malabsorption.
24. Diverticular and vascular disease of the colon. Inflammatory bowel disease.
25. Pathology of the appendix.
26. Peritonitis. Retroperitoneal fibrosis.

## **2nd Semester**

27. Bilirubin metabolism and jaundice.
28. Hepatic failure.
29. Acute viral hepatitis.
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.
36. Nonviral infections of the liver. Neonatal hepatitis.
37. Cholelithiasis.
38. Cholecystitis, cholesterosis and cholangitis.
39. Noninflammatory lesions of the kidneys associated with nephrotic syndrome.
40. Renal diseases associated with systemic disorders.

41. Tubulointerstitial diseases of the kidneys.
42. Pathology of the fallopian tube and the ovaries.
43. Benign disorders of the lymphoid cells.
44. Pathology of the adrenal cortex.
45. Diabetes.
46. Amyloidosis.
47. Diseases affecting the basement membrane zone of the skin.
48. Pathology of the nose and paranasal sinuses.
49. Pathology of the nasopharynx.
50. Bone fractures. Osteonecrosis. Reactive bone formation.
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 1hour 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 from histology in the final. The first three ranked students – the winners - will be awarded.

### **Consultation**

Upon request there is a possibility for a consultation with the tutor. The students are welcome to autopsy practices of other 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**

#### **SEMIFINAL:**

**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.

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

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

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

**4. The exam for EM 1-6 begins at 8.30 a.m.** sharp at the **11<sup>th</sup> 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 3<sup>rd</sup> year students as well. The sign up procedure is controlled and regulated by the software and the institute can not interfere with the system. The officially signed up students will be scheduled for examination.

In case the internet based sign up system would not be introduced you must sign up in advance into the SIGN UP BOOK which is located on the 1st floor at the main entrance in front of the

doorman's office. Only the registered students are entitled to take examination on the given day. Your name should be appeared in printed form to avoid the unintentional misspelling. The registration should also include your group (e.g. EM/1, EM/4 etc.).

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

**8. Retake exam:** In case of failure or for those who are unsatisfied with the result of the first exam a retake exam should be taken to improve the mark. For that a retake ticket is required from the secretariate. If one retakes an exam to improve the previous mark it is not granted that mark of the retake exam can not be the same or worst than the previous mark.

**The retake exam - the first retake exam as well - may be oral by request !!**

**Students who have failed the exam on one occasion can retake it not earlier than four working days passing by after the first trial (the days of the examinations are not included).** One must also register on the NEPTUN system and indicate that this is the first, second, etc. retake exam. Without retake ticket one is not allowed to take an examination.

**Any further details regarding the exam and exam dates will be discussed on a STUDENT / STAFF meeting held in the last week of November. The date of the meeting is to be announced on the lecture.**

### **8. Types of the written questions:**

Different kinds of questions are prepared and randomly selected from a pool.

The test questions include simple choice (one right answer out of 5), combination (2-5 correct answers according to a code), multiple choice (2-5 correct answers - no code), "true-false" questions, medical terms and short assays.

a/ True-false: You must decide if the given statement is true or not.

For example:

The eagle is a bird.

A: True                      B: False                      (Mark: A)

b/ Simple choice: Only 1 answer is correct out of 5 possibilities.

For example:

Select the country in which pyramids are found:

A: Netherlands

B: Egypt

C: Hungary

D: Cyprus

E: Greece

(Mark: B)

c/ Problem-solving simple choice.

For example:

Jane has four children. Betty is the oldest, her mother was 18 when she was born. Tom is 2 years younger than Bobby and 5 years older than the youngest child, Mark. Bobby was born 3 years later than Betty. Mark was born 2 years ago. How old is Jane now?

A: 28

B: 18

C: 23

D: 30

E: 35

(Mark: D)

d/ Combination (simple choice with multiple choice pattern).

You have four or five possible answers and 5 combinations. Mark the only letter covering the correct answers.

For example:

The natural habitat of the following animals is the water.

1. lion A: 1,2,3

2. sea-lion B: 2,3,4

3. whale C: 2,4,5

4. shark D: 1,2

5. baboon E: 2,3

(Mark: B)

e/ Combination questions with a standard code:

A: 1, 2, 3

B: 1, 3

C: 2, 4

D: 4

E: 1, 2, 3, 4

f/ Multiple choice: Two to five possible answers. Mark all of the correct possibilities. (The number of the correct answers is not indicated!)

For example:

Select the presidents of the U.S.

A: Neil Armstrong

B: J.F. Kennedy

C: Michael Jackson

D: George Washington

E: Ronald Reagan

(Mark: B,D,E)

g/ Relations: You should match the corresponding numbers and letters

For example:

1. wind A: snow

2. light B: fluid

3. white C: air

4. water            D: food  
5. taste            E: sun

(Mark: 1C, 2E, 3A, 4B, 5D)

h/ Medical term.

For example:

What is the name of the medical person who is engaged in pathology?

(Write: pathologist)

i/ Assay: You should give a short, concise description of a given topic.

For example:

List the main features of a modern car (minimally 3) (Write: safe, fast, comfortable)

j/ Figure: You should name the individual parts of the given figure.

For example:

Name the numbered parts: (Mark: 1: hair, 2: ear, 3: nose, 4: lip)

## FINAL

Form of the **FINAL** examination \_

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

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

**The examination for EM 1-6 will take place at the 2<sup>nd</sup> 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.

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

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

#### **OPTIONAL PRACTICAL EXAM of HISTOLOGY preceeding 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 2<sup>nd</sup> 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, preprepared 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 included). 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. Tímár (passing by the doorman's cabine to the right, at the end of the corridor take a left turn ).**

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

Serious mistakes or "clear spots" in your knowledge may significantly affect the final mark or even result in a failing.

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

## Schedule

### Lectures

	I. semester	II. semester
Monday	9:30–10:40	10:50–12:00 **
Wednesday	8:00–9.10	8:00–9.10 **

### Practices

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

\*\* preliminary data

### Tutors

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

Responsible tutor: Dr. András Kiss

**Schedule for the academic year of 2008/2009**

**1<sup>st</sup> 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

**2<sup>nd</sup> semester:** February 02. - May 15., 2009

Official holidays: February 11-12.(Simmelweis 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 (1<sup>st</sup> and 2<sup>nd</sup> 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 Tímár**  
**Head of Department**

## INTERNAL MEDICINE

1st Dept. of Internal Medicine

3rd Dept. of Internal Medicine

Tutor: **Prof. Dr. Ferenc Szalay, Dr. Katalin Keltai, Dr. Margit Abonyi**

### First Semester

---

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

Introduction to internal medicine. The sick man. The medical interview. The doctor's conductance and attitude towards the patient. Basic rules of the medical interview. Details of history taking. Questions related to the respiratory, circulatory and gastrointestinal systems.

The physical examination. Inspection. Palpation.

Percussion. Auscultation.

Fever. Taking the temperature. The types of fever curves.

The main symptoms of pulmonary disease. Cough, sputum production, hemoptysis, dyspnea, wheezing, cyanosis and chest pain.

Physical diagnosis of the common pleural and pulmonary syndromes.

Examination of the heart. Inspection and palpation of the precordial region. Evaluation of the apical impulse. Percussion of the heart. ECG. The heart sounds (normal and pathological findings).

Murmurs (Normal and pathological findings).

he pulse. Examination of the vascular system. The pericardium.

The diagnosis of vascular heart disease (1).

The diagnosis of vascular heart disease (2). Heart failure.

The blood pressure. Hypertensive vascular disease. General signs and symptoms of the diseases of abdominal organs (gaseous abdominal distention, ascites, painful acute abdominal diseases).

Examination of the gastrointestinal tract. General diagnostics of liver diseases.

General diagnostics of biliary tract diseases.

General diagnostics of pancreatic diseases. Metabolic diseases (diabetes mellitus).

The erythrocyte sedimentation rate (ESR). The complete blood count (CBC). General diagnostics of hematological diseases.

Immunology.

Investigation of the musculoskeletal and the nervous systems.

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

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

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

The technique of physical examination. Inspection. Palpation. Percussion, Auscultation. Continuous practicing of the basic techniques in history taking and physical examination throughout the semester.

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

## INTERNAL MEDICINE

### Second Semester

---

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

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

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

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

**MEDICAL PSYCHOLOGY**

General Medicine, 3<sup>rd</sup> year Medical Students  
Institute of Behavioral Sciences

AOMAGPSZ-1A

**1<sup>st</sup> Semester**

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

**Course Syllabus:**

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

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:**

**Behavior & Medicine, 3rd Edition, Danny Wedding**, Hogrefe & Huber Publishers, Seattle, 2001, ISBN 0-88937-238-1

**Course Director:** Dr. Piroska Balog  
 NET 20<sup>th</sup> 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. Róbert Bódizs  
 Dr. Mónika Kovács Gyöngyvér Salavetz  
 Dr. Piroska Balog László Léder  
 Alpár Lázár Krisztina Neculai

## MEDICAL PSYCHOLOGY

General Medicine, 3<sup>rd</sup> year Medical Students  
 Institute of Behavioral Sciences

### 2<sup>nd</sup> 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 14<sup>th</sup> weeks in the venues indicated on the course information sheet.

Week 1.	<b>LECTURE</b>	<b>Behavioral interventions</b>	<b>Dr. Adrienn Stauder</b>
Week 2.	<b>LECTURE</b>	<b>Psychotherapeutic methods</b>	<b>Dr. György Purebl</b>
Week 3.	<b>LECTURE</b>	<b>Stress and illness</b>	<b>Prof. Dr. Mária Kopp</b>
Week 4.	<b>LECTURE</b>	<b>Altered states of consciousness and suggestive communication in medical practice</b>	<b>Gábor Suhai-Hodász</b>
Week 5.	<b>LECTURE</b>	<b>Intellect, Cognitive state, Thought processes, and Perception</b>	<b>Dr. Róbert Bódizs</b>
Week 6.	SEMINAR	Depression and mood disorders	
<b>SPRINGBREAK</b>			
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:**

**Behavior & Medicine, 3<sup>rd</sup> Edition, Danny Wedding**, Hogrefe & Huber Publishers, Seattle, 2001, ISBN 0-88937-238-1

**Recommended text books:**

Kopp M. - Skrabski Á.: Behavioural Sciences Applied in a Changing Society, Corvina, 1996  
Fadem B: Behavioural Science. Harwal, 2<sup>nd</sup> ed., 1994,  
Stoudemire A: Human Behavior: An introduction for Medical Students, Lippincott Co., 1994  
Gatchel R.J.- Baum A-Krantz D.S.: An Introduction of Health Psychology. McGraw-Hill, 1989.

**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 Bódizs	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 beneficence.

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?

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

Refusal of life sustaining treatment by competent and incompetent patients.

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

The concept of medically futile treatment.

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

**12. week (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 embryo- 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.)

Course Faculty:

Jozsef Kovacs, MD, PhD, (Head of the Department of Bioethics), 210-2930/6350; e-mail:

kovjz@net.sote.hu

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

Imre Szabik, MD, PhD e-mail: szabimre@net.sote.hu

Jeno Lorincz, MD, JD e-mail: lorjen@net.sote.hu

Department:

Institute of Behavioral Sciences

Department of Bioethics

NET Building, 19th, 20th floor

1089. Budapest, Nagyvárad tér 4.

Tel: 210-2953

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

**List of questions**

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

**Textbook:**

Erich H. Loewy—Roberta Springer Loewy (2004): Textbook of Health Care Ethics 2nd edition.

Dordrecht—Boston—London: Kluwer Academic Publishers

ISBN: 1-4020-1460-0

# PHARMACOLOGY AND PHARMACOTHERAPY

Tutor: **Dr. Júlia Timár**

## Second semester

---

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

**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 I (Year 3, 2008/2009, second semester) :

*General pharmacology* – History of pharmacology. Pharmacodynamics. Pharmacokinetics.

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

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

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

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

*Vitamins.*

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

#### 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

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

**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 oscillometry, monitors, oxygen supply according to availability at the different locations).

The assembly of intravenous catheters and practicing IV catheter insertion (under supervision).

Participation at transfusions, practicing blood group determination.

Introduction to patient documentation and subsequently the independent recording of patients' data.

Establishing relationships with patients and their families with special emphasis on providing medical information to the patient and maintaining physician-patient confidentiality.

Practicing so-called small laboratory techniques, i.e. those basic laboratory techniques needed in bedside diagnosis (RBC/WBC count, urinalysis, use of dipsticks).

Participation in consultations, especially consultations of patients known to the student.

Participation in the hospital's medical seminars and conferences.

On-call duties.

## BASIC AND PRE-CLINICAL MODULES

## OBLIGATORY ELECTIVE SUBJECTS

1 <sup>st</sup> semester						
Subject Code	Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOKOZTOR_1A	History of Medicine	2	-	2	pract. mark	-
AOHUMFBI_1A	Developmental Biology I.	2	-	2	pract. mark	-
AOKONKIN_1A	Information Retrieval Science in Library	2	-	2	pract. mark	-

2 <sup>nd</sup> semester						
Subject Code	Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOKOZTOR_1A	History of Medicine	2	-	2	pract. mark	-
AOHUMKLA_1A	Introduction to Clinical Anatomy	2	-	2	pract. mark	Anatomy, Histology, Embryology III.
AOHUMFBI_2A	Developmental Biology II.	2	-	2	pract. mark	Developmental Biology I.
AOKONKIN_1A	Information Retrieval Science in Library	2	-	2	pract. mark	-

**BASIC AND PRE-CLINICAL MODULES**

**ELECTIVE SUBJECTS**

1st semester						
Subject Code	Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOLEKMSZ_3A	Hungarian Medical Terminology III.	2	-	2	pract. mark	Hungarian Medical Terminology II.
AOLEKMSZ_5A	Hungarian Medical Terminology V.	2	-	2	pract. mark	Hungarian Medical Terminology IV.
AOTDKTDK?_A	Research (TDK munka)	1	-	1	pract. mark	-
AOKJIOHE_1A	History of Medical Professionalism	2,5	-	2	pract. mark	-

**2nd semester**

2nd semester						
Subject Code	Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOLEKMSZ_4A	Hungarian Medical Terminology IV.	2	-	2	pract. mark	Hungarian Medical Terminology III.
AOLEKMSZ_6A	Hungarian Medical Terminology VI.	2	-	2	pract. mark	Hungarian Medical Terminology V.
AOTDKTDK?_A	Research (TDK munka)	1	-	1	pract. mark	-
AOKIKAR_1A	Clinical Cardiovascular Physiology	2	-	2	pract. mark	Medical Physiology II.





*Faculty of Medicine*  
*4<sup>th</sup> year*

## STUDY PROGRAMME

### Fourth Year

1st semester						
Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOFRMFRM_2A	Pharmacology and Pharmacotherapy II.	1.5	2.5	4	semi-final	Pharmacology and Pharmacotherapy I.
AOKOZKOZ_1A	Public Health I.	1	1.5	2	semi-final	Precinical module
AOKARKAR_1A	Cardiology	1	2	3	semi-final	Internal Medicine II.
AOBL1BEL13A <sup>1</sup> AOBL2BEL123A <sup>2</sup> AOBL3BEL133A <sup>3</sup>	Internal Medicine III.	1	3	4	pract. mark	Internal Medicine II.
AOSB1SEB_1A	Surgery I.	2	2	4	semi-final	Precinical module
AOFUJFUL_1A	Otorhinolaryngology (either)	1	2	3	semi-final #	Precinical module
AOBORBOR_1A	Dermatology (or)	1.5	2.5	4	semi-final #	Precinical module
AOSZBFOG_1A	Oral Surgery and Dentistry	2	-	2	semi-final #	Precinical module
AORADRAD_1A	Radiology	2	2	4	semi-final #	Precinical module
<b>Total Number of Credit Points from Compulsory Subjects</b>				<b>30</b>		

<b>Obligatory elective / Elective subjects</b>	
--	--

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

<b>Total Number of Credit Points from Obligatory elective / Elective Subjects</b>	<b>4</b>
---	----------

**Fourth Year**
**2nd semester**

Subject code	Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOFRMFRM_3A	Pharmacology and Pharmacotherapy III.	2	2	4	final#	Pharmacology and Pharmacotherapy II.
AOKOZKOZ_2A	Public Health II.	1	1.5	3	semi-final#	Public Health I.
AOBL1BEL14A AOBL2BEL24A AOBL3BEL34A	Internal Medicine IV.	1	3	4	semi-final#	Internal Medicine III.
AOSB1SEB_2A	Surgery II.	2	2.5	4	pract.mark	Surgery I.
AOFUJFUL_1A	Otorhinolaryngology (either)	1	2	3	semi-final#	Pre-clinical module
AOBORBOR_1A	Dermatology (or)	1.5	2.5	4	semi-final#	Pre-clinical module
AOPULPUL_1A	Pulmonology	1	2	3	semi-final	Internal Medicine III.
AOORTORT_1A	Orthopaedics	1	2	3	semi-final#	Surgery I.

**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**

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

## LIST OF TEXTBOOKS

- 1 Cecil's Essentials of Medicine. Ed. Andreoli, Carpenter, Griggs. Loscalzo.W.B. Saunders. 5<sup>th</sup> ed. 2001. ISBN 0-7216-8179-4
- 2 Adler: ABC of AIDS. 1993. 3<sup>rd</sup> ed. ISBN 727907611. BMJ
- 3 Adler: ABC of Sexually Transmitted Diseases. 3<sup>rd</sup> ed. 1995. ISBN 72790261X. BMJ
- 4 Rona M.MacKie: Clinical Dermatology. An Oxford Core Text. 5<sup>th</sup> ed. ISBN: 13:97801985258061  
ISBN10: 019852580X Paperback Pages  
[www.oup.com/us/catalog/general/subject/Medicine/Dermatology](http://www.oup.com/us/catalog/general/subject/Medicine/Dermatology)
- 5 Fitzpatrick's Dermatology in General Medicine, 7th ed.
- 6 Becker,W.- Naumann,H.- Pfaltz R.: Ear, Nose and Throat Diseases. Thieme. Stuttgart, New-York, 1994. ISBN 0-86577-536-2 or 3-13-671202-3
- 7 Répássy,G.: Otolaryngology. Eger, Radó Ny. 2000.
- 8 Katzung: Basic and Clinical Pharmacology, Lange 10<sup>th</sup> ed, 2007
- 9 Churchill's pocketbook of cardiology. Grubb, NR-Newby,D.E. Edinburgh 2006.
- 10 Richard B. Gunderman: Essential Radiology. 2<sup>nd</sup> ed. Thieme, 2006. ISBN 9781588900821/97831311104724
- 11 Basic Radiology. By: M.Y.Chen, T.L.Pope, D.I.Ott. Lange Clinical Science, 2004.
- 12 The New Public Health: An Introduction for the 21<sup>st</sup> Century. By:T.Tulchinsky, E.A. Varavikova. 2000. ISBN 03350-5
- 13 Adams,J.C-Hamblen,D.L.:Outline of Orthopaedics. 12<sup>th</sup> ed. Churchill Livingstone, Edinburgh, 1995. ISBN 0443 05149 6
- 14 Horst Cotta: Orthopaedics. Georg Thieme Verl. New York, 1980. ISBN 3-13590001-0
- 15 Bourne,Brewis: Lecture Notes on Respiratory Disease. Blackwell. 5<sup>th</sup> ed. 1998. ISBN 0-632-04968-5
- 16 Sabiston Essentials of Surgery. Saunders. 1994. ISBN 0-7216-3492-3.
- 17 Davis-Christopher : Textbook of Surgery rövidített változata!
- 18 Szabó Gy.: Oral and Maxillofacial Surgery. Bp. Semmelweis Kiadó, 2001.
- 19 Szende B.-Suba Zs.: Introduction to Histopathology. Bp. Medicina. 1999.
- 20 Koesner, K.R.: Manual of Minor Oral Surgery for the General Dentist. Blackwell Munksgaard, 2006.

### Recommended textbooks:

- 1 Cecil Textbook of Medicine. 21<sup>th</sup> ed. W.B. Saunders, 2000. Vol.1-2.
- 2 Lynn S. Bickley: Bates' Guide to Physical examination and history taking
- 3 Tulassay Z. (Ed): A belgyógyászat alapjai (I.-II.)
- 4 Internet links for Internal Medicine
- 5 Current Medical Diagnosis and Treatment. (Ed.)Tierney,McPhee,Papadakis. Appleton & Lange, McGraw-Hill 2002. ISBN 0-07-136466-8
- 6 Harrison's Principles of Internal Medicine. 15<sup>th</sup> ed. McGraw-Hill Inc. 2001.
- 7 Concise Oxford Textbook of Medicine. Ed. Ledingham, Warrell. Oxford University Press, Oxford, 2000.
- 8 Davis-Foster-Gamelli: Essentials of Clinical Surgery. Mosby Year Book
- 9 Davis-Christopher (ed.: Sabiston): Textbook of Surgery. The biological basis of modern surgical practice. Saunders Company.
- 10 Duckworth,T.: Orthopaedics and Fractures. 3<sup>rd</sup> ed. Blackwell Science, 1995.
- 11 Szécsény-Berenty: Sebészet. Bp. Medicina.
- 12 Gaál: Sebészet. Bp. Medicina.
- 13 Littmann: Sebészeti műtéttan. Bp. Medicina.
- 14 Hardcopy and free on internet: Shimizu's Textbook of Dermatology  
<http://www.derm-hokudai.jp/shimizu-dermatology/index.html>
- 15 Peterson: Contemporary Oral and Maxillofacial Surgery. Mosby, 2003.
- 16 Peterson: Principles of Oral and Maxillofacial Surgery. Decker, 2004.
- 17 Robinson, Howe: Tooth Extraction. A Practical Guide. Oxford, 2000.
- 18 Forrai J.-Ballér P.: Chrestomathy on the History of Medicine. SOTE, Bp. 1992.

# 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.

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

Centrally acting skeletal muscle relaxants (spasmolytics). Pharmacological management of

neurodegenerative disorders. Drugs used to treat migraine.

*Clinical pharmacology of psychiatric and neurological diseases.*

*Pharmacology of peripheral nerves and muscles.* – Local anesthetics. Skeletal muscle relaxants.

Drugs acting on the smooth muscle. Smooth muscle relaxants.

*Pharmacology and clinical pharmacology of infections caused by living pathogens* – Antiseptics.

Antimicrobial, antiviral, 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:**

1<sup>st</sup> semester. Written test

2<sup>nd</sup> semester. Semi-final, oral

3<sup>rd</sup> 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

**Textbook:** B. G. Katzung: Basic and Clinical Pharmacology, 10<sup>th</sup> edition

## PHARMACOLOGY AND PHARMACOTHERAPY

### Second Semester

---

**Lectures** (2 hours)    **Practices** (2 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 III (Year 4, 2008/2009, second semester):**

*Pharmacology of cardiovascular system* – Drugs used in heart failure. Agents used in cardiac arrhythmias. Antihypertensive agents. Vasodilators and antianginal agents. Drugs used in peripheral vascular diseases. Agents used in hyperlipidemia. Diuretics and antidiuretics.

*Clinical pharmacology of cardiovascular diseases* – Hypertension, heart failure, ischemic heart diseases, atherosclerosis, arrhythmias.

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

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

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

*Immunopharmacology*

*Treatment strategy of rheumatoid arthritis*

*Clinical pharmacology of diabetes mellitus. Metabolic syndrome.*

*Toxicology*

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

**Absence justification:** Medical certificate is accepted

There are no obligatory midterms

**Semester requirements:**

The number of absences should not be more than 25 percent of the practices in the semester.

Successful exam from the topic of the preceding pharmacological course

**Written test:** scores.

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

**Exam types:**

1st semester. Written test

2nd semester. Semi-final, oral

3rd semester. Final exam which consists of three parts. **1.** Preceding exam from toxicology. **2.**

Written test from clinical pharmacology. **3.** Oral exam.

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

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

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

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

## Public Health

**Institute: Department of Public Health**

**Location: NET building, 1089 Budapest, Nagyvárad tér 4., 13<sup>th</sup>, 14<sup>th</sup>, 19<sup>th</sup> and 21<sup>st</sup> floors.**

Academic coordinator for EM4 Public Health:

**Dr. András Terebessy**

NET 13<sup>th</sup> 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:

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

### Other recommended sources:

- Tulchinsky TH, Varavikova EA. The New Public Health: An Introduction for the 21<sup>st</sup> Century. Academic Press, 2000.
- Detels R, McEwen J, Beaglehole R, Tanaka H. (eds.). Oxford Textbook of Public Health 4<sup>th</sup> edition. Oxford University Press, 2002. Available online at University workstations from the Central Library's website (<http://www.lib.sote.hu>) through the OVID system's Books@OVID database.
- Acute Communicable Disease Control Manual (B-73), 2006 revision. Los Angeles County Department of Public Health. Freely available at:  
<http://www.lapublichealth.org/acd/procs/b73/b73index.htm>
- Heymann DL. Control of Communicable Diseases Manual 18<sup>th</sup> edition. American Public Health Association Press, 2005. Earlier editions are available to read at the department's library (NET, 21<sup>st</sup> floor).
- Information at numerous websites which are partly listed at the back of the required textbook (An Overview of Public Health) and also on the department's website (<http://www.kozegeszsegtan.sote.hu>), or are announced separately during lectures and practicals.



**Lectures:**

One 45 minute lecture every week, 14 lectures per semester.

**Practicals:**

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

**Attendance:**

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

**Practical groups:**

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

**In-course assessment:**

At the end of three randomly chosen lectures there will be short, multiple choice quizzes with a few questions on the lecture's material. The points earned on these quizzes will augment students' score on the semi-final exam.

At practicals students will be given three in-class or take-home exercises on major topics of the semester's material. Each exercise will receive an "unsatisfactory", "satisfactory" or "excellent" mark. Students are required to earn at least a satisfactory mark on all exercises in order to pass the semester.

**Semi-final exam:**

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

**Academic administration (index matters, submission of assignments... etc.)**

Mrs. Hlatky Sándorné (Hédi)

Mrs. Judit Németh

NET, 13<sup>th</sup> 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

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

**Students are strongly recommended to visit regularly our website where updated informations are available: <http://cvc-oktatas.blogspot.com/>**

## INTERNAL MEDICINE

1<sup>st</sup> Dept. of Internal Medicine Tutors: **Prof. Dr. Ferenc Szalay, Dr. Margit Abonyi**

3<sup>rd</sup> Dept. of Internal Medicine Tutor: **Dr. Katalin Keltai**

### First Semester

---

The patient presenting with urinary symptoms.

Functional and morphological assessment of the kidney.

Glomerulopathies: the clinical syndromes; histology; possibilities of treatment.

Tubulopathies. Interstitial nephritis.

Acute and chronic renal failure. Diagnosis and treatment. Dialysis treatment, kidney transplantation.

Acute volume and electrolyte disorders.

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

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

Systemic lupus erythematoses (SLE).

Autoimmune haematological diseases.

Rheumatoid arthritis

Autoimmune vasculitis. Periarthritis nodosa, Henoch-Schönlein purpura, Wegener's granulomatosis, giant cell arteritis, temporal arteritis, Takayasu arteritis, Buerger disease.

Spondyloarthropathies. Ankylosing spondylitis. Reactive arthritis. Psoriatic arthropathy.

Dermatomyositis, polymyositis, polymyalgia rheumatica, fibromyalgia. Osteoarthritis.

Autoimmune hepatitis and pancreatitis.

Competition – Written test

## INTERNAL MEDICINE

### Second semester

---

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

**Lectures:** Monday 8.00-9.40

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

Title of the lecture
Introduction. Epidemiology, etiology and pathomechanism of cardiac diseases
Diagnosis of cardiac diseases.
Acute coronary syndrome. Angina. Myocardial infarction
Disorders of the myocardium. Ischemic and non-ischemic cardiomyopathy. Congestive heart failure. Cor pulmonale.
Sudden cardiac death.
Disorders of the heart valves
Inflammation and infection of the heart. Endocarditis, myocarditis, pericarditis.
Arrhythmias
Disorders of the electrical system of the heart. Cardiac electrophysiology.
Cardiac pharmaceutical agents
Procedures done for coronary diseases. Devices used in cardiology; pace maker, defibrillator, devices used to maintain blood pressure.
Heart surgery, heart transplantation. Primary tumors of the heart.
Diseases of blood vessels. Atherosclerosis, aneurism. Diseases of aorta and carotid arteries.
Competition – Written test

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

## SURGERY

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. - Acute pancreatitis

Pancreas II. (Chr. Pancreatitis. Tumours)

The artificial nutrition - Enteral, parenteral

The acute gastrointestinal bleeding

Catastrophic surgery. - Surgery of tropical diseases

Pediatric Surgery

Consultation - Questions-answers

**Site of lectures: (előadások helye): lecture hall**

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

# OTORHINOLARYNGOLOGY, HEAD AND NECK SURGERY

Tutor: *Dr. László Noszek*

## First Semester - half class

## Second Semester - half class

---

### Lecture

(1 hour per week)

The role of otorhinolaryngology in medicine. Clinical anatomy of the ear. Diseases of the external ear.

Acute and chronic otitis media I. (etiology, diagnosis, pathology).

Acute and chronic otitis media II. (Complications and therapy)

Types of hearing losses, etiology. Audiological diagnostic methods.

Surgical management of hearing losses. Otosclerosis. Cochlear implant.

Physiology and lesions of the vestibular system.

Neurological and ophthalmological aspects of ear diseases. Prevention and rehabilitation.

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

Infections and tumors of the nose and the paranasal sinuses. Therapeutical possibilities.

Clinical anatomy, physiology and diseases of the pharynx.

Diseases of the tonsils and their complications.

Indications and complications of the tonsillectomy.

Anatomy and physiology of the larynx. Disorders.

Infections of the larynx and their management.

Dyspnoe and suffocation with upper airway origin.

Conicotomy and tracheotomy.

Tumors of the larynx and their therapy.

Rehabilitation of patients after total laryngectomy.

### Practice (2 hours per week)

Clinical examinations.

Diagnostical methods of the ear.

Evaluation of different types of perforations of the tympanic membrane. Cadaver bone practice.

Routine audiology. Uning fork practice.

Operating theatre. Video.

Examination of the vestibular system. ENG. CCPG.

Evaluation of different otological cases.

Anterior and posterior rhinoscopy. Clinical management of the epistaxis.

X-ray photos of the paranasal sinuses. Operating theatre. Video.

Advanced examination of the pharynx. Directoscopy, fiberoscopy.

Peritonsillar abscess. Dangers of the tonsillectomy.

Tonsillectomy. Operating theatre.

Direct and Indirect of the voice.

Laryngoscopy. Videostroboscopy.

Emergency management of suffocation.

Operating theatre. Video. Voice prostheses.

Diseases of the trachea and the oesophagus.  
Foreign bodies. Medial and lateral neck masses.

Oesophagoscopy, bronchoscopy.  
Case reports. Palpation and investigation of patients with different neck masses.

## ORAL SURGERY AND DENTISTRY

Tutor: **Dr. Zsolt Németh**

### First Semester

---

**Lectures (2 hours per week)**

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

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

## DERMATOLOGY

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.
3. Sexually transmitted diseases (STD). Classic venereal diseases (gonorrhoea, syphilis). Modern STDs (Chlamydia, Mycoplasma, Yeast, Trichomonas). AIDS.
4. Dermatoallergy. Atopy. Urticaria. Eczema. Drug eruptions.

5. Dermatoimmunopathology. Basics of the skin immune system (SIS). Bullous skin disorders. Psoriasis. Skin symptoms of autoimmune diseases. OLE. SLE. Scleroderma group. Dermatomyositis. Vasculitis.
6. Skin symptoms of vascular diseases.
7. Oncodermatology.
8. Skin symptoms of internal diseases. Skin symptoms of hepatic disorders, metabolic and endocrine diseases. Lichen, alopecias.
9. Basic principles of general and local dermatological treatment. Skin symptoms of long lasting drug usage.

**Goal of the training:**

1. Knowledge of diagnostics, etiopathogenesis 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. Márta Orosz**

### **Second semester**

---

**Lectures** (1 hour per week)

Invasive and noninvasive diagnostic techniques of the lung diseases.

i.e. Fiberoptic bronchoscopy, lung biopsies, B.A.L., radiology, CT-scan, radioisotope scanning, ultrasound, lung function tests, immunological examinations.

The lung: anatomy and function (inclusive non-respiratory)

Chronic Obstructive Pulmonary Diseases

(Small Airway Diseases except: bronchial asthma)

Epidemiology, etiology, diagnosis, clinical picture, therapy.

Emphysema (clinical picture, diagnosis, laboratory findings,

Alpha-1 antitrypsin deficiency)

Bronchial asthma (epidemiology, etiology, pathogenesis, diagnosis, clinical picture)

Allergic rhinitis

Bronchial asthma, allergic rhinitis (treatment)

Pulmonary tuberculosis (epidemiology, etiology, primary and postprimary tb, clinical feature and risk groups. Common signs and symptoms. Diagnosis and treatment.

Follow-up dispensation.

Role of the I.C.U. (Intensive Care Unit) in pulmonology.

(Respiratory failures, mechanical ventilation, ARDS.)

Pneumonias (classification, etiology, causative agents, clinical features, diagnosis, therapy)



Opportunistic pathogens, AIDS and the lung, pulmonary mycotic infections  
 Tumors in the lung (statistics, etiology, classification, histology, clinical features, diagnosis, management, primary and metastatic forms)  
 Pulmonary embolism and pulmonary hypertension (clinical manifestations, origin, prevention, therapy, recurrent form)  
 Occupational lung diseases (Air pollution and the lung)  
 Immune diseases of the lung -Interstitial lung diseases  
 Sarcoidosis, Goodpasture-syndrome, hypersensitive pneumonitis, lung involvement in collagen vascular disease.  
 Diseases of the mediastinum and pleura.  
 Infrequent pulmonary diseases with uncertain etiology.

### **Consultation**

#### **Practises** (2 hours per week)

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

## **ORTHOPEDICS**

Tutor: **Dr. Gergely Holnapy**

### **Second Semester**

---

#### **Lectures**

Subject of Orthopedic Education. Organization.  
 Orthopedic care in Hungary. Possibilities of prophylaxis.  
 Inflammatory diseases in orthopaedics.  
 Anatomy and biomechanics of the spine. Mai posture.  
 Scheuermann's disease. Vertebra plana, Calve.  
 Scoliosis. Theories concerning the etiology of various kinds of scoliosis.  
 Pathological, clinical and radiological symptoms and appearance. Symptomatology and therapy of the functional scoliosis. Symptoms and therapy of scoliosis with recognized etiology (congenital, paralytic, rachitic).  
 Degenerative diseases of the spine. Etiology of low back pain, clinical symptoms, therapy. Low back of disc origin. Significance of the intervertebral discs under normal and pathological conditions. Symptomatology of the ischias syndrome and its therapy.  
 Spondylolysis and spondylolisthesis. Lumbalization and Sacralization.  
 Deformities and diseases of the neck and the upper extremity.  
 Congenital torticollis, Klippel-Feil deformity. Cervical rib. Sprengel deformity.  
 Obstetricalisparalysis. Recurrent dislocation of the shoulder. Cervicobrachial syndrome.  
 Periarthritis of the shoulder. Dupuytren contracture. Kienböck disease. Tennis elbow.  
 Madelung deformity. Sudeck dystrophy of the upper extremity.  
 Osteoarthritis of the hip. Etiology, pathology, clinical and radiological symptoms.  
 Methods of conservative and operative Treatment.  
 Diseases of the child's hip. Legg-Perthes-Calve disease. Slipped capital femoral epiphysis. Acute and chronic arthritis of the hip.

Congenital dislocation of the hip. Anatomy and development of the hip joint. Concept of dysplasia. Subluxation and luxation. Pathology. Early and late clinical and X-ray signs. Early and late conservative therapy. Various methods of operative treatment. Palliative operation.

Diseases of the knee. Recurrent dislocation of the patella.

Osteochondritis of the tibial tubercle (Osgood-Schlatter disease). Osteochondrosis of the tibia. Varus, valgus and hyperextension deformity. Osteoarthritis.

Chondromalacia of the patella. Meniscus lesions.

Diseases of the foot. Congenital clubfoot. Tarsal synostosis. Hallux valgus. Aseptic necrosis of the bones of the foot. Osteoarthritis of the joints of the foot. Flatfoot.

Neuromuscular diseases. Classification and treatment. Infantile cerebral palsy.

Disturbances of the development of the vertebral body and neural arch. Muscular defects. Progressive muscular dystrophy and other diseases of the muscles.

Primary tumors of bones and their classification. Benign bone tumors. Osteoid osteoma. Semimalignant and malignant tumors (giant cell tumor, chondroma, osteosarcoma, chondrosarcoma, multiple myeloma, Ewing sarcoma). Main pathologic features..

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

Developmental anomalies. Congenital anomalies of the extremities.

### **Consultation.**

## **ORTHOPEDICS**

### **Practices**

Instruction of correct behaviour in the Hospital and during practicals. Introduction to the Hospital. Therapeutic aims of Orthopedics. Methods of the clinical practicals. Methodology of learning Orthopedics.

Diagnostic and therapeutic methods of Orthopedics. Anamnesis. Inspection, palpation, examination of motions.

Basics of radiological examination of the musculoskeletal system. Normal Roentgen anatomy of the bones and joints. Form and function. Methods of examination of limb shortening and alterations of the forms. Contracture. Limping.

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

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

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

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

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

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

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

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

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

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

Examination of patients with diseases and deformations of the neck, upper extremity. Torticollis, cervicobrachial syndrome, peri-arthritis 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

**Hüttli, Kálmán: From X-ray to interventional radiology.** Imaging methods, their place and role in detecting pathologic conditions. Conventional X-ray, ultrasonography. Physical fundamentals. Ionizing radiations. Fluoroscopy, radiography, digital imaging, computed tomography. Vascular imaging, interventional procedures.

**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.

**Mester, Ádám: Musculoskeletal radiology.** Osteopenia, osteoporosis osteomalacia. Insufficiency fracture, pathologic fracture, stress fracture. Regional osteoporosis, RSDS. Osteolysis, sclerosis, heteroplasia (Paget). Periosteal new bone formations enthesopathy, osteophytes, syndesmophytes, parasyndesmophytes, spiculum, Codman triangle, lamellar onion-skinning. Soft tissue calcifications. Atrophic and proliferative erosions. Neurogenic osteoarthropathy. Osteoarthritis, osteochondritis, SNSA, rheumatoid arthritis, spondylodiscitis, osteochondroses. Storage diseases, deposition diseases.

**Mester, Ádám: Chest imaging.** Fluoroscopy, radiography, AMBER. Airways, airspace. alveolar and interstitial inflammatory changes. Consolidation, ground glass, air trapping. Emphysema types, Chronic Obstructive pulmonary Diseases. Atelectasis types. Cystic lesions. Bronchiectasis. Granulomatous diseases. Pulmonary parenchymal changes: congestion, oedema, haemorrhage, alveolar proteinosis. Pneumothorax. Pleural effusion. Pulmonary embolism. Primary tumours and staging. Peripheral and central pulmonary tumours. Differential diagnostics of pulmonary nodules. Metastases.

**Hüttli, 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.

**Györke, Tamás: Nuclear medicine.** Tracer theory. Radioactive isotopes. Radiopharmaceuticals. Gamma camera; single photon investigations: planar and SPECT imaging. PET. Static and dynamic investigations. Image fusion, hybrid imaging: PET-CT, SPECT-CT. Bone scintigraphy. Endocrine investigations. Nephro-urology. Nuclear oncology. Nuclear cardiology. Lung scintigraphy. Gastroenterology. Neuro-psychiatry. Inflammation. Radionuclide therapy.

**Karlinger, Kinga: Neuro-radiology.** Investigating methods (avoid invasivity): X ray. CT: soft tissues, haemorrhages, c.m. CTA, perfusion CT. Angiography (DSA) catheterisation, intervention. Ultrasound: babies. MRI. Nuclear medicine. CNS Radio-Pathology: Cerebrovascular (stroke) ischaemic, haemorrhagic. Time window. SAH: mortality, recurrency. Trauma: fractures (direct, indirect), subdural, epidural haematomas, contusion. Tumours: supra-, infratentorial, intra-, extraaxial. Inflammation: bacterial, viral, parasital. White matter lesions, demyelinations (m.s.)

**Karlinger, Kinga: Endocrine and ophthalmic imaging.** Ophthalmology: trauma (IOFBs), tumours, orbital masses, Graves. Morphology and algorithms in endocrinopathies: Pituitary: anterior lobe micro-, macroadenomas. PPL: DI. Thyroid, parathyroid glands: CT, NM, US, MR. Adrenals: hyperplasia, adenomas, cc.

**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, middle skull base. Lateral facial area, mandibula, temporo-mandibular joint, oral cavity, oropharynx, hypopharynx, larynx, trachea, temporal bone, internal meatal canal, pomto-cerebellar region. Organ and aetiology based: squamous cell cancer, lymphnodes, salivary glands, central neural diseases, vascular, skeletal, lipid lesions. Trauma, infection, developmental anomalies.

**Tóth Géza: Oesophageal, gastric and small bowel imaging.** Esophageal disorders. Swallowing disorders. Gastro-esophageal reflux disease. Esophageal cancer. Achalasia. Barrett's esophagus. Esophageal rings and webs. Esophageal rings and webs, esophageal varices, esophagitis, hiatal hernias, peptic ulcer, diverticulas. Gastric disorders, peptic ulcer, gastric cancer, pyloric stenosis, perforation. Small bowel disorders, CT enterography, intussusception, adhesion, motility and functional abnormality, small bowel tumors, inflammatory bowel disease, A-V malformations.

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 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 acute abdomen is to introduce the radiological aspects of the most important diseases and their complications of acute

abdomen. E.g.: perforations, ileus, inflammations, renal stones and choleliths, appendicitis, pancreatitis, diverticulitis, extrauterin 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 witch modality should be used in witch cases and what is the correct examining pathway.

**Kirschner, Lajos: Breast imaging.** Screening and diagnostic mammography, ultrasound. Visual inspection, palpation, patient's history. Positioning compression, standard and additional views, spot compression, magnification. Imaging of implants, and of specimen. Digital mammography, sonography, MRI. Biopsy methods, preoperative localization. Benign disorders cysts, benign tumors, haematoma, fibroadenoma, mixed tumors, papillomas. Inflammations, mastitis, abscess, fistula. Malignant lesions.

**Kirschner, Lajos: Uro-genital radiology.** Plain film, retrograde, excretory urography, drip infusion. Cystography, cystoureterography, seminal vesiculography. Obstructive uropathy, space occupying lesions, tumors. Renal cysts, calculi, pyelonephritis, abscess. Vascular lesions. Ureter, urinary bladder, prostate, seminal vesicles, testicular diseases. Female pelvic diseases. Incontinence.

**Kis, Éva: Paediatric radiology.** Differences: adult and paediatric radiology. (X. ray. Ultrasound, CT. MR). Prenatal US, MR. Chest. (neonatal). Gastrointestinal tract. ( obstructions). Urogenital tract (obstructive uropathies). Neuroradiology (newborn). Musculoskeletal (infection, congenital malformations, tumors)

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

**Engloner, László: Invasive radiology, non vascular interventional radiology.** Invasive Diagnostic Procedures. Angiography, Arteriography, Venography, Portography. Lymphography. Percutan Transhepatic Cholangiography – PTC. Ductography, Fistulography. Biopsies. Fine Needle Biopsy, Aspiration, Core Biopsy. Arterial Puncture and Catheterization. Contrast Materials: Angio and CT. Embolization. Materials and methods. Indications. Liver – TIPS. Bile duct intervention. Liver tumours. Kidney and urinary tract interventions. Local intraarterial embolisation, chemoembolization, chemoperfusion. Percutan tumour ablation – Radiofrequency – Laser – Ethanol.

**Mózsa, Szabolcs: Radiation biology, radiation hygiene.** Biological effects of Ionizing radiation. Dosimetry, SI units. Direct effect on the water. Indirect effects of the produced free radicals. Radiation effects on the organic molecules, nucl. acids, nucleotides and proteins. Radiation provoked damages in the cellular syntheses, genetic effects. Tissue reactions, different radiosensitivity of particular tissues. Radiosensitivity of the human organism; background radiation. Radiation connected risk factors in patients and professionals. Acute and chronic radiation-sicknesses. Genetic and somatic risk. Damages in the fetal growth. Radioprotection: staff, patients, population, environment. Environment protection and the radioactive waste.

**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)  $\text{Ra}^{226}$ ,  $\text{Co}^{60}$ ,  $\text{Cs}^{137}$ ,  $\text{Ir}^{192}$ . 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*  
*5<sup>th</sup> year*

## STUDY PROGRAMME

### Fifth Year

Subject code	Compulsory Subjects	1st semester				Prerequisite
		Lectures	Practicals	Credit Points	Examination	
AOBL1BEL15A <sup>1</sup> AOBL2BEL25A <sup>2</sup> AOBL3BEL35A <sup>3</sup>	Internal Medicine V.	1	3	4	semi-final	Internal Medicine IV.
AOSB1SEB_3A	Surgery III.	1	1	2	semi-final	Surgery II.
AONO1SZU_1A	Obstetrics and Gynecology I.	2	–	2	pract. mark	Surgery II.
AOGY1GYE11A <sup>4</sup> AOGY2GYE21A <sup>5</sup>	Paediatrics I.	2	3	5	semi-final	Internal Medicine IV.
AOPSELM_1A	Psychiatry I.	1.5	2	3	semi-final	Internal Medicine IV.
AONEUNEU_1A	Neurology I.	2	1.5	3	pract. mark	Internal Medicine IV.
AOIGSIGS_1A	Forensic Medicine I.	1	2	2	pract. mark	Pre-clinical module
AOANEANE_1A	Anaesthesiology and Intensive Therapy	1.5	1	2	semi-final	Surgery II.
AOTRATRA_1A	Traumatology	2	2	4	semi-final	Surgery I.
AOSZ1SZE_1A	Ophthalmology	2	2	4	semi-final#	Surgery I.
<b>Total Number of Credit Points from Compulsory Subjects</b>				<b>31</b>		
<b>Obligatory elective / Elective subjects</b>						

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**

Subject code	Compulsory Subjects	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOBL1BEL16A <sup>1</sup> AOBL2BEL26A <sup>2</sup> AOBL3BEL36A <sup>3</sup>	Internal Medicine VI.	1	3	4	semi-final	Internal Medicine V.
AONO1SZU_2A	Obstetrics and Gynecology II.	2	1 week/sem.	4	semi-final	Obstetrics and Gynecology I.
AOGY1GYE12A <sup>1</sup> AOGY2GYE22A <sup>2</sup>	Paediatrics II.	2	3	5	pract. mark	Pediatrics I.
AOPSIELM_2A	Psychiatry II.	1.5	2	4	pract. mark	Psychiatry I.
AONEUNEJ_2A	Neurology II.	2	1.5	4	semi-final	Neurology I.
AOIGSIGS_2A	Forensic Medicine II.	1	2	3	semi-final#	Forensic Medicine I.
AOANESOO_1A	Emergency Medicine and Prehospital Emergency Care	2	1	2	semi-final	Internal Medicine III.
AOUROURO_1A	Urology	1	2.5	3	semi-final#	Pre-clinical module
AOSACSAS_1A	Family Medicine in Daily Practice	-	5*2/sem.	2	pract. mark	Internal Medicine V.
<b>Total Number of Credit Points from Compulsory Subjects</b>				<b>31</b>		

**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**

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

- 1 W.E. Hathaway-W.W. Hay (ed.): Current Pediatric Diagnosis and Treatment. 13<sup>th</sup> ed. Lange Medical Book. ISBN 08358-1442-1, ISSN 0093-8556.
- 2 Knight's Forensic Pathology. 3<sup>rd</sup> ed. 2004. Arnold.
- 3 Kaplan H.J.- Sadock B.J.-Grebbe J.A.: Kaplan and Sadock's Synopsis of Psychiatry. Behavioral Sciences Clinical 4. Psychiatry. 9th ed. Williams and Wilkins, 2003. ISBN 0-7817-3183-6
- 4 N.C.Andreasen-D.W.Black: Introductory textbook of Psychiatry. American Psychiatric Press, Washington.
- 5 Lang,G.K.:Ophthalmology. A Pocket Textbook Atlas. Thieme Flexibook. Stuttgart, 2000. ISBN 3-13-126161-7
- 6 Hacker N.F-Moore J.G-Gambone J.C.:Essentials of Obstetrics and Gynecology. 4<sup>th</sup> ed. W.B. Saunders Co. ISBN 0-721601790 Paperback
- 7 Dandy, D.J.: Essential Orthopaedics and Trauma. Churchill Livingstone 1993. 2<sup>nd</sup> ed. ISBN 0-443-04722-7
- 8 Smith's General Urology. E.A.Tanagho, J.W.McAninch (ed.) Appleton & Lange. 15<sup>th</sup> ed. McGraw-Hill Professional Publ. 2000. ISBN 0-83-858607-4
- 9 Arányi Zs., Kamondi A., Kovács T., Szirmai I.: Investigation of neurological patients.
- 10 Adams: Principles of Neurology. McGraw-Hill
- 11 Lindsay,Bone,Callender:Neurology and Neurosurgery Illustrated. Churchill Livingstone
- 12 Marini J.J.-Wheeler A.P.: Critical Care Medicine – The Essentials. Williams and Wilkins. Baltimore, 2<sup>nd</sup> ed. 1997. ISBN 0-683-05555-0

### Recommended textbooks:

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

## INTERNAL MEDICINE

1st Dept. of Internal Medicine Tutor: Prof. Dr. **Ferenc Szalay**, Dr. **Margit Abonyi**

3rd Dept. of Internal Medicine Tutor: Dr. **Katalin Keltai**

### First Semester

---

**Lectures** with case presentations

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

## INTERNAL MEDICINE

### Second Semester

---

**Lectures** with case presentations

Infections of the head, neck and lower respiratory tract.  
 Infections of the heart and vessels. Infective endocarditis.  
 Phlebitis.  
 Differential diagnosis of diarrhea. Food poisoning.  
 Acute infectious diarrhea. IBD.  
 AIDS syndrome and other HIV related disorders.  
 Infections involving bones and joints. Differential diagnosis of musculoskeletal and connective tissue diseases.  
 Sexually transmitted diseases.

**Lectures** with case presentations

Poisoning I. Initial evaluation of the patient with poisoning or drug overdose. The symptomatic patient.  
Diagnosis of poisoning. Other treatment.  
Poisoning II. Treatment of common specific poisoning.  
Differential diagnosis of thoracic pain.  
Differential diagnosis of abdominal pain.  
Differential diagnosis of jaundice.  
Alcohol related diseases.  
Disorders due to physical agents. Cold, heat, burns, electrical shock, drowning.  
Geriatric medicine and the elderly patient.  
The paraneoplastic syndromes. Oncologic emergencies.  
Primary and systemic cancer therapy.

## **SURGERY**

Tutor: **Dr. Péter Kokas**

### **First Semester**

---

**Lectures** (2 hours every second week)

NO LECTURE !!!

The surgery of hernia\*

The surgery of endocrin organs\*

No lecture

The surgery of breast\*

No lecture

Vascular surgery. (To be announced later)\*\*

No lecture

Cardic surgery (To be announced later)\*\*

No lecture

Thorax and pulmonary surgery\*\*\*

No lecture

The minimal invasive surgery (MIC) and the surgical perspectives\*

No lecture

Consultation. - Questions/Answers\*

**Site of lectures:**

**Lecture room of 1<sup>st</sup> Department of Surgery** (Előadó terem 1. Seb. Klinika)\*

**Lecture room of Dept. Of Cardio-Vascular Surgery** (Szív és Érsseb. 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)

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

# OBSTETRICS AND GYNECOLOGY

## Second Semester

---

**Lectures** (2 hours/week)

Gynecological endocrinology. Menstrual disorders. Inflammatory diseases in obstetrics and gynecology. Sterility, infertility. Assisted reproduction. Cervical cancer. Cervical Cancer. Tumors of the ovary. Tumors of the vulva, vagina and corpus uteri. Principles of cancer therapy. Endometriosis. Polycystic ovary syndrome (PCOS). Genetic Counseling. Prenatal genetic diagnosis. Fetal anomalies. Dysmorphology. Perimenopausa. Genital prolapse. Urogynecology. Vital statistics. Medical legal problems in obstetrics and gynecology.

Occasionally the topics are interchangeable.

Practical education will be in groups of ten students. They spend a week in the Department rotating between major divisions and special outpatient clinics. They will take part in the night duties twice during the week.

## **PEDIATRICS**

1<sup>st</sup> Dept. Tutor: Dr. *Erzsébet Horváth*

2<sup>nd</sup> Dept. Tutor: Dr. *Péter Hauser*

### **LECTURES IN PAEDIATRICS FOR 5<sup>th</sup> GRADE MEDICAL STUDENTS**

#### **First Semester**

---

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

#### **Subject**

The care of newborns and preterm babies.

Fever of infants and children. Congenital malformations

Introduction to paediatrics. Newborn physiology

Nutrition of infants. The care of the healthy baby

Presenting symptoms. Methods of paediatric diagnosis Inborn errors of metabolism

Diseases of the respiratory tract

Renal diseases in childhood

Psychomotor development of the child.

Mental retardation

Fluid and electrolyte disturbances.

Care of the child with diarrhea

Malnutrition. Chronic malabsorption disorders

Intrauterine infections. Anaemia. Infant mortality.

SIDS

Seizures during infancy and childhood.

Status epilepticus

Congenital heart diseases

Disturbances of the lipid metabolism

## **PEDIATRICS**

#### **First Semester**

---

#### **Practice**

The Pediatric Interview and History

The Pediatric Physical Examination

The Status of the Physical Findings

The Growth and Development of Infants

The Growth and Development of Children

Nutrition of Infants

Nutrition of Toddlers

Nutrition of Children

Genetic disorders and genetic counseling

Diagnostic Procedures (venipuncture, urine collection, gastric aspiration etc.)

Therapeutic procedures (administration of fluids, intravenous route, spinal tap, etc.)

Reanimation, monitoring of the critically ill child

EEG

ECG

X-ray

# PEDIATRICS

## Second Semester

---

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

### TOPIC

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

## **PEDIATRICS**

### **Second Semester**

---

#### ***Practice***

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

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

## **PSYCHIATRY**

Tutor: ***Dr.Zsolt Unoka***

### **First Semester**

---

#### ***Lectures***

Introductory lecture, curriculum and exams  
Genes and environment interaction  
Anxiety disorders: diagnosis and treatment  
Affective disorders: diagnosis I  
Affective disorders: diagnosis II  
Alcohol abuse and dependence diagnosis and treatment  
Psychosomatic disorders: diagnosis and treatment  
Schizophrenia: diagnosis  
Somatoform disorders, Somatisation and conversion disorders,  
hypochondriasis: diagnosis and their psychotherapy  
Personality disorders: diagnosis and treatment  
Substance abuse diagnosis and treatment  
Geriatric disorders: diagnosis and treatment  
Organic mental disorders: diagnosis and treatment  
Classification of mental disorders



## First Semester

---

The semi-final exam in Psychiatry is a written test of 50 items which comprises multiple choice types, true and false and case recognition questions.

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

## Second Semester

---

### Lectures

Child and adolescent psychiatry  
 Biochemical theories of mental disorders  
 Other psychotic disorders: diagnosis  
 Suicide and suicidal behaviour  
 Emergency psychiatry  
 Antipsychotic therapies  
 Anxiolytic therapies  
 Sleep disorders and their treatment  
 Family therapy, autogen training, hypnosis  
 Behaviour and cognitive therapies  
 Other psychotherapies  
 Crisis intervention and community psychiatry  
 Aftercare and rehabilitation of psychiatric patients  
 Consultation and liaison psychiatry

## Second Semester

---

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

# FORENSIC MEDICINE

Tutor: Dr. *Márta Hubay*

## First Semester

---

### **Lectures**

The forensic medicine and its connection with law  
The scene of death, suspicion of accident, suicide and homicide  
Hurts and injuries I.  
Hurts and injuries II.  
Sudden death  
The SIDS syndrome  
Traffic medicine I.  
Traffic medicine II.  
Toxicology I.  
Toxicology II.  
Alcohol, alcoholism  
Narcotics, narcomania  
Asphyxia  
Identification  
Test writing

## Second Semester

---

### **Lectures**

Forensic Pediatrics  
Forensic gynecology and obstetrics  
Forensic traumatology  
Forensic neurotraumatology  
Forensic points of internal medicine I.  
Forensic points of internal medicine II.  
Forensic psychology and psychiatry  
Environmental damages, occupational diseases  
Medical risk, diagnostic problems  
Genetics, serology  
Transplantation, euthanasia

## FORENSIC MEDICINE

### Practice

- 50 per cent of the practical lessons will be interpreted in the autopsy room.
- Once a semester each student has to make a written test in the framework of the consultation lessons.
- 50 per cent of the practical lessons will be “consultative lessons”.

The topics:

### First Semester

---

- The role of the medical expert in the legal procedures.
- Forensic autopsy and forensic autopsy report.
- Expert patient connection, general rules of forensic examination.
- Expert in front of the court (ethical, legal rules, the interpretation of the expert's opinion, the controversial reports, expert witness).
- Legal points of medicine, patients' rights.
- Examination of hurts and wounds, the first documentation.
- Special points of examining different wounds.

### Second Semester

---

- Forensic examination of children and adolescents.
- Forensic obstetrical and gynecological examinations.
- Forensic psychological and psychiatric examinations.
- Social and medical insurance, the medical risk, malpractice.
- Paternity problems serological identification.
- Rules and ethics of human clinical experiments.
- Consultation (topic chosen by the students).

## UROLOGY

Tutor: **Dr. Péter Nyirády**

### Second Semester

---

#### 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

- a) Preparation
- b) Induction of Anesthesia
- c) Maintenance of the patient airway
- d) Intraoperative fluid management
- e) Maintenance of the Anesthesia
- f) Termination of the Anesthesia, recovery
- g) Anesthetic complications

## Regional anesthetic techniques

## Pain relief

- a) Acute pain (including postoperative pain)
- b) Chronic pain

## Postoperative complications

**Emergency and critical care**

## Primary and advanced cardiopulmonary life support

## Techniques and procedures of critical care

- a) Techniques of airway maintenance
- b) Techniques of intravenous access
- c) Evaluation of the fluid, ionic and acid/base balance
- d) Principles of fluid management
- e) Transfusion, blood products
- f) Principles of enteral and parenteral nutrition

**Lectures and Practice**

- g) Equipment and techniques of ventilatory therapy
- h) Techniques of support and replacement of renal function
  
- i) Critical care monitoring
- j) Invasive techniques of critical care
- k) Special pharmacology of critical care
  - inotropic drugs
  - use of antibiotics
  - anticoagulation
  - steroid treatment
  - other drugs

Diseases requiring intensive therapy

- a) Respiratory failure
  - acute (including ARDS and asthmatic attack)
  - chronic
  
- b) Cardiovascular diseases
  - acute myocardial infarction
  - severe dysrhythmias
  - heart failure
  - thrombotic and embolic diseases
  - aneurysms
  
- c) Shock states
  - hypovolaemic shock
  - cardiogenic shock
  - septic and toxic shock states
  - anaphylactic reactions
- d) Acute renal failure
  
- e) Acute hepatic failure
- f) Severe hematologic disorders (including DIC)
- g) Gastrointestinal diseases leading to critical conditions (incl. pancreatitis)
- h) Critical states of endocrinopathies
- i) Neuromuscular diseases requiring intensive therapy (incl. head injuries)
  
- j) Severe infections (including peritonitis, AIDS), Sepsis
- k) Toxicology
  
- l) Critical care of the traumatic patient
- m) Burns, Hypothermic injuries
  
- n) Problems related to obstetrics Resuscitation of the newborn
- o) Multiple organ failure

**Lectures and Practice**

Special topics of critical care

- a) Policies of admissions and refusals of the ICUs
- b) Prognostic score systems
- c) Ethical and legal issues of critical care
- d) Complications and risks of the intensive therapy
- e) Policies of sedations and pain management
- f) Military and civil disasters
- g) Transport of the critically ill patient

**TRAUMATOLOGY**

Tutor: **Dr. Miklós Szébeny**

**First Semester****Lectures** (2 hours per week)

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  
 Lecture relevant

## OPHTHALMOLOGY

Dept. of Ophthalmology

Tutor: Dr. **Jeanette Toth**

### First Semester

---

#### **Lectures:**

Introduction. History of ophthalmology.

Ophthalmology in medicine.

Functions of the eye. Optics.

The conjunctiva. Ocular surface diseases. The "red eye".

Diseases of the eyelids.

The lacrimal system - function and diseases.

The cornea — keratitis, degenerations, dystrophies.

Keratoplasty. Refractive surgery.

Diseases of the sclera.

The crystalline lens. Aetiology of cataract.

Management of infantile and adult cataract.

The orbit. Signs and symptoms of orbital diseases. Thyroid ophthalmopathy Infections.

Lacrimal gland diseases.

The uvea and its diseases.

Glaucoma. Clinical diagnosis. Classification. Treatment.

Disturbances of ocular circulation.

"Medical", retina (vascular diseases, macular disorders) and "surgical" retina (retinal detachment).

Ocular manifestations of systemic diseases. The vitreous and its disorders.

Pediatric ophthalmology. Strabismus, amblyopia.

Diseases of the optic nerve and optic pathways.

Neuro-ophthalmology. Normal and abnormal eye movements.

Pupillary reactions.

Tumours of the eye.

Modern diagnostic and imaging techniques in ophthalmology.

Trauma of the eye and adnexa.

The role of the general practitioner in the management of eye diseases.

Multiple choice questions. Diagnostics (slides).

Demonstration material: slides, handouts, videotapes, case studies.

## OPHTHALMOLOGY

### First Semester

---

#### **Practice:**

Anatomy of the eye and adnexa. Dissection of a pig's eye.

General notions on the examination of an eye patient.

The normal ophthalmological status.

Functions of the eye. Determination of visual acuity (distant, near). Refractive errors of the eye.

Retinoscopy.



Correction of visual refractive errors. Prescription of glasses. Javal-Schiötz ophthalmometer. Corneal topography. Contact lenses. Photorefractive keratectomy. Visual field, colour vision, examination of dark adaptation, critical flicker fusion frequency. Tonometry. External examination of the eye (diffuse light, focal illumination, slit lamp), exposing the palpebral fissure, eversion of the eyelids. Differential diagnosis of the red eye. Ophthalmoscopy I. Red reflex. Direct and indirect ophthalmoscopy. Examination of the pupil. Ophthalmoscopy II. Fluorescein angiography. Scanning laser ophthalmoscopy. Surgical management of cataract. Ultrasound biometry. Planning of the refractive power of IOL. One - day surgery. The glaucoma patient, screening and follow-up. Antiglaucomatous interventions. Surgery of the vitreous body. Ophthalmoscopy III. Pediatric ophthalmology. The examination of concomitant squint and its treatment. Binocular vision. Differential diagnosis of paralytic strabismus.

### **Practice:**

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

## **NEUROLOGY**

### **General information**

Tutor: **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 5<sup>th</sup> year:**

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

**Other suggested books:**

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

**1<sup>st</sup> Semester**

---

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

<b>Week</b>	<b>Practice</b>
1.	Basic principles of neurological diagnosis. The anamnesis. The connection between symptoms, localization and causes of neurological diseases.
2.	Assessment of the paresis. Examination of muscle tone and trophy.
3.	The mono- and polysynaptic reflexes. The pyramidal signs. The upper and lower motoneuron lesion.
4.	Motor functions of cranial nerves. Bulbar, pseudobulbar and suprabulbar paresis.
5.	Examination of the I. and II. Cranial nerve. The visual fields.
6.	Examination of the III., IV., VI. Cranial nerves. The eye movements. The rystalli reflexes. Gaze disorders.
7.	The V cranial nerve.
8.	The facial nerve palsy.
9.	The nystagmus. Dizziness and vertigo. The vestibular system.
10.	Examination of the sensory system.
11.	The coordination. The cerebellar functions (neo-, paleo-, and archicerebellum).

12. Examination of the spine and spinal cord. The vegetative functions.  
Signs of meningeal irritation.
13. The brainstem syndromes. The reticular activating system.
14. Practical exam

## 2nd Semester

---

### **Week**                      **Lecture title**

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

### **Week**                      **Practice**

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

## Neurology Examination Question List for Vth year Students

### **I. Neuroanatomical, physiological and biochemical basis of neurology**

1. The visual system
2. Innervation of extraocular muscles. The oculomotor nuclei.
3. Gaze control. Gaze disturbances
4. Pupillary reflex arcs. Disturbances of pupillary reflexes.
5. Trigeminal nerve
6. Facial nerve
7. The vestibular system
8. Hearing

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

## II. Basic Neurology

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

## III. Neurological Disorders

1. Classification of ischaemic cerebrovascular disorders
2. Intracranial bleedings, subarachnoidal hemorrhage
3. Symptomatology of Parkinson's disease
4. Classification of headaches. Trigeminal neuralgia
5. Focal epilepsies
6. Generalized epilepsies
7. Meningitis. Examination of the CSF in inflammatory neurological diseases
8. Encephalitis

9. Diagnosis of polyneuropathies
10. Emergency in neurology
11. Traumatic CNS diseases
12. Diagnosis of dementia
13. Multiple sclerosis: signs and diagnosis
14. Intracranial tumors
15. Spinal tumors
16. Disorders of the nervous system due to alcoholism
17. Myasthenia gravis
18. Guillain-Barre syndrome
19. Encephalopathies
20. The motor neuron diseases
21. Muscular dystrophies

## EMERGENCY MEDICINE

Dept. of Anesthesiology and Intensive Therapy

Tutor: Dr. **Balázs Hauser**

**Compulsory subject: Emergency Medicine and Prehospital Emergency Care (EMPEC) – program and topics**

**2 credit**

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

Content	Responsible speciality
C. Circulatory failure, hypotension, heart failure, hypertensive crisis. Pathophysiology, differential diagnosis, treatment in the field and in the ED. Peri-arrest arrhythmias.	E/I: 90
D. Differential diagnosis and management of altered mental state. Organic and metabolic causes. Management of convulsion. Management of meningitis. Process of stroke management from first responder to definitive treatment. Psychiatric emergencies.	Together P:30+E/I:60
Differential diagnosis and treatment of acute and chronic pain in the field and in the ED. Pain syndromes. Pain management, analgo-sedation, narcosis. Causes and management of fever on-the-scene and in the ED.	Together E/I: 90
Gastrointestinal symptoms (vomitus, diarrhoea, obstipation, bloody stool). Measures in case of acute infectious disease. Acute abdominal pain. Differential diagnosis and treatment of acute OB/GYN problems in the field and in the ED. Emergency management of labor and delivery out-of-hospital.	E/I: 90
Prehospital and ED care of trauma and polytrauma.	Together P:45+E/I:45
Military and disaster medicine I.	M-C-M
Military and disaster medicine II.	M-C-M
Toxicology I. General principles of toxicology. Recognition and treatment of common poisonings.	E/I: 90
Children in the field and in the ED. Emergency pediatrics.	Közös P:30'+E/I:60

**Practices** (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 (Kútvölgyi Hospital)

ED: Emergency Department of Szt. Imre Hospital

# Prehospital and Emergency Medicine (PEM) – Compulsory elective subject

Dept. of Anesthesiology and Intensive Therapy

Tutor: Dr. **Balázs Hauser**

## Program and topics

### 2 credit

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

## FAMILY MEDICINE IN DAILY PRACTICE

Tutor: *Dr. Péter Torzsa*

### Second Semester

---

#### Week

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

### List and syllabi of the ELECTIVE SUBJECTS

It is compulsory to choose one subject each semester in the 4<sup>th</sup> and 5<sup>th</sup> 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 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  
 Pediatric 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;
Application deadline:	1 <sup>st</sup> September 2008 – 5 <sup>th</sup> September 2008.
Precondition	There isn't.

- 1. Introduction, technical details introduction of Central Library's Homepage: [www.lib.sote.hu](http://www.lib.sote.hu) and its facilities**  
Useful Links, List of current periodicals, WebPac  
Basic concepts: book, periodicals, homepage and their identifiers, CD-ROM, Floppy file management (saving, copy files), email, mailing lists.  
Searching databases main concepts: bibliographic database, record, result list, thesauri, full text, abstract  
Organizing e-mail study groups  
Searching in the WePac and current periodicals list  
6 samples- **Homework**
- 2. Web Searching and database searching** professional discussion lists and their role in scientific work  
**Web Searching** with different types of search engines, advanced searching with Boolean operators, relevancy and decision making  
MESH and PubMed Searching  
Model searching –on general exercises  
6 samples- **Homework**
- 3. Link collections and professional portal sites**  
concept of a portal,  
**what a medical portal** should contain: conference news, research news and abstracts from current articles, professional mailing lists and chat rooms, links introduction of medical  
portals:-DrugFacts:<http://www.factsandcomparisons.com/> MedBioWorld  
<http://www.medbioworld.com/>  
Medical  
Matrix:<http://www.medmatrix.org/reg/login.asp>  
Link collections: Health Web <http://healthweb.org/>; Hardin Meta Directory  
<http://www.lib.uiowa.edu/hardin/md/index.html>; BioSites  
<http://galen.library.ucsf.edu/biosites/>  
to make a link collection from a declared subject- **Homework**

**Searching International Library catalogues**

**Searching in Ulrich's Plus periodical catalogue and form books in Books in Print database at the Ovid platform**

**Library of Congress:** <http://lcweb.loc.gov/>

**The British Library** <http://www.bl.uk/>

**Heidelberg University Catalogue**

<http://www.ub.uni-heidelberg.de/Englisch/>

National Széchenyi Library <http://www.oszk.hu/>

**How do we get from the abstract to the full article?** -

practicing the proper search strategy

6 samples- **Homework**

5. **Information retrieval practical lesson**

sample searching (bibliographic, statistical and web searching)

Consultation on search methods and results.

6 samples- **Homework**

6. **OVID databases**

**Evidence Based Medicine databases:** the role of the EBM in research and practice

**Full text journals in Ovid databases:** 115 Lippincott Williams and Wilkins journals and 1500 journals of Science Direct, Cross Ref how they can appear by results –OPENLINK technology

**MEDLINE,EMBASE, CINAHL databases** which kind of information they contain

unique and general search fields. Theasauri and index- how they make easier searching

Citation manager: saving, e-mailing, printing and exporting records.

Model searching: 6 samples

**Homework:** searching on a subject

**Database searching**

**Encyclopedias: Encyclopedia of Life Sciences, Encyclopedia of Forensic Medicine (multimedia documents)**

**Full text resources: Dictionary of Natural Products; Micromedex**

**Poisindex, Identidex; Micromedex Drug Reax**

**Pharmacopoeias: European Pharmc. And US Pharmc.**

Images .MD medical image database

Model searching: 6 samples

6 samples- **Homework**

8. **Reference Manager**

***the role of reference softwares in modern publishing***

***Literature searching: Importing and exporting rystalline records***

(from Science Direct, Web of Science, OVID Medline, PubMed and e-journals hosted by Highwire)

***creating own records***

***search facilities*** within our records and from PubMed;

***data handling: spell checking, filtering duplicates***

**Homework:** create your own database by collecting records

9. **E-journals**

***e-journals – main concepts: fulltext and its formats, e-journal types:***

***Online only or with existing Print edition. Free medical journals:***

11.

***<http://www.freemedicaljournals.com/>; Online First publishing, DOI code***

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

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

***Information retrieval practical lesson***

sample searching (database, journal searching)

Consultation on search methods and results. Reference Manager, e-journals, databases etc.

6 samples- ***Homework***

***Impact factor (JCR)***

Homework discussion

***calculating Impact factor*** and its role by measuring scientific publications

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

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

***Web of Science and its sections***

***general searching*** in the database model searching –guided

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

***Citation analysis***

***Homework discussion***

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

***preparing the citation analysis:***

***Web of Science database cited reference search***

***Saving references in the official format, special rules of the method:***

self-citation, Identification of records

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

***scientometric practical lesson***

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

***Correction and discussion on main rules***

***Information retrieval- practical lesson***

***Homework discussion***

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

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

Summary of the course, consultation

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

***Proposed grade or exam test during the exam period.***

## INTRODUCTION TO CLINICAL ANATOMY

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

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

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

Exam: written

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

Subject:

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

- General introduction, surface anatomy.
- Slide anatomy I-II.
- Application of slide anatomy in CT and MRI pictures.
- Psychiatric neuroanatomy.
- Neuroanatomy and cannabis.
- Anatomical relations of the endoscopy pictures, particularly in lesser pelvis.
- Anatomical changes in hypertension.
- 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

1<sup>st</sup> Dept. of Obstetrics and Gynecology

### First Semester

---

The fundamentals of classical genetics

Polygenic inheritance, multifactorial determination

General cytogenetics

Basic principles of embryology and teratology

Clinical molecular genetics

Amniotic fluid cell culture for cytogenetic analysis

Alphafetoprotein (AFP)

Genetic amniocentesis

Pathology of multiple pregnancy

Genetic counseling

General aspects of decision making regarding the fate of pregnancy

Elements of phenotype analysis

Embryopathology and fetal pathology

Sphingolipidoses

Mucopolysaccharidoses and mucopolipidoses

Disorders of carbohydrate metabolism

Diseases of amino acid metabolism

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

## **ANAESTHESIA AND INTENSIVE THERAPY**

Dept. of Anesthesiology and Intensive Therapy

### **First Semester**

---

#### **Lectures**

Molecular aspects of anaesthesia  
Sleep, depth of anaesthesia and awareness  
Monitoring in anaesthesia and intensive therapy  
Safety in anaesthesia and intensive therapy  
Significance of coexisting diseases for anaesthesia  
Applied physiology of respiratory therapy  
The principles of the respiratory therapy  
Haematology in anaesthesia and intensive therapy  
Day-case anaesthesia. Anaesthesia of patients suffering from IHD  
The policy of antibiotics  
Multiple organ-systems failure  
Endocrine and metabolic responses to surgery and anaesthesia  
Interventional bronchoscopy  
Acute and chronic pain  
Moral and legal problems in anaesthesia and intensive therapy

Topics may change depending on lecturers' availability.

## NEONATOLOGY

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

### Second Semester

---

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

## CLINICAL ENDOCRINOLOGY

2<sup>nd</sup> 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, acute abdomen.

Gastric, duodenal, small bowel emergencies.

Peritonitis acuta.

Abdominal trauma.

Surgery of the wound, infections, anaerobic infections in surgery (MRSA, Fournier, tetanus, anaerobic)

Small bowel obstruction, large bowel obstruction.

Esophageal emergencies.

Biliary emergencies.

Complications of peptic ulcer.

Gastrointestinal bleeding.

Pancreatitis acuta.

Pancreatitis chronica.

Appendicitis, diverticulitis, sigmoiditis, typhlitis.

Surgical infections.

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

## CLINICAL HEMATOLOGY

2<sup>nd</sup> Dept. Of Internal Medicine

Course director: **Prof. Dr. Lídia Sréter**

### Second Semester

---

Topics of interest in the field of hematology, state of the art of various hematological and hemato-oncologic diseases

2 hours per week



**Main topics:**

1. Place and significance of hematology. Normal blood production, basics of hematologic diagnosis.
2. Classification of anemias, diagnosis.
3. Myelodysplastic syndromes.
4. Diagnosis and treatment of acute leukemias.
5. Acute leukemias of the childhood.
6. Classification and treatment of lymphomas I.
7. Classification and treatment of lymphomas II.
8. Clinical picture and diagnosis of hemorrhagical diatheses.  
Prophylaxis and treatment of venous thrombosis.
9. Gastroenterological complications of hematological diseases.
10. Dermatologic manifestations of hematological diseases and hematological symptoms of dermatologic diseases.
11. Immunocytopenias.
12. Hematological emergencies.
13. Stemcell transplantation.
14. Infectious complications of hematological diseases

## 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.
3. Emerging and re-emerging bacterial diseases in Tropics: plague, leprosy, cholera etc.: epidemiology, clinical course and treatment.
4. The most important viral diseases: Denque, 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

Introduction. What is Medicine? Methods and sources of Medical History. The birth of paleomedicine (bones, teeth, mummies). Prehistoric medicine. Scientific and Shaman medicine, Magic medicine (forms, methods), survival in the folk-medicine.

Medicine of ancient civilizations, rivers valley`s culture: Mesopotamia, Egypt, Hebrew Medicine – in the Bible time – India, China, America (Peru, Mexico). Heritage of the empirical knowledge, technical equipments and methods. Magico-religious and empirico-rational therapies. Practitioners. Theories of diseases.

Greco-Roman Medicine. Homeric medicine. Asclepians, Hippocrates, Corpus Hippocraticum – the concept and doctrine of his theories about the nature and diseases (the four humors). The Oath. Hygiene and health education. Post-Hippocratical schools – the golden heritage in the school of Alexandria. Medicine in Rome: the roman physicians, diseases. Advance of public health. Water supply and sanitation, climate, soil and health, diseases, endemics. The worker` health, provision of medical care. (Celsus, Galenus)

Medieval medicine. Byzantine Healers, Arabian Hakims, Monks, Crusaders and medieval “doctors”. The Arabian medicine: chemistry, pharmacy, hospitals. Rhases, Avicenna, Abulcasis. The medieval Monasteries (Monte Cassino). The growth of European cities, sanitary problems of urban life. The first religious medical school in Salerno. Medieval Universities, medical humanists and Christian caritas.

Medicine in the Renaissance. The Arts and the humanism. The new mentality of medicine: Paracelsus. The revolution of anatomy: Vesalius and his contemporaries. The first step toward the specialization. Botany and mineralogy. The printing of book`s role in medicine. Foundation of the administration of Public Health. Epidemic diseases: communicable and non-communicable diseases. Theories, therapies and medical care, hospital. Quarantine.

Experimenters, Teachers and Theoreticians in the sixteenth and seventeenth centuries. Body as machine – old schools: iatrochemical, iatrophysical theories. New schools: animism, tonus, vitalism, stimulation, homeopathy. The circulation of the blood. Harvey`s methodology. Malpighi. Microscopy. Birth of modern clinical medicine: Sydenham. Boerhaave and his pupils.

Industrialism in the eighteenth century. Clinical medicine – schools of clinicals (French, English, German, Habsburg). The first Vienna School: van Swieten. The man-midwife (Smellie, Hunter), surgery (Hunter, Valsalva), pathology (Morgagni, Bichat). Public health and hygiene. Occupational health, prison reform, general health (death rate, statistics), Ramazzini, Frank. Smallpox. Infant mortality. Nursing, dispensaries and hospitals, development of obstetrics. Sanitary conditions – filthy towns.

Clinical medicine in the second half of the nineteenth century. Bacteriology a new science in medicine. Revolution, concepts and theories under the microscope. New discoveries, Pasteur, Koch. Social revolution, industrialism, public health. National and international movements and health reforms, and medical care. Period of great epidemics. International health organization. The Red Cross.

Wells, Morton, Simpson, Jackson. Asepsis and antiseptics. Early efforts to develop aseptic techniques. Semmelweis, Lister. Progress in surgery, Billroth. Cholecystostomy, appendectomies.

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

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.

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

New discoveries in the twentieth century. Hormones. Drug revolution. New remedies. Pediatrics, Women, fertility, abortion, statistics. Sexual revolution. The intellectual world: psychology and psychiatry. Psychology of sex. Freud, Kraft-Ebing, Adler, Jung. Mental health. The role of the emotion and disease. Nature of the doctor-patient relationship.

History of medicine and impairment, disability and handicap. Rehabilitation from the monasteries till the clinic. The birth of clinic. Organization of medical care, nurses. Education. Universities. Ethics, Oath and Acts.

The preventive medicine and its role in the society. Economic and social trends in changing society. The welfare and Mothers and Children. Health of the school child. Voluntary action for health. Teaching people about health. Responsibility of government for advancement of health. Services. Registers. Environment. Rise of scientific nutrition.

## CLINICAL CARDIOVASCULAR PHYSIOLOGY

### AOKKIKCAR\_1A

*Elective course for medical students in the 3rd, 4th and 5th years.*

The purposes of the course are:

To refresh and extend – in selected topics – the basic knowledge related to normal and pathological functions of the human circulatory system

To integrate the latest scientific results related to different organization levels – from molecular physiology to system physiology – of the cardiovascular system.

To discuss and demonstrate measurement principles and techniques, as well as physiological and pathophysiological mechanisms related to the application of modern non-invasive cardiovascular diagnostic procedures in the clinical practice.

Program:

1. Biomechanical background of normal and pathological cardiovascular functions.
2. Hemodynamics of cerebral aneurisms
3. Recent results in control of cerebral blood supply, physiological and clinical aspects
4. Clinical physiology of the microcirculation
5. Age related changes in the vascular system, role of sexual hormones

6. Coronary circulation, possibilities of pharmaco-physiological interventions
7. Pathophysiology of chronic venous insufficiency
8. Role of endothelial mechanisms in clinical symptoms
9. Duplex ultrasonic investigation of large vessel function: measurement of vessel wall elasticity, Doppler-indexes, study of veins
10. Ultrasonic investigation of the human heart: theoretical background; 2D-, M-, Doppler-mode, color Doppler imaging, echocardiography; diagnostics of valve insufficiency and coronary diseases

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

Further information is available on this web page: [www.elet2.sote.hu](http://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: AOFMKAB\_1A**

**Credit: 2**

#### Topics:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Absence justification: Medical certificate is accepted**

**There is no midterm**

**Requirement: Participation at the lectures**

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

**Exam: written test**

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

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

**Exam absence justification: Medical certificate is accepted**

## **BASICS OF FAMILY MEDICINE**

2008/2009

Department of Family Medicine

Director: Prof. Dr. Iászló Kalabay

Location: *Kútvoégyi Hospital, first floor, library*

**Family medicine as a speciality**

**Past and present of family medicine in Hungary**

**Daily routine of family doctor**

Dr. Kalabay Iászló

**Doctor-patient relationship in family practices. Communication skills**

Dr. Torzsa Péter

**Emergency care in family practice**

Dr. Szabó János

**Cardiology and prevention in family practice**

Dr. Simon Judit

**Diabetes mellitus in family practice**

**Optimal treatment of diabetes mellitus**

Dr. Dani Vilmos

**Prevention program in family practice**

**Optimal treatment of hypertension**

Dr. Torzsa Péter

**Primary care in cities**

Dr. Torzsa Péter

**Primary care in the countryside**

Dr. Szabó János

**Care of gipsy patients**

Dr. Horváth Péter

**Medical ethics and law**

Dr. Vajer Péter

**Continuing home care**

**Rehabilitation**

**Terminal illnesses**

**Summary**

Prof. Dr. László Kalabay

Dr. Péter Torzsa

## **History of the medical professionalism**

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 19<sup>th</sup> 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 16<sup>th</sup> 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 18<sup>th</sup> 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 20<sup>th</sup> 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 20<sup>th</sup> 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 Jávör**

Tutor: Dr. Mariann Szabó Dinya

**2 hours/week**

---

### T H E M E S

---

Data, information, knowledge and decision in the medicine and health care

---

Classification and coding systems, ICD-10

---

Informatics in the prevention

---

Networking

---

WEB 2.0 and the health care system

---

Signal analysis and image processing

---

Standards in the medical informatics

---

Information systems in the health care

---

The electronic patient record

---

Knowledge management

---

Data security in the health systems. Digital signatures

---

Informatics of the primary health care and drug management

---

Health care financing and informatics

---

Health and health care statistics

---

Telemedicine

---



**CLINICAL MODULE**
**OBLIGATORY ELECTIVE SUBJECTS**

Subject Code	Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOSZLABI_1A	Antibiotic Therapy and Infectology	2	-	2	pract. mark	Pre-clinical module

**CLINICAL MODULE**
**ELECTIVE SUBJECTS**

1 <sup>st</sup> semester						
Subject Code	Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOANEINT_1A	Anesthesia and Intensive Care	2	-	2	pract. mark	Pre-clinical module
AONO1KLG_1A	Clinical Genetics	2	-	2	pract. mark	Pre-clinical module
AOIMMKIM_1A	Clinical Immunology	2	-	2	pract. mark	Pre-clinical module
AOINFMED_1A	Health Informatics	2	-	2	pract. mark	Pre-clinical module
AOMMSTCM_1A	Traditional Chinese Medicine	2	-	2	pract. mark	Pre-clinical module
AOBMKULT_1A	Ultrasonography	2	-	2	pract. mark	Pre-clinical module
AOKUIOHE_1A	History of Medical Professionalism	2.5	-	2	pract. mark	-

**2<sup>nd</sup> semester**

2 <sup>nd</sup> semester						
Subject Code	Subject	Lectures	Practicals	Credit Points	Examination	Prerequisite
AOFRRMKAB_1A	Aspects of Drug Abuse	2	-	2	pract. mark	Pre-clinical module
AOKIKGAR_1A	Clinical Cardiovascular Physiology	2	-	2	pract. mark	Medical Physiology II.
AOBL2END_1A	Clinical Endocrinology	2	-	2	pract. mark	Pre-clinical module
AOBL2HEM_1A	Clinical Hematology	2	-	2	pract. mark	Pre-clinical module
AOSB2SSB_1A	Emergency in Surgery	2	-	2	pract. mark	Pre-clinical module
AOSB1CSS_1A	Family Surgery	2	-	2	pract. mark	Surgery I.
AOGY1NEO_1A	Neonatology	2	-	2	pract. mark	Pre-clinical module
	Prehospital and Emergency Medicine	2	-	2	pract. mark	It can be taken only in the 10 <sup>th</sup> semester.
AOSZLTRP_1A	Tropical Medicine	2	-	2	pract. mark	Pre-clinical module
AOBMKULT_1A	Ultrasonography	2	-	2	pract. mark	Pre-clinical module





*Faculty of Medicine*  
*6<sup>th</sup> year*

## COMPULSORY INTERNSHIPS AND RESPONSIBLE DEPARTMENTS

### ***Internal Medicine***

#### **1<sup>st</sup> Department of Internal Medicine**

Budapest VIII., Korányi S. u. 2/A Phone: 459-1500 / ext. 1554

Head of the Department: **Dr. Miklós Szathmári**

Tutors: **Prof. Dr. Ferenc Szalay, Dr. Margit Abonyi**

#### **3<sup>rd</sup> Department of Internal Medicine**

1125 Budapest, XII. Kútvölgyi út 4. 12. Phone: 355-1122

Head of the Department: **Prof. Dr. István Karádi**

Tutor: **Dr. Katalin Keltai**

### ***Surgery***

#### **1<sup>st</sup> 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***

#### **1<sup>st</sup> Department of Pediatrics**

Budapest VIII., Bókay J. u. 53. Phone: 334-3186

Head of the Department: **Prof. Dr. Tivadar Tulassay**

Tutor: **Dr. Erzsébet Horváth**

#### **2<sup>nd</sup> Department of Pediatrics**

Budapest IX., Tűzoltó u. 7-9. Phone: 215-1380

Head of the Department: **Prof. Dr. György Fekete**

Tutor: **Dr. Boglárka Bánsági**

### ***Obstetrics and Gynecology***

#### **1<sup>st</sup> Department of Obstetrics and Gynecology**

Budapest VIII., Baross u. 27. Phone: 266-0473

Tutors: **Dr. József Gábor Joó**

**Dr. Gyula Richárd Nagy**

## **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., Kútvölgyi út 4. Phone: 325-1100

Head of the Department: **Prof. Dr. László Kalabay**

Tutor: **Dr. Péter Torzsa**

## **Prehospital Emergency Medicine**

### **National Ambulance Service**

Budapest XIII., Róbert Károly krt. 77. Phone: 344-3737

Deputy Director: **Dr. Gábor Göbl**

Tutor: **Dr. Erzsébet Márton**

## STUDY PROGRAM

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

# The grade influences the qualification of the diploma.

### Important note concerning the 6th year rotation

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

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

The documents should include the following information:

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

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

**Professor Dr. Mark Kollai**  
Academic Program Director

## INTERNAL MEDICINE

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

## SURGERY

- Acting as a HO or SHO under strict supervision, including administration and practical skills.
- Admitting of patients with full physical examination, including breast and PR examinations.
- Theoretical planning for examinations and treatments for the examined patients.
- Continuous observation and registration of the patient's condition with administration.
- Writing of discharge reports.
- Performing different injections (iv., im, sc), insertion of venflons, phlebotomies. To determine blood group, performing of transfusions under strict supervision. Completion of administration.
- Insertion of NG tubes.
- Catheterization (urethral and suprapubic).
- Removal of clips and stitches.
- Changing of dressings.
- Assistance at abdominal and thoracic wash-outs or punctures.
- Taking part in consultations with other specialists.
- Theoretical decisions about operations. Consenting.
- Taking part in operations, scrubbing in, stitching.
- Being on duty for 24 hours once a week.

- Examination and treating of emergency patients.
- Taking part in anesthesiological preparation of patients.
- Observation of premedications.
- Assistance at several anesthesiological procedures, including spinal, peridural and GA.
- Assistance at intubations. If possible, independent intubation.
- Measurement of CVP.
- Assistance at jugular and subclavian venal punctures.
- Suction of the throat and trachea.
- Observation of ITU work.

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

- Observation of postoperative treatment.
- Observation of resuscitation and reanimation.
- Observation of autopsies of the ward.
- Being present at every medical discussion of the ward.
- Observation of outpatient work.
- Assistance in outpatient work including assistance at day surgical operations.
- Changing of dressings of outpatients.
- Treatment of infected wounds.
- Assistance at IV anesthesia.
- Performing and assisting at local anesthesia.
- Observation and assistance at ultrasound, endoscopies and X-ray examinations.
- As interns, students take part in the daily rounds and report on the patients examined by them or treated in their section. Interns examine the patients under the supervision of the ward chief or ward surgeon. Interns are required to be personally involved in the examinations and the evaluation of the findings.

***Involvement in the preparation of the documentation of the patients.***

***Involvement in the preoperative preparations as well as in the postoperative care and treatments.***

- Take part in the operations as second assistants.
- Take part in on-call duty without numerical limitations. During on-call (night) duty, interns should-under the supervision of the ward chief or authorized surgeon – be involved in solving all problems caused by either acute or chronic diseases.
- Interns are required to take part in all consultations organized for them.

***Interns will be eligible for the final examination if the above conditions have all been met and their academic achievements during their internship proved.***



## TRAUMATOLOGY

### Requirements

- Diagnostics of fractures
- Principles of treatment of fractures
- Diagnostics of hand injuries
- General principles of the management of hand injuries
- Management of major traumas (head, thoracic, abdominal, spinal and skeletal injuries)

The oral examination in surgery includes one question of traumatology.

***The department will accept certificates issued by Departments of Traumatology or Departments of Orthopedics.***

## PEDIATRICS

According to the curriculum, 6<sup>th</sup> 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
    - c) paperwork (status of physical findings, decursus, discharge report, etc.)

- d) diagnostic procedures (venapuncture, urine collection, etc.)
- Ward round participation
- Every day consultation about different Pediatric subjects (see enclosed list)

### **Consultation**

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

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

## **OBSTETRICS AND GYNECOLOGY**

### ***Essential Requirements in Obstetrics***

- Prenatal care (anamnesis, lab tests, screening during pregnancy, obstetrical examinations, Leopold's manoeuvres)
- Cardiotocography (NST, OCT)
- Ultrasonography (evaluation)
- Abnormal pregnancy (diagnosis and therapy), intercurrent diseases (diabetes, heart diseases, renal diseases). Preeclamptic toxemia, hypertension, twins, hemorrhages, abortions
- Normal labor
  - fetal and maternal monitoring, management of the stages of labor (examinations during labor)
- Abnormal labor
  - breech delivery, transverse lie (diagnosis)
- Obstetric operations (assistance at labor and delivery)

- Obstetric operations (vacuum extraction, forceps, cesarean section, episiotomy)
- Postnatal care
  - Evaluation of the premature, dysmature and eutrophic newborns
  - Fundamentals of neonatal management
- Essential Requirements in Gynecology
- Gynecologic anamnesis
- Gynecologic examinations (to be carried out)
  - vaginal examination
  - colposcopy – cytology (basic knowledge, how to take a PAP smear)
  - examination of the breast
- Gynecologic operations (assistance)
  - bartholin abscess, cyst
  - D and C
  - abdominal hysterectomy
  - vaginal hysterectomy
  - colporrhaphy
- Postoperative management (basic knowledge)
- Outpatient clinics (to take part in the office work of outpatient clinics for gynecology, genetic counseling, adolescent gynecology, menopause, endocrinology, etc.)
- Bleeding disorders
- Cervical, corporal, ovarian, vulvar cancer (etiology, screening, diagnosis, therapy)
- Inflammation of the genital tract (PID)
- Urinary incontinence
- Contraception

## NEUROLOGY

General information

Tutor: 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 nightduty (no sleep in). Students' activity in the wards, at the Outpatient Clinic and during duty, and also the case report is evaluated by the student's tutor on an assessment sheet. The assessment form and the case report must be presented at the final exam. During the training period two days of absence are allowed.

### Final examination

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

The final examination consists of:

1. practical part: neurological examination skills, decision making, tested at the bedside;
2. theoretical part: 3 theoretical questions.

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

On event of failing the earliest possible retake is 10 days later.

### Official textbooks:

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

### Other suggested books:

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

## 6<sup>th</sup> 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 retinal abnormalities.

### VI. Episodic disorders

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

### VII. Cerebrovascular diseases

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

### VIII. Multiple sclerosis (MS)

- A. The criteria for the clinical diagnosis of MS.
- B. The treatment of MS.

### IX. Head trauma

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

### X. Dizziness and disorders of hearing

- A. Define vertigo, and contrast it with other type of dizziness.
- B. Describe nystagmus, hanging head test (Hallpike maneuver), calorics.
- C. Identify the clinical features of: benign paroxysmal positional vertigo, vestibular neuronitis, Meniere's disease, brainstem TIA with vertigo, acoustic neuroma.

### XI. Disorders of higher cognitive functions

- A. Define and assess: dementia, delirium, amnesia, confabulation, hallucination.
- B. Define normal-pressure hydrocephalus.
- C. Define the anatomical basis for aphasia and dysarthria.
- D. Differentiate the aphasias on the basis of ability to produce speech, comprehension, naming, repetition.

- XII. Disorders of altered consciousness
  - A. Define hypnoid and non-hypnoid unconsciousness.
  - B. The anatomic basis of consciousness.
  - C. Assess the comatose patient, evaluation and treatment.
  - D. Localize the following: decorticate and decerebrate rigidity, conjugately deviated eyes, pathologic respiration, pinpoint pupils, anisocoria, intact versus absent oculocephalic response, intact versus disconjugate ice water calorics.
  - E. Diagnosis and management of increased intracranial pressure (ICP).
  - F. Symptoms of uncal and other herniations.
- XIII. Headaches and facial pain
  - A. Clinical features of migraine, cluster headache, tension headache, trigeminal neuralgia, "organic" headache.
  - B. Treatment for common headaches.
- XIV. Brain tumors
  - A. Clinical presentation and diagnosis of primary brain tumors.
  - B. Metastatic tumors to the brain in adults.
- XV. Infections
  - A. Bacterial meningitis, viral meningitis, encephalitis including herpes simplex, chronic meningitis, brain abscess. Neurosyphilis. Lyme disease.
  - B. HIV and the nervous system.
- XVI. Spinal cord disorders
  - A. Neurological symptoms caused by compression, transection and hemisection of the spinal cord.
  - B. Autonomic deficits caused by spinal cord lesion.
  - C. Clinical presentation of vitamin B12 deficiency.
- XVII. Peripheral nervous system disorders
  - A. Clinical syndromes of neuropathy, neuromuscular junction disorders, myopathy.
  - B. Describe: radicular pain, radiculopathy, mononeuropathy, meralgia paresthetica, mononeurosis 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 6<sup>th</sup> year Students**

- | <b>1<sup>st</sup> series</b> | <b>Priority questions</b>                       |
|------------------------------|---|
| 1.                           | Disorders of the innervation of pupils.         |
| 2.                           | The facial nerve                                |
| 3.                           | Differential diagnosis of vertigo and dizziness |
| 4.                           | Localisation of paresis syndromes               |
| 5.                           | Symptomes of upper and lower motroneuron lesion |
| 6.                           | Types and rystalline of aphasia                 |
| 7.                           | Classification of unconscious conditions        |
| 8.                           | Examination of the unconscious patient          |

9. Unconsciousness due to metabolic origin
10. Emergency in Neurology
11. Clinical manifestation of increased intracranial pressure. Herniations.
12. Traumatic intracranial bleeding
13. Trauma of the spine and spinal cord
14. Clinical syndromes of impaired circulation of the internal carotid artery
15. Clinical syndromes of impaired circulation of the vertebro-basilar system
16. Emergency in cerebrovascular disorders
17. Diagnostic procedures in cerebrovascular disorders.
18. Disturbance of cerebral venous circulation.
19. Intracerebral bleedings.
20. Diagnosis, treatment and prognosis of subarachnoid hemorrhage
21. Status epilepticus
22. Meningitis, encephalitis
23. Multiple sclerosis
24. Signs of brain tumors
25. Signs of tumors of the spine and spinal space
26. Brain edema
27. Diagnostic criteria of dementia
28. Diagnosis of Parkinson's disease
29. Wernicke-Korsakow syndrome
30. Guillain-Barre syndrome
31. Disturbance of micturition and defecation
32. Myasthenia gravis

## 2<sup>nd</sup> series

1. Neurological causes of impaired visual acuity. Visual field defects.
2. Ocular movement and gaze disorders
3. Disorders of the vestibular system.
4. Syndromes of lower cranial nerve dysfunctions.
5. Syndromes of pons and mesencephalon lesions
6. The muscle tone control
7. Neuroanatomical basis of sensory disturbances
8. Functional systems of cerebellum. Signs of cerebellar disorders.
9. Gait disorders
10. Symptoms of frontal lobe damage
11. Symptoms of temporal lobe damage
12. The limbic system
13. Symptoms of parietal lobe damage
14. Symptoms of occipital lobe damage
15. Cerebral dominance (functional brain asymmetry)
16. Classification of aphasia
17. Agnosia, apraxia, alexia, agraphia
18. The basal ganglia
19. Disorders of the thalamus
20. Localisation of memory disturbances
21. Imaging techniques (angiography, CT, MR, PET, SPECT )
22. Ultrasound examination of the cerebral vessels
23. EEG in the diagnostic workup
24. EMG, nerve conduction studies, transcranial magnetic stimulation and evoked potentials (BAEP, VEP, SSEP)

25. The lumbar puncture and the examination of cerebrospinal fluid
26. The cerebral circulation, and its regulation
27. Classification of cerebrovascular disorders
28. TIA
29. Cerebrovascular disorders in young adults
30. Treatment of cerebral ischemia
31. Classification of epilepsy
32. Diagnostic workup of epilepsy
33. Differential diagnosis of syncope and other types of disturbed consciousness
34. Treatment of epilepsy

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



## PSYCHIATRY

Department of Psychiatry and Psychotherapy

Tutor: **Dr. 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](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 6<sup>th</sup> year includes a **4-weeks-long rotation** in Psychiatry in a hospital or clinic which is accredited for teaching by Semmelweis University.
2. If you want to complete your rotation abroad, then before you start it, you must present at our department an officially stamped statement of acceptance issued by the teaching hospital abroad where you intend to spend your rotation.

BE AWARE: The **Statement of Acceptance** for the 4-weeks Psychiatry internship requested from practice places abroad must state:

- a) The training place abroad is a teaching hospital
  - b) The brief description of how Psychiatry is taught in that institution
  - c) The name of the responsible tutor (name, e-mail)
3. The Psychiatry practice must consist of 8 hours on 15 (4x5) workdays at psychiatric wards. Students participate in the everyday work of the wards, in patients' admission, in ward rounds and in therapeutic decisions. One all-night-duty is part of the rotation period.
  4. Writing a case report during rotation period is a task for every student. A sample case report is available at the website of our department ([http://www.sote.hu/intezetek/oktatas/7inst\\_id=51\\_&page\\_id=5](http://www.sote.hu/intezetek/oktatas/7inst_id=51_&page_id=5)).
  5. Case reports should not include patients' personal data (name, birth date, insurance number, etc). **Only those practice places are acceptable where the release of the case report is not forbidden by law.** Students completing the internship abroad have to present at the exam the CERTIFICATE in which the tutor has indicated their performance during the internship on the scale: excellent-satisfactory-unsatisfactory and commented on their strengths and weaknesses.

**Without these documents students are not allowed to take their final exam in Psychiatry.**

**Please note** that the Final Examination in Psychiatry cannot be taken in the 4<sup>th</sup> 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 5<sup>th</sup> and 6<sup>th</sup> year (also available at our website)

## FAMILY MEDICINE IN DAILY PRACTICE

Tutor: **Dr. Péter Torzsa**

During practice, treatment of patients is carried out with continuous consultation.

The student should:

- master the basics of treatment of acute cases;
- gain insight into the everyday practice of ongoing treatment of patients and the care of the chronically sick;
- form an opinion of the importance of the doctor-patient and nurse-patient relationship;
- besides treating patients, encounter social and family problems that have an influence on health;
- having gained the necessary knowledge and experience, prepare – under the GP tutor's supervision – an independent case study, and carry out treatment independently;
- take part in home visits;
- keep a continuous documentary record of observations and experience in a practice diary.

***If the student wishes to complete the internship outside Hungary, the following instructions are to be followed:***

### ***Objectives of the course***

1. To introduce the medical care outside the hospital, giving an opportunity to study the characteristics of work in general practice.
2. To help to manage patient members of a family who have problems (not only diseases) with their physical, psychological and social aspects.
3. To provide an opportunity to improve students' clinical skills.

### ***Structure of the course***

2 weeks = 10 workdays; working together with a GP tutor in his office and accompanying him/her on house calls:

4 consulting hours/day  
10 house calls/2 weeks

### ***Topics to observe and concentrate on during the course:***

patient-physician communication (structure, methods)  
problem-based care  
problem-oriented solution  
decision-making responsibility  
common acute problems  
complex care of patients with chronic illnesses

### ***Make short notes in a 3–4 pages diary about:***

8–10 instructive and interesting cases/day  
(age, sex, problem, alteration in physical status, solution)

**The following should be practiced independently:**

history taking  
physical examination  
making medical record

**Assessment and evaluation:**

The performance of the students will be assessed on the diary and a written qualifying report by the GP tutor, so show these instructions to him/her, asking for an opinion about your medical knowledge  
pharmaceutical knowledge  
practical abilities (physical examination)  
attitude, interpersonal relations, communication skills

## **PREHOSPITAL EMERGENCY MEDICINE (OXYOLOGY)**

Ambulance practice  
National Ambulance Service  
Lecturer: **Dr. Gábor Góbi**

### **Syllabus**

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

Goal of the ambulance practice is to gain insight into

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

The certification of the practice should contain the

- period of time spent at the ambulance station
- list of cases the student participated at
- signature of the local director of the Ambulance Service

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

Mode of certifying absences: oral

Requirement of getting the semester signature: 70 practice hours

Evaluation: "completed" or "not completed"

## GENERAL INFORMATION

The University grants students of foreign citizenship the permission to complete internships outside Hungary **at 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. **In case of paying in two parts, the reduction will be made** from the 2<sup>nd</sup> 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.)



# FACULTY OF DENTISTRY



*Faculty of Dentistry*  
*1<sup>st</sup> year*

## STUDY PROGRAMME

### First Year

		1 <sup>st</sup> semester			BASIC MODULE	
subjects code	subjects	Creditcode	Examination			
	<b>Compulsory</b>	<b>C28</b>				
FOFZFZI_1A	Medical Physics and Statistics I.	C5L2,5P2,5	semifinal			
FOOBIKEM_1A	Medical Chemistry I.	C7L4P5	semifinal			
FOGENBIO_1A	Medical Biology I.	C3L2P2	semifinal			
FOLEKWSZ_1A	Hungarian Medical Terminology I.	C4L0P4	pract.mark			
FOANTANA_1A	Anatomy, Histology, Embryology I.	C9L3P6	semifinal			
FOTSITSN_1A	Physical Education I.	C0L0P1	signature			
	<b>Obligatory Elective</b>	<b>C6</b>				
FOLEKOTR_1A	Medical Terminology	C2L0P2	pract.mark			
FOKONKIN_1A	Library Informatics	C2L2P0	pract.mark			
FOKOZTO_1A	History of Medicine	C2L2P0	pract.mark			
	Total Credit	<b>34</b>				<b>One to be chosen</b>



		BASIC MODULE		
2 <sup>nd</sup> semester				
subjects code	subjects	Creditcode	Examination	prerequisites
	<b>Compulsory</b>	<b>C25</b>		
FOANTANA_2A	Anatomy, Histology, Embryology II.	C9L3P6	semifinal	Anatomy, Histology, Embryology I.
FOFZFZ_2A,	Medical Physics and Statistics II.	C5L2,5P2,5	final#	Medical Physics and Statistics I.
FOOBIKEM_2A	Medical Chemistry II.	C5L4P4	final#	Medical Chemistry I.
FOGENBIO_2A	Medical Biology II.	C3L1,5P2	semifinal	Medical Biology I.
FOGENIMM_1A	Basic Immunology	C1L2P0	semifinal	Medical Biology I.
FOFPKFOA_1A	General Dental Materials	C1L1P0	semifinal	Medical Chemistry I.
FOFKKPRF_1A	Preventive Dentistry I.	C1L0P1	pract.mark	Anatomy, Histology, Embryology I.
FOOMSELS_1A	First Aid	C0L0P1	signature	
FOTSITSN_2A	Physical Education II.	C0L0P1	signature	Physical Education I.
	<b>Obligatory Elective</b>	<b>C3</b>		
FOINFINF_1A	Medical Informatics	C3L1P2	semifinal	
	<b>Elective</b>	<b>C2</b>		
FOLEKMSZ_2A	Hungarian Medical Terminology II.	C2L0P4	pract.mark	Hungarian Medical Terminology I.
	Total Credit	<b>30</b>		
	<b>compulsory summer pract.</b>			
	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

- 1 G.J.Romanes: Cunningham's Textbook of Anatomy. Oxford, 1981. ISBN 0-19-2631319
- 2 P.R.Wheater,-H.G.Burkitt,-V.G.Daniels: Functional Histology.Churchill Livingstone, 1987. ISBN 0-443-02341-7.
- 3 L.C.Junqueira et al.: Basic Histology. Prentice-Hall International Inc. 1989. ISBN 0-8385-05724
- 4 K.M.Moore: The Developing Human. Clinically Oriented Embriology. Saunders Company W.B. 1988. ISBN 0-7216-4662-X
- 5 Alberts et al: Essential Cell Biology. 2004. Garland Publ. ISBN 0-8153-3481-8
- 6 Thompson & Thompson: Genetics in Medicine. 6<sup>th</sup> ed. Saunders. ISBN 0721602444
- 7 Falus A.: Immunology. Physiological and molecular aspects. Bp. Semmelweis Publ. 2001. ISBN 963-9214-124
- 8 Rontó-Tarján (eds.): An Introduction to Biophysics with Medical Orientation 3<sup>rd</sup> ed. Bp. Akadémiai K. 1999. ISBN 963 05 76074
- 9 Laboratory Manual of Medical Physics and Statistics. (Bp.) Semmelweis University, 2005.
- 10 Ebbing-Grammon: General Chemistry. Houghton Mifflin Co. 6<sup>th</sup> ed. New York. 1999. ISBN 0-395-90222-3
- 11 Lehninger: Principles of Biochemistry. 4<sup>th</sup> ed. 2004. ISBN 0716743396
- 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
- 16 Csermely P.-Hrabák A.: Principles of Organic Chemistry. Bp. 1999.
- 17 Wilson, Mansfield, Heath, Spence: Dental Technology and Materials for Students. Blackwell Scientific Publications. ISBN 0-632-01763-5
- 18 Primary Preventive Dentistry. Ed.by Norman O.Harris, F.Garcia-Godoy. 5<sup>th</sup> ed. Appleton and Lange, Stamford. 1999. ISBN 0-8385-8129-3

### Recommended textbooks:

- 1 Alberts et al: Molecular Biology of the Cell. 4<sup>th</sup> ed. Gerland Publishing Inc.ISBN 0-8153-4072-9
- 2 Csaba Gy.-Madarász B.:A sejt szerkezete. The structure of the cell. Bp. Semmelwies K. 1999. ISBN 963-8154-950
- 3 Stryer: Biochemistry. 4<sup>th</sup> ed. 1995. ISBN 0-7167-2009-4
- 4 Zumdahl: Chemical Principles. 3<sup>rd</sup> ed. 1998. Houghton-Mifflin Co. Boston. ISBN 0-395-83995-5
- 5 Sasvári-Müllner: Bioorganic Compounds 4 kötet. (Bp.)
- 6 Maróti-Berkes-Tölgyesi: Biophysics Problems. A Textbook with Answers. Bp. Akadémiai K. 1998. ISBN 963-05-7526-4
- 7 McCabe J.F.: Applied Dental Materials. Blackwell Scientific Publications. ISBN 0-632—02826-2
- 8 First Aid manual. St Andrews' Ambulance Association and the British Red Cross St John Ambulance. Ed. Dorling Kindersley, 2002. ISBN: 0751337048.

# ANATOMY, HISTOLOGY AND EMBRYOLOGY

Department of Anatomy, Histology & Embryology

Tutor: **Prof. Dr. Miklós Réthelyi**

## First Semester

Lectures: 3 hours per week

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

Lectures	Dissecting room	Histology lab.
1. The place of anatomy, histology and embryology in the medical curriculum, their nomenclature	Behaviour in the dissecting room. Bones and joints of the shoulder girdle and the arm.	Behaviour in the histology lab. Use of the microscope.
2. Structure of the limbs (bony skeleton, joints, muscles, groups of muscles, fasciae, histological specimens. fascial compartments, arteries, superficial and deep veins, nerves, innervation of the muscles and the skin	Demonstration: shoulder joint	Preparation of the
3. Animal tissues, epithelial cells, simple epithels		Stains. Study of a solid and a hollow organs: surfaces, homogenous structure, layered structure.
4. Stratified epithelia	Bones of the shoulder girdle and the upper extremity.	SIMPLE EPITHELIS: Simple squamous (mesothel, pleura); simple cuboidal (kidney); simple columnar (gallbladder); pseudostratified (trachea)
5. Types and composition of joints (general arthrology)	Rules of the dissection (prevention of accidents).	STRATIFIED EPITHELIA: squamous, non-ceratinizing (esophagus); squamous ceratinizing (skin); columnar male urethra); transitional epithel (urinary bladder)
6. Features of the skeletal musculature (general myology)	Dissection of the shoulder and elbow joints.	GLANDULAR EPITHEL. Goblet cells (colon); merocrine gland (salivary gland); apocrine gland (prostate); holocrine gland (sebaceous gland). PIGMENT EPITHEL (retina)
7. Shoulder joint and the muscles acting upon it	Dissection of the joints of th upper extremity. Dissecting of the upper extremity: removal of the skin, fascia brachii and antebrachii	CONNECTIVE TISSUE, FIBERS. Collagen fibers tendon); elastic fibers (vessel wall); Muscles, vessels and nerves reticular fibers (liver); differential stainig of the fibers (skin); ground substance (umbilical cord)
8. Bones and joints of the hand		CONNECTIVE TISSUE, CELLS. Various types of cells
9. Glandular epithelium		
10. Muscles of the hand	Muscles of the shoulder region, flexor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles. Palmar aponeurosis.	
11. Connective tissue, cells		
12. Connective tissue: fibers; types of the connective tissue		
13. Blood, hematopoiesis	Extensor muscles of the arm and forearm, vessels and nerves adjacent to the above muscles.	
14. Supporting tissue		
15. Bone formation		
16. Vertebrae, sacrum, vertebral column	TEST. Upper extremity	
17. Superficial and deep muscles of the back		

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

# ANATOMY, HISTOLOGY AND EMBRYOLOGY

## Second Semester

Lectures	Dissecting room	Histology lab.
1. Introduction. Significance of the vascular and lymphatic organs in the medical curriculum and in the medical practice	Heart: surface structure, vessels, myocard	VESSELS. Elastic artery (carotid artery); middle size artery and vein, arterioles, venules, capillaries (tongue)
2. Histology of the vessel wall		
3. Lymphatic organs: lymph node, spleen		
4. Lymphatic organs: thymus, tonsils	Chambers of the heart, valves	LYMPHATIC ORGANS. Lymph node, spleen
5. Surface structures of the heart, anulus fibrosus, myocard		
6. Chambers of the heart, valves		
7. Vessels of the heart, conducting system, topography. Pericard	Pericard. In situ heart dissection. Demonstration of unfixed heart.	LYMPHATIC ORGANS. Thymus, palatine tonsil, lingual tonsil.
8. Development of the heart and the pericard I.		
9. Development of the heart and the pericard II. HEART. Wall structure, Malformations.		
10. Viscera, introduction. Histological structure of the solid and hollow viscera	TEST. Heart, anatomy and embryology	conducting system. DIGESTIVE SYSTEM. Lip, tongue, filiforme, fungiform and vallate papillae.
11. Suprahyoid muscles. Muscles of facial expression. Oral cavity.	Muscles of the face (demonstration)	Foliate papilla (demonstration)
12. Muscles of mastication. Tongue		
13. Salivary glands. Anatomy of the teeth	Tongue, cervical organs on the visceral complex	DIGESTIVE SYSTEM. Salivary glands (parotid, submandibular, sublingual); tooth (demonstration)
14. Development and histology of the teeth		
15. Development of the face, malformations		
16. Pharynx, structure of the wall, soft palate	Esophagus, aorta	DIGESTIVE SYSTEM. Tooth development, esophagus
17. Infrahyoid muscles, cervical fascia, para- and retropharyngeal space		
18. Esophagus, stomach: anatomy and histology		
19. Development of the foregut	Abdominal organs, peritoneum.	DIGESTIVE SYSTEM.
20. Small intestine: anatomy and histology	Hepatoduodenal ligament, mesentery	Stomach, cardia, pylorus
21. Colon, rectum: anatomy and histology		
22. Liver and biliary apparatus: anatomy	Unpaired branches of the abdominal aorta, tributaries of the portal vein	DIGESTIVE SYSTEM. Duodenum, jejunum, ileum, colon, appendix
23. Liver and biliary apparatus: histology		
24. Pancreas: anatomy and histology. Portal vein and tributaries		
25. Development of the middle and hindgut	Demonstration of the abdominal visceral topography in the cadaver	DIGESTIVE SYSTEM. Liver, gallbladder, pancreas
26. Peritoneum	of the second year and in unfixed	cadaver. Larynx, trachea
27. Cartilages, joints and muscles of the larynx	Pleura. Mediastinum.	TEST. Lymphatic organs, vessels, heart, digestive system
28. Skeleton of the larynx, laryngeal inlet, rima glottidis		
29. Trachea, lung: anatomy. Pleura		
30. Histology of the lung. Development of the respiratory system		
31. Kidney, ureter: anatomy	TEST. Anatomy and embryology of the digestive and respiratory systems.	RESPIRATORY SYSTEM. Larynx, trachea, lung.
32. Histology and vascular structure of the kidney	Capsules of the kidney, components of the renal hilum.	Demonstration: embryonal lung
33. Urinary bladder: anatomy and histology. Female urethra		

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

Semester examination (semi-final)

## PREVENTIVE DENTISTRY I.

Department of Conservative Dentistry

Lecturer: **Prof. Dr. Ida Nyárasdy**

### Second Semester

**Week**                      **Lectures** (1 hour/week)

#### The first eight weeks – lectures

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

After these lectures: 2 x 2,5 hours practices – at schools

14<sup>th</sup> (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 Góbi**

Tutor: **Dr. Imre Engelbrecht**

## Second Semester

---

### Topics

Principles of first aid. Recognition of an emergency. Assessment of the scene.  
 Dangerous scene. Safety measurements on the scene. Call for an ambulance.  
 Emotional viewpoints of managing emergencies.  
 Assessment of the patient. Responsiveness – unresponsiveness. Assessment of the responsive patient: complaints, signs for the severe condition. Positioning of the patient in specific conditions.  
 The unconscious patient. Airway management. Assessment of the vital signs.  
 Recovery position.  
 Heart attack. Sudden death. Chain of survival.  
 BLS (Basic Life Support)  
 BLS  
 AED (Automated External Defibrillator). PAD (Public Access Defibrillation)  
 BLS + AED  
 BLS + AED  
 Chocking. Drowning. Electrocutation.

Injuries. Extrication of the patient: Rautek maneuvers. Helmet removal. Mobilization and immobilization of injured patients.  
Bleeding control. Bandages. Burns. Fractures, dislocation, sprain.  
Fainting. Shock. Allergy  
Stroke. Convulsions. Diabetes mellitus: Hypoglycaemia. Shortness of breath.  
Poisoning. Drugs. Drunkenness.

Note: Participation at 75% of practices is necessary. Compensation of absences is possible in subsequent practices.

Development in learning skills will be controlled all the time during the practices in the semester.

Mode of certifying absences: oral – referring to practices

Requirements: The student should be able to

- recognize emergencies, and call for help
- start with BLS + AED
- provide airway management in unconscious patients
- provide first aid for patients complaining for chest-pain, shortness of breath, signs for hypoglycaemia and having suffered from fainting, shock condition, convulsion, injuries.

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

## MEDICAL INFORMATICS

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

Director: Dr. **András Jávör**

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.

<b>THEMES</b>	
1. Health care and organizations. Data and information in health care. Types of clinical data (text, sound, image)	Lecture
2. Data transmission and telecommunication. The internet	Lecture
3. DBMS Database Management Systems. Electronic Patient Record	Lecture
4. WEB 2.0 and the health care system. Mobile Communication	Lecture
5. Security, Encryption and Digital Signature	Lecture
6. Structuring and representing medical knowledge. Evidence and case bases.	Lecture
<hr/>	
1. Data manipulation in the computer. Working with text, image, sound and video	practice
2. Getting Started With The Internet.	practice
3. Database management programs, constructing a relational data base of students' lecture books using Microsoft access.	practice
4. Extracting data from a food database using MS Access.	practice
5. Data manipulation and visualizations with Microsoft Excel.	practice
6. Compiling food recipes using Microsoft Word.	practice
7. Compiling publication a food cookbook using Netscape.	practice
8. Browsing In Dental Information Resources On The Internet	practice
9. Diet planning using MS Excel.	practice
10. Mobile Communication	practice
11. JAVA, AJAX and RSS in WEB 2.0 applications	practice
12. Presentation using Microsoft PowerPoint.	practice

**Related reading:**

J.H. van Bommel: Handbook of Medical Informatics  
 Printed version: Bohn Stafleu Van Loghum, Houten/Diegem 1996  
 E-text: <http://www.mihandbook.stanford.edu>

**See all the other detailed curricula at General Medicine, 1<sup>st</sup> 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.



*Faculty of Dentistry  
2<sup>nd</sup> year*

**STUDY PROGRAMME****Second Year**

		<b>BASIC MODULE</b>		
<b>3rd semester</b>				
<b>subjects code</b>	<b>subjects</b>	<b>Creditcode</b>	<b>examination</b>	<b>prerequisites</b>
	<b>Compulsory</b>	<b>C28</b>		
FOANTANA_3A	Anatomy, Histology, Embryology III.	C8L3P5	semifinal	Anatomy, Histology, Embryology II.
FOOBIBKM_1A	Medical Biochemistry I.	C6L4P3	semifinal	Medical Chemistry II.
FOKIKELT_1A	Medical Physiology I.	C1L1L6P5	semifinal	Anatomy, Histology, Embryology II. Medical Chemistry II.
FOFPKODT_1A	Odontotechnology I.	C3L1P2	pract.mark	Medical Physics and Statistics II. General Dental Materials
FOTSITSN_3A	Physical Education III.	C0L0P1	signature	Physical Education II.
	<b>Elective</b>	<b>C4</b>		
FOLEKMSZ_3A	Hungarian Medical Terminology III.	C2L0P4	pract.mark	Hungarian Medical Terminology II.
AOHUMFBI_1A	Developmental Biology I.	C2L2P0	pract.mark	
	Total Credit	<b>32</b>		

		4th semester			BASIC MODULE
subjects code	subjects	Creditcode	examination	prerequisites	
	<b>Compulsory</b>	<b>C30</b>			
FOANTANA_4A	Anatomy, Histology, Embryology/ IV.	C5L1P4	final#	Anatomy, Histology, Embryology III.	
FOOBIBKM_2A	Medical Biochemistry II.	C6L4P3	final#	Medical Biochemistry I.	
FOKIKELT_2A	Medical Physiology II.	C10L6P4,5	final#	Medical Physiology I.	
FOFPKODT_2A	Odontotechnology II.	C5L0P5	pract.mark	Odontotechnology I.	
FOKFKKFP_1A	Conservative Dentistry and Endodontics, Pre-clinical I.	C4L1P3	pract.mark	Odontotechnology I.	
FOTSITSN_4A	Physical Education IV.	COL0P1	signature	Physical Education III.	
	<b>Elective</b>	<b>C4</b>			
FOLEKMSZ_4A	Hungarian Medical Terminology IV.	C2L0P4	pract.mark	Hungarian Medical Terminology III.	
FOHUMFBI_2A	Developmental Biology II.	C2L2P0	pract.mark	Developmental Biology I.	
	Total Credit	<b>34</b>			

Explanation

1.5 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

- 1 Guyton-Hall: Textbook of Medical Physiology. ISBN 0-7216-5944-6. W.B. Saunders Company
- 2 Devlin: Textbook of Biochemistry with clinical correlations. 6<sup>th</sup> ed. J.Wiley and Sons, 2006. ISBN 0-470-03853-5 (paper and online version)
- 3 Wilson, Mansfield, Heath, Spence: Dental Technology and Materials for Students. Backwell Scientific Publications. ISBN 0-632-01763-5
- 4 A.Newbrun: Cariology Quintessence. ISBN 0867152052
- 5 C.M.Sturdevant: Operative Dentistry. Mosby ISBN 0-80166366-0
- 6 Walton-Torabinejad: Principle and Practice of Endodontics. W.B.Saunders Co. 2<sup>nd</sup> ed. 1996. ISBN 0-7216-4924-6

### Recommended textbooks:

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

# ANATOMY, HISTOLOGY AND EMBRYOLOGY

Department of Anatomy, Histology & Embryology

Tutor: **Prof. Dr. Miklós Réthelyi**

## First Semester

**Lectures:** 3 hours per week

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

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

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



# ANATOMY, HISTOLOGY AND EMBRYOLOGY

## Second Semester

### Week

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

Semester examination (final)

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

Class V. Facial Cavity preparation for amalgam and Tooth-Colored Material.

Class II. Cavity preparation for Amalgam.

Class III. Cavity preparation for Tooth-Colored Material.

Class IV. Disto-Incisor Cavity Preparation for Tooth-Colored Material.

Class II. Cavity preparation for Tooth Colored Material. Tunnel preparations for proximal Restorations.

Class II. Cavity preparations for Gold (metal) inlay and gold onlay restorations.

Class I, IV, V, VI. Cavity preparation for gold inlay restorations

Cavity preparations for Composite resin and porcelain inlay restorations.

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

Preparation for Porcelain Veneers.

### **Manual training** (3 hours per week)

Introduction to practice: general Department's policy. Rules of the house.

Distribution of instruments.

Handing over of instruments.

Discussion of drilling methods

Drilling practice I.

Drilling practice II.

Drilling practice III. Practical exam

Grinding of extracted carious human teeth

Black's class I. and V. cavity preparation for plastic restoration.

Preparation of class II. Cavities (I.)

Preparation of class II. cavities. (II.)

Preparation of class III. and IV. cavities

Cavity preparation by modified Black's principles. Practical exam

Class I. and V. cavity preparation for inlay

Class II. cavity preparation for metal inlay

Class II. inlay cavity preparation.

Practical exam

Complete of the works.

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

# ODONTOTECHNOLOGY

Dental Technology

Lecturer: Dr. **Péter Kivovics** D.M.D.

## First Semester

---

### **Lectures** (1 hour/week)

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

### **Practice** (2 hours/week)

**Topics:** construction of upper and lower complete denture

**Examination:** practical course grade

## Second Semester

---

**Lecture:** –

### **Practice** (5 hours/week)

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

**Examination:** Practical course grade.

**See all the other detailed curricula at General Medicine, 2<sup>nd</sup> year**





*Faculty of Dentistry*  
*3<sup>rd</sup> year*

## STUDY PROGRAMME

### Third Year

5th semester				PRE-CLINICAL MODULE
subjects code	subjects Compulsory	Creditcode	examination	prerequisites
FOKFKFP_2A	Conservative Dentistry and Endodontics, Pre-clinical II.	C36 C4L1P3	semifinal	BASIC MODULE
FOMIKOMIK_1A	General and Oral Microbiology	C5L2P3	final#	BASIC MODULE
FOOBTOPF_1A	General and Oral Pathophysiology	C4L2P2	final#	BASIC MODULE
FOSZBSBP_1A	Oral and Maxillofacial Surgery, Pre-clinical course	C2L0P2	pract.mark	BASIC MODULE
FOSZBOPT_1A	Oral Pathology I.	C2L2P0	semifinal	BASIC MODULE
FOPTKPAT_1A	Pathology I.	C6L4P2	semifinal	BASIC MODULE
FOKFKPRF_2A	Preventive Dentistry II	C3L1P2	pract.mark	BASIC MODULE
FOLEKFSZ_1A	Hungarian Dental Terminology I.	C4L0P4	pract. mark	BASIC MODULE
FOPFKPPP_1A	Prosthodontics, Pre-clinical Course	C4L1P3	final#	BASIC MODULE
<b>Total Credit</b>			<b>34</b>	

6th semester				PRE-CLINICAL MODULE
subjects code	subjects Compulsory	Creditcode	examination	Prerequisites
FOFKKOF_1A	Conservative Dentistry and Endodontics I.	C31 C4L1P3	pract.mark	Conservative Dentistry, Pre-clinical II.
FOBL3BEL_1A	Internal Medicine I.	C4L2P2	pract.mark	General and Oral Pathophysiology
FOSZBSZB_1A	Oral and Maxillofacial Surgery I.	C4L1P3	pract.mark	Oral and M. Surgery, Pre-clinical
FOOBTOBI_1A	Oral Biology	C5L3P2	final#	General and Oral Pathophysiology
FOSZBOPT_2A	Oral Pathology II.	C2L1P1	final#	Oral Pathology I.
FOPTKPAT_2A	Pathology II.	C3L1P2	final#	Pathology I.
FOPPKFOP_1A	Prosthodontics I.	C4L1P3	pract.mark	Prosthodontics, Pre-clinical Course
FOPPKSUG_1A	Radiation Protection	C2L1.5P1	semifinal	BASIC MODULE
FOFKKPRF_3A	Preventive Dentistry III	C1L1P0	final#	Preventive Dentistry II
FOLEKFSZ_2A	Hungarian Dental Terminology II.	C4L0P4	final	Hungarian Dental Terminology I.
	<b>Elective</b>	<b>C2</b>		
	Traditional Chinese Medicine	C2L2P0	pract.mark	for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year students
FOTDKTDK_1A	TDK Work within the Union of Research Students	C1L1P0	pract.mark	
	<b>Total Credit</b>	<b>35</b>		
	<b>compulsory summer practice</b>			
	Dento-Alveolar practice (summer, 4weeks)	120' 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

- 1 McCracken's Removable Partial Prosthodontics (10/e) Glen P.McGivney-Alan B.Carr. Hardback Mosby, 1999. ISBN 0323006787
- 2 Schillingburg et al.: Fundamentals of Fixed Prosthodontics. Quintessence 3<sup>rd</sup> ed. 1997. ISBN 93 13 86 500
- 3 Craig,R.G.: Restorative dental material. Mosby, 10<sup>th</sup> ed.
- 4 R.M.Basker-J.C.Davenport: Prosthetic Treatment of the Edentulous Patient. 4<sup>th</sup> ed. McMillan Press Ltd. ISBN 0-333-56704-8 ISBN 0-333-56705-6
- 5 Neil-Nairne: Complete Denture Prosthetics. Wright. ISBN 72 36 20 636
- 6 Neil-Walter: Partial Dentures. ISBN 06 32 08 025 8
- 7 C.M.Sturdevant: Operative Dentistry. Mosby. ISBN 0-80166366-0
- 8 A.Newbrun: Cariology Quintessence. ISBN 0-867152052
- 9 Walton, Torabinejad: Principles and Practice of Endodontics. W.B.Saunders Co. 2<sup>nd</sup> ed. 1996. ISBN 0-7216-4924-6
- 10 Primary Preventive Dentistry. Ed.by:Norman O.Harris, F.Garcia-Godoy. 5<sup>th</sup> ed. Appleton and Lange, Stamford. 1999. ISBN 0-8385-8129-3
- 11 Samaranayake et al.: Essential Microbiology for Dentistry. Edinburgh, Churchill Livingstone. ISBN: 0443049890
- 12 Sibernagl S.-Lang F.: Color Atlas of Pathophysiology. Thieme, Stuttgart, 2000. ISBN 0-86577-866-3(TNY) ISBN 3-13-116551-0 (GTV)
- 13 Ferguson D.B.:Oral Bioscience. Churchill Livingstone, 1999. (Harcourt Publ.Ltd.) ISBN 0-443-05373-1
- 14 Heckner F: Practical Microscopic Hematology. 4<sup>th</sup> ed. Williams and Wilkins Trada Bldh. 1993. ISBN 0-8121-1711-5
- 15 Rubin: Essential Pathology. Lippincott Williams and Wilkins, Philadelphia, 3<sup>rd</sup> ed. 2000. ISBN 0-7817-2395-7
- 16 Szende B.-Suba Zs: Introduction to histopathology. Bp. Medicina. 1999.
- 17 Szabó Gy: Oral and Maxillofacial Surgery. Bp. Semmelweis Publ. 2001.
- 18 Koesner K.R.:Manual of Minor Oral Surgery for the General Dentist. Blackwell Munsgaard, 2006.
- 19 Worthington-Lang-LaVelle: Osseointegration in Dentistry. An Introduction. Quintessence, Chicago, 1994.
- 20 Sethi, A.-Kaus, Th: Practical implant dentistry. Quintessence, London. 2005.
- 21 Andreoli,T.E.-Bennett,J.C.-Carpenter,C.C.J.-Plum,F.: Cecil Essentials of Medicine. 4<sup>th</sup> ed. W.B.Saunders Co. 2000.

### Recommended textbooks:

- 1 Nikiforuk: Understanding Dental Caries.(1-2) Karger.
- 2 Murray,J.J.: The Prevention of Oral Disease. 3<sup>rd</sup> ed. Oxford Univ. Press 1996. ISBN 0 19 2624563 (Hbk) ISBN 0 19 2624571 (Pbk)
- 3 Fluoride in Dentistry. 2<sup>nd</sup> Ed.:Fejerskov,O.-Ekstrand,J.-Burt,B.A. Munksgaard, 1996. ISBN 87-16-11282-2
- 4 Preventív fogászat. Szerk. Bánóczy J.-Nyárasdy I. Bp. Medicina. 1999. ISBN 963-242-003-9
- 5 Pathophysiology and Disease. An Introduction to Clinical Medicine. Lange Medical Book. Prentice-Hall International Inc. ISBN 0-8385-8095-5
- 6 Jansen van Rensburg B.G: Oral Biology. Quintessence Publishing Co. Inc. 1995. ISBN 0-86715-271-0
- 7 Goldschlager N.:Principles of Clinical Electrocardiography. 3<sup>rd</sup> ed. Appleton and Lange, 1989. ISBN 0-8385-7951-5
- 8 Marsh, Ph.-Martin, M.V: Oral Microbiology. Oxford, Wright. ISBN: 0723610517
- 9 D.Tóth F.: Microbiology for Dentistry. Vol.I-II. University of Debrecen, 2002.
- 10 E.C.Combe: Notes on dental materials. Univ.Manchester, 1986.
- 11 J.F.McCabe: Applied dental materials. Univ. Newcastle, 1990.
- 12 Howe: A Minor Oral Surgery. Wright. 1987. ISBN 723608237.
- 13 Howe: The Extraction of Teeth. Wright. 1990. ISBN 723622310.
- 14 Seward et al.: An Outline of Oral Surgery. Wright. 1998. ISBN 0-7236-0735-4 és -0407-x
- 15 Peterson: Contemporary Oral and Maxillofacial Surgery. Mosby, 2003.



- 16 Peterson: Principles of Oral and Maxillofacial Surgery. Decker, 2004.  
 17 Robinson, Howe: Tooth Extraction. A Practical Guide. Oxford, 2000.  
 18 Harrison's Principles of Internal Medicine, Petersdorf, Adams, Braunwald, Isselbacher, Martin, Wilson, McGraw-Hill Book Company. 15<sup>th</sup> ed.

## 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

Cardiac insufficiency. Forward and backward heart failure.

Cardiomyopathies. Hypo- and hyperventilation. Obstructive and restrictive respiratory disorders. Emphysema. Respiratory insufficiency

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

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

Consequences of hypertension

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

Pathophysiology of kidney functions. Acute renal failure. Chronic renal failure. Uremia syndrome. Nephrosis.

Protein metabolism. Development of hypoproteinemia. Low protein and amino acid intake and absorption.

Complete and incomplete proteins Kwashiorkor and marasmus.

Energy balance. Low and high energy intake. Regulation of metabolic rate. Anorexia nervosa.

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

Lipid metabolism. Absorption and metabolism of lipids. Regulatory and endocrine effect of WAT.

#### Practices (2 hours per week)

Gastric function

Liver

ECG-1 (Rhythm, frequency, axis, development of various waves on the normal ECG)

ECG-2 (Defects of excitation. ES)

ECG-3 ( Defects in conductance, blocks.)

ECG-4 (Defects of repolarisation. Myocardial infarction)

ECG-5 (Hypertrophy, hypokalemia)  
Midterm exam

Urine analysis, renal function tests

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

Proteins, malnutrition astric function

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

Salt and water metabolism

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

Lipid metabolism. Atherosclerosis

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

Diabetes

Acute and chronic complications and oral side of diabetes.

(Oral manifestations in diabetes.)

Pain sensation: central and oral mechanisms.

Clinico-chemical assays for endocrine disorders

Pathophysiology of malignancies.

Molecular laboratory diagnostic (Prof. Varga)

Acid-base regulation. Respiratory acidosis and alkalosis. Metabolic acidosis, alkalosis. Mechanisms in compensation.

Acid base analysis

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

## ORAL PATHOLOGY

1<sup>st</sup> Department of Oral, Dental and Maxillofacial Surgery

Lecturer: Prof. Dr. **Zsuzsa Suba**

### First Semester

---

#### **Lecture**

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

Developmental disturbances in structure of the teeth.

Growth disturbances of teeth. Premature eruption, delayed eruption.

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

Developmental disturbances of the jaws and the temporomandibular joint.

Developmental anomalies of the face and soft oral tissue.

Developmental disturbances of the salivary glands. Etiology of malformations.

Discoloration of the teeth. Dental plaque. Dental calculus.

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

Clinical aspects of dental caries. Histopathology of dental caries.

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

Hypercementosis. Resorption of the teeth.

Diseases of the pulp. Periapical lesions.

Periodontal diseases Implantation. Reimplantation. Transplantation.

Homoiotransplantation.

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

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

## ORAL PATHOLOGY

### Second Semester

---

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

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

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

**PATHOLOGY**1<sup>st</sup> Department of PathologyCourse director and tutor: **Dr. Attila Zalatnai****First Semester**

---

**Lecture****Laboratory**

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

# PATHOLOGY

## Second Semester

### Lectures

(1 hour per week)

Urinary tract and male reproductive system

Gynecologic pathology. Vulva. Cervix. Body of uterus and endometrium.

Fallopian tube. Ovary. Placenta and neonatal pathology.

Gestational throphoblastic disease.

Pathology of the breast.

Blood and lymphoid organs. Benign and malignant disorders of lymphoid cells. Hodgkin's disease. Disorders of the spleen.

Disorders of the mononuclear phagocyte system. Acute and chronic myeloproliferative syndromes.

Endocrine system.

Gallbladder and extrahepatic bile ducts. Pancreas. Diabetes.

Head and neck pathology.

Bones and joints, skeletal muscles.

Pediatric oncology.

Nervous system. Trauma. Circulatory and inflammatory diseases.

Demyelinating and metabolic diseases.

Tumors of the nervous system. Peripheral nervous system.

Pathology of the skin.

Clinicopathological conference

### Practices

(2 hours per week)

AUTOPSY

AUTOPSY

AUTOPSY

AUTOPSY

AUTOPSY

AUTOPSY

HISTOLOGY

AUTOPSY

AUTOPSY

HISTOLOGY

AUTOPSY

AUTOPSY

AUTOPSY

HISTOLOGY

## SEMESTER EXAMINATION (SEMIFINAL)

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

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

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

The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester two midterm examinations should be passed.

## GENERAL AND ORAL MICROBIOLOGY

Department of Medical Microbiology

Program Director and tutor: Prof. Dr. **Károly Nagy**

Tutor: Dr. **Zsuzsanna Csukás**

### First Semester

---

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

Introduction to microbiology. General bacteriology (morphology, physiology and cultivation of bacteria) Bacterial genetics.

Infections and diseases (pathogenesis of bacterial infection, virulence, importance of biofilm formation). Specific and non-specific host defences. Active and passive immunization.

Sterilization and disinfection. Antibacterial chemotherapy (mode of actions, resistance, side effects).

Gram-positive facultative and obligate anaerobic cocci. Gram-negative facultative anaerobic, microaerophilic and obligate anaerobic cocci and coccobacilli.

Gram-positive aerobic and anaerobic rods. Gram-positive spore-forming rods.

Gram-negative facultative anaerobic rods. Gram-negative anaerobic rods.

Mycobacteria.

Rickettsia, Chlamydia.

Mycoplasma.

Spirochetes. Importance of bacterial infections involving the oral, perioral tissues and salivary glands.

Medical importance of fungi (general mycology, chemotherapy of fungal infections). Importance of fungal infections involving the oral and perioral tissues.

Protozoa (general characterization and the most important human pathogenic protozoa). Helminths (general characterization and the most important human worms).

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

Important respiratory pathogen viruses. Important enterally transmitted viruses.

Hepatitis viruses.

Retroviruses (AIDS).

Viruses and cancer.

#### **Practices** (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)

Mycobacteria. Spirochetes. Rickettsiae.

Chlamydiae.

Mycoplasma.

Medically important fungi

Medically important protozoa.

Medically important helminths.

General virology (cultivation of viruses, cell-virus interactions, serological tests and molecular techniques used in laboratory diagnosis of viral diseases)

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

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

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

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

Tooth-colored restaurations (acrilic resin, acid etch technique, matrices for composite resins, reading bonding, agent along with either self-curing or light-activated composite resin, insertion of composite resins, finishing composite resin, glanzing the restoration).

The rubber dam.

Direct gold restauration (inlay).

Indirect inlay-onlay restauration.

The dental pulp. Diagnosis of pulpal damage.

Endodontic morphology and access cavities.

Introduction; modern endodontics; scope of endodontics. General and systemic aspects of endodontics (the differential diagnosis of dental pain, examination, systemic disease and endodontics; endodontics and infective endocarditis).

Basic instrumentation in endodontics.

Conventional root canal therapy: preparation of the root canal system.

Conventional root canal therapy: medicaton.

Conventional root canal therapy: root filling.

**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 restaurations. Practical exam.

Access cavity preparation.

Working length determination

Cleaning and shaping of root canal I.

Cleaning and shaping of root canal II.

Obturation of root canal I.

Obturation of root canal II.

Completion of the root canal filling

Surgical endodontics.  
 Preparation for restoration of the endodontically treated tooth the pinledge restoration; onlay restoration; veneers techniques; crowns.

Reconstruction of root canal treated teeth

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

## CONSERVATIVE DENTISTRY AND ENDODONTICS

### Second Semester

---

**Lectures** (1 hour/week)

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

**Practices**

(3 hours/week)  
 Clinical practice  
  
 Clinical practice  
 Clinical practice  
  
 Clinical practice  
 Clinical practice  
 Clinical practice  
 Clinical practice  
 Clinical practice  
 Clinical practice  
 Clinical practice  
 Clinical practice  
 Clinical practice  
 Clinical practice

During the second semester students have to make:

- 3 amalgams fillings
- 3 esthetic fillings
- 15 hours assistance

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



# PREVENTIVE DENTISTRY II

Department of Conservative Dentistry

Lecturer: **Prof. Dr. Nyárasdy Ida**

## First Semester

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

## PREVENTIVE DENTISTRY III

Department of Conservative Dentistry

Lecturer: **Prof. Dr. 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 restorations. Prosthetic

Establishment and instrumentation of

Impression taking procedures for

Shade determination

Determination of centric occlusion and centric relation

Anatomy of the remaining teeth.

Cephalometric landmarks

Impression taking for fixed restorations

Preparation for fixed restorations

Preparation and impression taking procedures for post and cores

#### **Practices** (3 hours per week)

Description of hand-tools and laboratory appliances equipment

Upper first-anatomical impression on the dental clinic phantom head

Lower first-anatomical impression on

complete dentures phantom head

Cast construction

Special tray construction

Second – functional – impression

Fabrication of lower and upper bite-block I.

Fabrication of lower and upper bite-block II.

Midterm test

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

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

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

## PROSTHODONTICS

### Second Semester

#### **Lectures** (1 hour per week)

The reasons and the consequences  
 of the tooth loss  
 Complaints, medical history, extra-oral  
 and intra-oral examination, treatment  
 plans, and prognosis at edentulous patient  
 Infection control in dentistry. The upper  
 and the lower denture bearing area

First impression, casting, outline of the  
 special tray  
 Second (working) impression, mucostatic  
 and mucodisplacive techniques. Beading  
 and boxing, casting of working impression  
 Basic gnathology. (OVD, RVD, freeway  
 space, RCP, ICP, Posselt diagram)  
 Basic gnathology. (canine guidance,  
 unilateral and bilateral balanced occlusion)

Jaw registration. (type of articulators,  
 face bow registration)  
 Mounting in articulator, setting up  
 the teeth

Try-in procedure, flasking and packing  
 (processing) at complete denture  
 Fitting and advice to the patient. Short  
 time and long time recall procedures  
 Complex functional approach. Implant  
 techniques  
 Emergency denture. Immediate denture.  
 Copy denture  
 Relining, rebasing, repairing of complete denture  
 Consultation

#### **Practices** (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

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

## INTERNAL MEDICINE

3<sup>rd</sup> 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

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

#### **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

# ORAL AND MAXILLOFACIAL SURGERY

Tutor: Dr. **Attila Szűcs**

Preclinical training

## First Semester

---

**Practices** (2 hours per week)

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

## Second Semester

---

**Week Lectures** (1 hour per week)

The history of oral surgery  
 Clinical examination and diagnostics  
 Pain control. The physiologic and psychologic aspects of pain  
 The mode of action of local anaesthetics.  
 The pharmacological properties of local anaesthetic drugs  
 The technique of local anaesthesia Part I. (anaesthesia of teeth)  
 The technique of local anaesthesia Part II. (Matas, block of n. alv. sup. ant., anaesthesia of the tongue, the lip, the bucca)  
 The technique of local anaesthesia Part III. (Inflamed tissues, trismus)  
 Summerising clinical implications /video/  
 Complications of local anaesthesia.  
 Conscious sedation in dentistry  
 Indication and contraindication of tooth removal  
 Operation technique of dentoalveolar surgery Part I. (surg. tools, flaps, suturing)

**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 II. (complications of tooth removal, surgical root removal) (video)  
Problems with the eruption of teeth.  
The removal of the impacted teeth  
Guest speaker  
Midterm exam  
Consultation

Minor oral surgery

Midterm Demonstration

Minor oral surgery

Minor oral surgery

Midterm Demonstration

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

Practical course grade (five-scale).

# ORAL BIOLOGY

Lecturer: **Prof. Dr. Tivadar Zelles**

## Second Semester

---

### Lectures (3 hours per week)

The oral mineralized tissues – Amelogenesis-dentinogenesis – cementogenesis dentin and cementum. Microanatomy and structures of enamel, physiology and innervation of the pulp.– Chemistry of formation and solubilization of the various calcium phosphate salts. Crystallography of bio-apatite and other calcium phosphate  
Mechanism of biological calcification

– Principles of demineralization-remineralization-phenomena – The inorganic and organic composition of teeth – Role of fluoride and carbonate in calcium and dental tissue phosphate solubility demineralization -remineralization-phenomena

Abnormal development and mineralization of enamel, dentin and cementum – Pulpal mineralization and dentin-pulp phenomena; dentin permeability – Nutrition and hormonal influences on the oral mineralized tissues

The salivary glands and saliva – Ultrastructure and innervation – The physiology of salivary gland secretion

Neurological and pharmacological control of salivary gland secretion – Chemical composition and physical properties of saliva – Influences of saliva on oral tissues.

Nutritional and hormonal influences on salivary gland function and saliva composition. – Immune and non-immune defense mechanisms – Salivary secretion of drugs – S. gland regeneration

Oral motor and sensory system – Ultrastructure of temperature, touch, pressure and taste receptors of the oral cavity.– Physiology of 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

### Practices (2 hours per week)

Hematology I.  
Cellular components of the whole blood  
The function of the individual cells.  
Normal blood cell values  
Cellular elements of the bone marrow  
Methods for examining the peripheral blood smear and the bone marrow.  
Hematology II.  
Immature cellular forms  
The red and white blood cell series

Hematology III.  
White blood cell disorders  
Disorders related to segmented cells.  
Disorders related to mononuclear cells

Hematology IV. Malignant white cell disorders  
Part I. Classification of leukemias. Acute leukemias Cytochemical differentiation of acute leukemias Plasma cell dyscrasias  
Hematology V.  
Malignant white cell disorders. Part II.  
Chronic leukemias. The importance of oral symptoms in the early diagnosis of leukemias

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

Midterm exam of hematology

<p>and electromyography of oral musculature –                  Phenomenon of deglutition – Microcirculation and I                  nervation of the tongue – Role of the tongue in                  speech and other oral phenomena. Physiology of                  olfaction – Food consistency and its effects on oral                  phenomena</p>	
<p>The oral mucosa and periodontium – Ultrastructure                  of oral mucosa – epithelial cell and oral                  mucosa metabolism – Epithelial cell adhesion and                  aggregation Bacterial tooth and epithelial                  interaction. Transmucosal absorption. – The physiology                  and composition of sulcular fluid. – Microcirculation of                  the gingiva and periodontium – The biochemistry of                  the structure proteins of the periodontium –                  Ultrastructure of alveolar and associated bone –                  Physiology of bone remodeling, mechanical                  effects on bone – Physiology of bone remodeling,                  mechanical effects on bone Eruption and resorption                  – Oral immunological mechanism – Nutritional and                  hormonal influences on the oral mucosa and                  periodontium</p>	<p>Determination of salivary flow rate and                  collection of samples for analysis</p>
<p>Plaque associated diseases – Structures adhering                  to dental pellicle                  – Formation, composition and metabolism of dental                  plaque.                  – Plaque and the demineralization-remineralization                  phenomena                  – Dynamism and control of the oral microbial                  ecosystems                  – Pathogenesis of caries – Pocket formation Plaque                  and dental calculus formation – Gingivitis and                  periodontitis and alveolar bone resorption.</p>	<p>Measurement of fluoride concentration</p>
<p>Aging – Nutrition                  Aging Nutrition Part Two                  Hemostasis and fibrinolysis – Physiology                  and biochemistry                  – Activators and inhibitors of blood clotting                  and fibrinolysis                  – Thrombosis and bleeding disorders: etiology,                  pathomechanism, oral symptoms, differential diagnosis</p>	<p>Immunologic techniques                  Oral clearance measurements                  Oral cytology</p>
<p>Inflammation – cardinal signs – fever – changes in RES                  – vascular permeability – cellular reactions – chemical                  mediators – inflammation and repair</p>	<p>Analyses of oral hard tissues</p>
<p>The biological effects of ionizing radiation – The sources                  of ionizing radiation in the environment – General and                  specific effects: cell and genedamages – Radiation                  diseases and its consequences – Oral symptoms of                  therapeutic irradiations and the management of head                  and neck irradiated patients</p>	<p>Measurement of plaque and salivary pH</p>

**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 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.



*Faculty of Dentistry*  
*4<sup>th</sup> year*

**STUDY PROGRAMME**

**Fourth Year**

		<b>7th semester</b>			<b>CLINICAL MODULE</b>	
<b>subjects code</b>	<b>subjects</b>	<b>Creditcode</b>	<b>examination</b>	<b>prerequisites</b>		
	<b>Compulsory</b>	<b>C33</b>				
FOPFKRAD_1A	General and Dental Radiology	C4L2P2	final#	Radiation Protection		
FOKFKKOF_2A	Conservative Dentistry and Endodontics II.	C4L1P3	pract.mark	Conservative Dentistry and Endodontics I.		
F0BL3BEL_2A	Internal Medicine II.	C4L2P2	semifinal	Internal Medicine I.		
FOSZBSZB_2A	Oral and Maxillofacial Surgery II.	C4L1P3	pract.mark	Oral and Maxillofacial Surgery I.		
F0FRMFRM_1A	Pharmacology, Toxicology I.	C3L1P2	semifinal	Pathology II.		
F0FPKPOP_2A	Prosthodontics II.	C7L1P6	semifinal	Prosthodontics I.		
FOPDKPAD_1A	Periodontology I.	C1L1,5P0	semifinal	Oral Biology		
F0GFKFSP_1A	Orthodontics Pre-clinical	C1E0G1	pract.mark	Oral Biology		
F00BTODG_1A	Oral Diagnostics I.	C2L1P1	pract.mark	Pathology II.		
	<b>Obligatory Elective</b>	<b>C5</b>				
F0PSLIEL_1A	Psychiatry	C1L1P0	semifinal	Internal Medicine I.		
F0NEJNEU_1A	Neurology	C1L1P0	semifinal	Internal Medicine I.		
F0K0ZK0Z_1A	Public Health	C3L1,5P2	final#	General and Oral Microbiology		
	<b>Electives</b>	<b>C6</b>				
	Anesthesiology and Intensive Therapy	C2L2P0	pract.mark	for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year students		
	Traditional Chinese Medicine	C2L2P0	pract.mark	for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year students		
	Antibiotic Therapy and Infectology	C2L2P0	pract.mark	for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year students		
	Total Credit	<b>44</b>				

		8th semester		
subjects code	subjects	Creditcode	examination	Prerequisites
	<b>Compulsory</b>	<b>C26</b>		
FOKFKQF_3A	Conservative Dentistry and Endodontics III.	C4L1P3	pract.mark	Conservative Dentistry and Endodontics II.
FOBL3BEL_3A	Internal Medicine III.	C3L1P2	final#	Internal Medicine II.
FOSZBSZB_3A	Oral and Maxillofacial Surgery III.	C4L1P3	semifinal	Oral and Maxillofacial Surgery II.
FOFRMFRM_2A	Pharmacology, Toxicology II.	C3L1P2	final#	Pharmacology, Toxicology I.
FOFPKFOP_3A	Prosthodontics III.	C4L1P3	pract.mark	Prosthodontics II.
FOFPKGNA_1A	Gnathology	C2L1P1	semifinal	Prosthodontics II.
FOPKPAD_2A	Periodontology II.	C4L1P3	pract.mark	Periodontology I.
FOSZBIMP_1A	Implantology	C1L1P0	pract.mark	Oral and Maxillofacial Surgery II.
FOOBTODG_2A	Oral Diagnostics II.	C1L0P1	semifinal	Oral Diagnostics I.
	<b>Obligatory Elective</b>	<b>C7</b>		
FOMAGDPS_1A	Dental Psychology	C1L1P0	semifinal	Internal Medicine II.
FOSB3SEB_1A	Surgery	C4L2P2	final#	Internal Medicine I.
FOMAGESZ_1A	Medical Ethics (Bioethics) and Sociology	C2L1P1	semifinal	Pathology II.
	<b>Electives</b>	<b>C16</b>		
	Clinical Endocrinology	C2L2P0	pract.mark	for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year students
	Clinical Hematology	C2L2P0	pract.mark	for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year students
	Tropical Medicine	C2L2P0	pract.mark	for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year students
	Ultrasonography	C2L2P0	pract.mark	for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year students
	Medical,Epidemiological and Social Aspect of Drug Abuse	C2L2P0	pract.mark	for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year students
	Emergency in Surgery	C2L2P0	pract.mark	for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year students
	Environment Protection - Ecology	C2L2P0	pract.mark	for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year students
	History of Medicine	C2L2P0	pract.mark	for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year students
	Total Credit	<b>49</b>		for all years
	<b>compulsory summer practice</b>			
	General Dentistry practice (4weeks)	120' 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

- 1 Katzung,B.: Basic and Clinical Pharmacology. 8<sup>th</sup> ed. Lange Medical Books/McGraw-Hill, 2001.
- 2 Peter,E.S.Freund-Meredith B.McGuire.:Health, Illness and the Social Body. (A Critical Sociology.) Prentice Hall, Upper Saddle River, New Jersey.
- 3 D.T.Ozar-D.J.Sokol: Dental Ethics at Chairside: Professional Principles and Practical Applications. 2<sup>nd</sup> ed. 2002. Georgetown Univ. Press. ISBN 0-8784-0376-0
- 4 Mumenthaler: Neurology. Georg Thieme Verlag 1990. ISBN 3 13 523 909 3
- 5 Kaplan-Sadock: Pocket Handbook of Clinical Psychiatry. Wilkins, Baltimore 1990.
- 6 Fuller G.: Neurological Examination Made Easy. 3<sup>rd</sup> ed. Churchill Livingstone. 2004. ISBN 0443074208
  
- 7 Rajna Péter: Ideg- és elmegyógyászati szakkifejezések
- 8 Hoag, Pawlak: Essentials of Periodontics. Mosby. ISBN 80162228x.
- 9 Goaz, White: Oral Radiology. Mosby. ISBN 801618738.
- 10 T.G.Wilson-K.S.Kornman: Fundamentals of Periodontics Quintessence. 1996. ISBN 0-86715-303-2
- 11 The Washington Manual of Surgery. 3<sup>rd</sup> ed. 2002. Lippincott Williams & Wilkins. ISBN 0-7817-3389-8
  
- 12 Bricker,S.L.-Langlais,R.P.-Miller,C: Oral Diagnosis, Oral Medicine and Treatment planning. 2<sup>nd</sup> ed. 2002. B.C.Decker Inc. Hamilton London
- 13 Andreoli,T.E.-Bennett,J.C.-Carpenter,C.C.J.-Plum,F.:Cecil Essentials of Medicine. 4<sup>th</sup> ed. W.B. Saunders Co. 2000.
- 14 The New Public Health: An Introduction for the 21<sup>st</sup> Century. By: T.Tulchinsky, E.A.Varavikova. 2000. ISBN 0-12-703350-5

### Recommended textbooks:

- 1 Bengel,Veltman,Loevy,Taschini: Differential Diagnosis of Diseases of the Oral Mucosa. Quintessence Publishing Co. Inc. Chicago, Illinois 1989.
- 2 Manfred Strassburg/Gerdtr Knolle: Diseases of the Oral Mucosa A Color Atlas 2<sup>nd</sup> ed. Quintessence Publ. Co.Inc. Carol Stream Illinois 1994.
- 3 Coleman,G.C.-Nelson,J.F.: Principles of Oral Diagnosis. Mosby-Year Book, Inc.St.Louis, Missouri, USA 1993. "hand-outs" will be prepared and presented for the students by the lecturers
- 4 Forrai J.-Ballér P.: Chrestomathy on the History of Medicine. Bp. SOTE. 1992.
- 5 Behavior & Medicine. 3<sup>rd</sup> ed. Danny Wedding, Hogrefe & Huber Publishers, Seattle, 2001. ISBN 0-88937-238-1
- 6 Kopp M.-Skrabski Á.: Behavioural Sciences Applied in a Changing Society. Corvina. 1996. ISBN 963-7306-30-7.
- 7 Fadem B: Behavioural Science. Harwal, 2<sup>nd</sup> ed. 1994. ISBN 0-683-02953-3
- 8 Alan Stoudemire: Human Behaviour: An Introduction for Medical Students. Lippincott Company, 1994. ISBN 0-397-51337-2.
- 9 Gatchel R.J., Baum A., Krantz D.S.: An Introduction of Health Psychology. McGraw-Hill 1989. ISBN 0-07-100729-6
- 10 Lindhe,J.(ed.): Clinical Periodontology and Implant Dentistry. Munksgaard. 1998. ISBN 87-16-12060-4.
- 11 Principles of Oral Diagnosis. Ed.:Coleman,G.C.-Nelson,J.F. Mosby-Year Book, Inc. St.Louis, Missouri. 1993. ISBN 0-8016-1005-2
- 12 Rose,L.F.-Kaye,D.:Internal Medicine for Dentistry. 2<sup>nd</sup> ed. Mosby. 1990.
- 13 Surgery – Basic Science and Clinical Evidence. Ed. Norton,J.A. 1<sup>st</sup> ed. 2000. Springer. ISBN 0-387-9844-X
- 14 Baehr,M.M.D- Frotscher,M.M.D:Duus's Topical Diagnosis in Neurology: Anatomy, Physiology, Signs, Symptoms. Thieme. Medical Publ. 2005. ISBN 3136128044
- 15 Lindsay K.-Bone I.-Callender R.: Neurology and Neurosurgery. Illustrated. 4<sup>th</sup> ed. Churchill Livingstone, 2004. ISBN 0443070563
- 16 Szirmai I.-Kamondi A.-Arányi Zs.-Kovács T: Neurological examination. Bp. Semmelweis Publ. 2006. ISBN 963 9656062

## PHARMACOLOGY, TOXICOLOGY

Lecturer: Dr. **Valéria Kecskeméti**

Tutor: Dr. **Zsuzsanna Gyarmati**

### First Semester

---

#### **Lectures** (1 hour per week)

Drugs, receptors and pharmacodynamics  
Pharmacokinetics: Absorption, distribution

Drug biotransformation  
Introduction to Autonomic Pharmacology  
Cholinoreceptor-activating drugs  
Cholinoreceptor-blocking drugs  
Adrenoceptor-activating drugs  
Adrenoceptor-blocking drugs

Local anesthetics I.  
Local anesthetics II.  
General anesthetics  
Opioid analgesics and antagonist  
Principles of antimicrobial drug action  
Penicillins, cephalosporins  
Tetracyclines, chloramphenicol

Sulfonamides – Drugs with specialized indications – Antifungal agents

#### **Practices** (2 hours per week)

Drug interactions (agonists, antagonists)  
Factors influencing pharmacokinetic.  
Drugabuse, dependency, Allergy.  
Basic and clinical evaluation of new drugs  
Prescription writing

Ganglionic blocking drugs  
Skeletal muscle relaxants  
Clinical pharmacology of alpha-, beta-receptor blocking drugs  
Smooth muscle relaxants  
Prescription writing  
The alcohol  
Antiepileptic drugs  
Antiseptics, disinfectants  
Disinfectants  
Aminoglycosides  
Antimycobacterial drugs  
Antiviral chemotherapy  
Urinary antiseptics

## PHARMACOLOGY, TOXICOLOGY

### Second Semester

---

#### **Lectures** (1 hour per week)

Drugs used in congestive heart failure,  
Cardiac glycosides  
Vasodilators  
Antihypertensive drugs  
Drugs used in disorders of coagulation  
Histamine, Histaminereceptor antagonists  
Pharmacology of gastrointestinal tract  
Sedative-Hypnotics  
Antipsychotic agents

#### **Practices** (2 hours per week)

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

**Lectures** (1 hour per week)

Antidepressant drugs  
Nonsteroidal anti-inflammatory drugs; nonopioid analgetics  
Cancer chemotherapy  
Adrenocorticosteroids, adrenocortical antagonists

Agents that affect bone mineral homeostasis  
Agents that affect the other endocrine system  
Stomatological appearance of drug toxicity

**Practices** (2 hours per week)

Management of Parkinsonism  
Prescription writing

Consultation  
Drugs used in gastrointestinal diseases  
Dermatologic pharmacology  
Consultation

## INTERNAL MEDICINE

3<sup>rd</sup> Dept. of Internal Medicine

Tutor: Dr. **László Jakab**

### First Semester

---

**Lectures** (2 hours per week)

Immunologic principles. Lymphocytic system. Immunoglobulins. Types of immunologic reactions. Polycythemia. Agranulocytosis. The leukemias. Hodgkin's disease and non-Hodgkin's lymphoma. Introduction to anemia and approach to patients with anemia. Iron deficiency anemia. Megaloblastic anemia. Aplastic anemia. Hemolytic anemias. Plasma cell disorders. Multiple myeloma. Waldenström's macroglobulinemia. Heavy-chain disease. Amyloidosis. Hemostatic disorders. Thrombocytopenia. Thrombocytosis. Vascular purpuras. Disorders of the coagulation mechanism. Autoimmunity. Systemic lupus erythematosus. Sjögren's syndrome. Atopic diseases. Allergic rhinitis. Asthma of allergic etiology. Urticaria and angioedema. Serum sickness. Drug allergy. Contact dermatitis. Immunodeficiency diseases. Rheumatoid arthritis. Juvenile rheumatoid arthritis. Reiter's syndrome. Bechet's syndrome. Systemic sclerosis. Polymyositis and dermatomyositis. Wegener's granulomatosis. Hypothalamic and pituitary disorders. Hyperpituitary syndromes. Anterior pituitary insufficiency. Diabetes insipidus. The adrenal cortex. Cushing's syndrome. Addison's disease. Diabetes mellitus. Diagnosis and classification of diabetes mellitus. Complication and treatment of diabetes mellitus. Gout.

**Practices** (2 hours per week)

The medical examination of patients with immunological diseases.  
The medical examination of patients with immunological diseases.  
The medical examination of patients with hematological disorders.

The medical examination of patients with hematological disorders.

Dental aspects of hematological diseases

Dental aspects of hematological diseases

The medical examination of patients with endocrinological disorders

The medical examination of patients with endocrinological disorders

The medical examination of patients with metabolic diseases.

The medical examination of patients with metabolic diseases

The medical examination of patients



**Lectures** (2 hours per week)

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

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

**Practices** (2 hours per week)

The medical examinations of patients  
  
Consultation  
  
Consultation  
  
Consultation

**INTERNAL MEDICINE****Second Semester****Lectures** (2 hours per week)

Diseases of the kidney. Physical examination. Urine analysis.  
  
Primary glomerular disorders. Nephritic syndrome.  
  
Interstitial nephritis. Tubular disorders.  
Acute and chronic pyelonephritis. Nephrolithiasis.  
Acute and chronic renal failure.  
Disorders of the digestive system. History taking and physical examination. Special techniques for diagnosing disorders of the digestive system.  
Disorders of the esophagus. Peptic ulcer disease.  
  
Tumors of the stomach.  
  
Crohn's disease. Chronic ulcerative colitis.  
  
The malabsorption syndrome.  
  
Colonic and rectal neoplasms.  
  
Acute abdomen. Mechanical obstruction and ileus.

**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 kidney and urinary tract.  
The medical examination of patients with diseases of the gastrointestinal system  
The medical examination of patients with diseases of the gastrointestinal system  
The medical examination of patients with diseases of the gastrointestinal system  
Dental correlations in patients with the diseases of the gastrointestinal system  
The medical examination of patients with diseases of the liver and biliary tract  
The medical examination of patients with diseases of the liver and biliary tract  
The medical examination of patients with diseases of the pancreas

**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  
 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)

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

**Practices**

(3 hours per week)

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

**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)

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

### Practices (3 hours per week)

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

During the second semester have to make:  
 3 amalgam fillings  
 3 esthetic restorations  
 1 root canal filling  
 1 inlay  
 15 hours assistance

## PROSTHODONTICS

### First Semester

---

#### Lectures (1 hour per week)

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

#### Practices (7 hours per week)

Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients

**Lectures** (1 hour per week)

Tooth preparation I.  
 Tooth preparation II.  
 The adhesive bridges  
 Impression for fix restorations  
 Fixed partial dentures  
 Dowel restorations  
 Removable partial denture  
 Major connectors of upper and lower RPD  
 Indirect and direct retainers of RPD  
 Clinical and laboratorial steps of fixed partials dentures  
 Consultation

**Practices** (7 hours per week)

Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients

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

## PROSTHODONTICS

### Second Semester

---

**Topics Lectures**

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

**Practices**

Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients  
 Partially dentate patients

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

# SURGERY

I. Department of Surgery Department Section of Surgery

Tutor: Prof. Dr. **József Sándor**

## Second Semester

---

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

Surgery of the neck. Thyroid and parathyroid  
 Surgical treatment of the chest wall, breast, pleura, lung and mediastinum  
 Oesophageal surgery (injuries, diverticula, malignant diseases)  
 Gastric and duodenal surgery (benign diseases)  
 Gastric and duodenal surgery (malignant diseases)  
 Surgery of gall-bladder and extrahepatic biliary system  
 Surgery of the small intestines and colorectum (benign and malignant diseases)  
 Appendicitis  
 Surgery of the liver, pancreas and spleen. (injuries, inflammatory diseases and tumors)  
 Bowel obstructions  
 Hernias  
 Basic principles in vascular surgery  
 Shock. Cardiopulmonary resuscitation. intensive therapy  
 General principles of traumatology.  
 First aid.  
 Traumatological management of catastrophes.  
 Burned patients.  
 Urology Consultation      Visiting patients' ward

### **Practices** (2 hours per week)

Visiting patients' ward  
 Visiting operating theater  
 Visiting patients' ward  
 Visiting patients' ward  
 Visiting operating theater  
 Visiting operating theater  
 Visiting patients' ward  
 Visiting patients' ward  
 Visiting operating theater  
 Visiting patients' ward  
 Visiting patients' ward  
 Visiting patients' ward  
 Visiting operating theater  
 Visiting operating theater

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



**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 I V.  
(Fractures of the midfacial bones)  
Maxillofacial traumatology Part V.  
(Posttraumatic deformation and its correction)  
Differential diagnosis and treatment of facial pain  
Case Demonstration  
Guest speaker  
Consultation

**Practices** (3 hours per week)

Practicing minor oral surgery  
Practicing minor oral surgery  
Practicing minor oral surgery  
Practicing minor oral surgery  
Practicing minor oral surgery  
Practicing minor oral surgery  
Practicing minor oral surgery  
Midterm Demonstration  
Practicing minor oral surgery  
Practicing minor oral surgery  
Consultation

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

## ORTHODONTICS PRE-CLINICAL

### First semester

---

**The aim of training**

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

**Training form and time frame**

Practical education: 1 hour/week

Form of examination: practical mark based on the practical performance

Subject code: FOGFKFSP\_1A

Credit code: K1EOG1

Comment: The practical education takes place in 7x2 hours. Training starts in the autumn semesters only.

**The minimal conditions of participation**

Successful final examination of oral biology subject

**The used method**

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

### Detailed syllabus

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

## ORAL DIAGNOSTICS

Section of Oral Diagnostics

(Orális Diagnosztikai Részleg)

address: Bp. VIII., Szentkirályi u. 47. 1088,

Tel.: 459-1500/9161, 317-1044

**Tutor:** Prof. **Dr. Gábor Nagy** D.M.D Ph.D

email: oral@fok.usn.hu

### Fourth year 1<sup>st</sup> semester

---

**Week** **Lecture** (1 hour/week)

**Practice** (1 hour/week)

1. The Diagnostic method. Medical and dental history. The importance of "Oral diagnosis".
2. Clinical evaluation. Extraoral and intraoral physical examination. Stomato-oncological screening.
3. Additional methods of examination. Referrals and consultations. Clinical evaluation by laboratory methods.
4. Molecular oral Diagnostics
5. Physical assessment. Risk factors. Modification of the dental treatment planning for patients with compromised health.
6. New imaging methods in dentistry. Making decisions in dental radiology. (03.03.)
7. Up-to-date diagnosis of the periodontal tissues.
8. Documentation. The use of computers in the dental office. Special softwares in dentistry. Internet
9. Diagnosis of the salivary glands.
10. Diagnosis of the TMJ disorders and Differential diagnosis of orofacial pain
11. Clinical evaluation of dental conditions, and malocclusion
12. Diagnosis and differential diagnosis of maxillo-facial soft tissues. Part I.: White and red lesions.
13. Diagnosis and differential diagnosis of maxillo-facial soft tissues. Part II.: Ulcers and proliferations.  
Early diagnosis and preventive approach



## Rules of practices

Activity of the students:

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

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

### **Exam:**

**Practical hours should be visited during 2 days.**

**The time of practices is between 8.00 a.m – 2.00 p.m.**

Semifinal exam will be organized at the end of fourth year, second semester.

### **Minimal expectations:**

reaching the minimum level of the written theoretical evaluation (mark 2)

presentation of three written case-demonstrations reaching the minimum quality level (mark 2)

Non-performance of the minimal expectations invalidate the semester!

### **Textbook:**

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

### **Recommended books**

Bengel, Veltman, Loevy, Taschini: Differential Diagnosis of Diseases of the Oral Mucosa  
Quintessence Publishing Co. Inc. Chicago, Illinois 1989

Manfred Strassburg/Gerdt Knolle : Diseases of the Oral Mucosa A Color Atlas (Second Edition)  
Quintessence Publishing Co. Inc. Carol Stream Illinois 1994

Coleman, G.C. and Nelson, J.F.: Principles of Oral Diagnosis Mosby-Year Book, Inc. St. Louis, Missouri, USA, 1993.

“hand-outs” will be prepared and presented for the students by the lecturers

## Fourth year 2<sup>nd</sup> 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:**

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

#### **Recommended books**

Bengel, Veltman, Loevy, Taschini: Differential Diagnosis of Diseases of the Oral Mucosa  
Quintessence Publishing Co. Inc. Chicago, Illinois 1989

Manfred Strassburg/Gerdt Knolle : Diseases of the Oral Mucosa A Color Atlas (Second Edition)  
Quintessence Publishing Co. Inc. Carol Stream Illinois 1994

Coleman, G.C. and Nelson, J.F.: Principles of Oral Diagnosis Mosby-Year Book, Inc. St. Louis, Missouri, USA, 1993.

“hand-outs” will be prepared and presented for the students by the lecturers

# GENERAL AND DENTAL RADIOLOGY

Department of Prosthodontics

Lecturer: Dr. **Csaba Dobó Nagy**

## First Semester

---

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

Radiation physics  
 Dental caries  
 Pulp cavity  
 Extraction of the teeth  
  
 Root canal therapy  
  
 Periapical lesions  
  
 Periodontal disease  
  
 Cysts of the jaws  
  
 Hypercementosis  
 Excessive bone formation  
 Injuries to teeth  
 Osteomyelitis  
 Tumors  
 Apicoectomy  
  
 Anomalies  
 Salivary gland diseases  
 Resorption of the teeth  
 Radiation biology  
 Health physics  
 Long-cone paralleling technique  
 Traditional extraoral radiographic examinations  
 Panoramic technique I.  
  
 Panoramic technique II.

### **Practices** (2 hours per week)

Normal radiographic anatomy: Tooth anatomy (lecture)  
 Normal radiographic anatomy: Anatomic landmarks of the maxilla (lectures)  
 Normal radiographic anatomy: Anatomic landmarks of the mandible (lecture)  
 Development of the teeth, Deciduous teeth (lect.)  
 Recognition of the teeth, anatomic landmarks and caries  
 Development of the teeth, deciduous teeth, extraction of the teeth  
 Periapical lesions  
**1<sup>st</sup> midterm**  
 Periodontal disease  
**2<sup>nd</sup> midterm**  
 Cysts of the jaws  
**3<sup>rd</sup> midterm**  
  
 Hypercementosis  
 Excessivebone formation  
 Injuries to teeth  
 Osteomyelitis  
 Tumors, apicoectomy  
 Anomalies  
  
 Review  
  
 Review  
  
 Viewing of the examination radiographs I.  
 Viewing of the examination radiographs II.

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

## Psychiatry

Tutor: **Prof. Dr. István Bitter**

Department of Psychiatry and Psychotherapy

**Lectures:** 0.5/week, **practices:** 0.5/week

**Examination:** Semi-final

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

### Schedule

Subject of psychiatry, classification of disorders, diagnostic methods (lecture)

Case demonstration (psychiatric interview, signs and symptoms )

Affective disorders (lecture)

Case demonstration (depression)

Anxiety, anxiety disorders, somatoform disorders (lecture)

Case demonstration (anxiety disorder)

Organic psychiatry (lecture)

Case demonstration (dementia)

Substance related disorders (lecture)

Case demonstration (alcohol abuse)

Schizophrenia and associated disorders (lecture)

Case demonstration (schizophrenia)

Psychotherapy (lecture)

Emergency in psychiatry, legal aspects (lecture)

Case demonstration, consultation (Z. Hidas)

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

## NEUROLOGY

Tutor: **Dr. Sándor Illiczky**

### First Semester

---

#### **Classroom lectures:**

Cranial nerves and the brainstem

The motor system

The sensory system, pain syndromes

Altered consciousness. Emergency in neurology

Diagnosis and treatment of cerebrovascular disorders

Epilepsy and sudden loss of consciousness

Movement disorders

Inflammatory disorders and tumors of the nervous system

**Bedside practice, patient demonstration**

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

**Requirements:**

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

**Basic reading:**

Fuller G. Neurological Examination Made Easy (3<sup>rd</sup> edition) Churchill Livingstone, Published April 2004. ISBN 0443074208

**Suggested reading:**

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

**PERIODONTOLOGY AND ORAL MEDICINE**

Department of Periodontology

**Second Semester****Lectures** (2 hours per week)

Introduction to Periodontology  
 The morphology of the periodontium, histology and embryology of the periodontium  
 The dental plaque. Its origin and role in the periodontal diseases. Periodontal microbiology  
 Oral immunobiology  
 Oral immunopathology  
 Drugs and chemicals used in the periodontology  
 Pathomechanism of the periodontal disease  
 Clinical forms of periodontal diseases  
 Acute necrotizing ulcerative gingivitis  
 Pregnant gingivitis, Periodontal diseases with endocrine background.  
 Non-plaque related periodontal conditions  
 Oral mucous membrane diseases located on the gingiva  
 Periodontal diseases of the child and adolescents

**Practices** (2 hours per week)

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

Clinical practice

Clinical practice

Clinical practice

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

## PUBLIC HEALTH

Tutor: **Dr. András Terebessy**

### English Dental

---

**Lectures** (1 hour per week)

Definition of Public Health; Past, present and future of Public Health

Demography: International and Hungarian situation

General epidemiology Analytical and intervention methods on field of chronic non-communicable diseases

Lifestyle: smoking, alcohol consumption, drug-abuse

Epidemiology and prevention of non-communicable diseases I

Epidemiology and prevention of non-communicable diseases II

Epidemiology and prevention of Cancer

**Practicals** (2 hours per week)

Introduction Basic demographical data

Public Health Program of EU

Visit into the Central Kitchen of the University

Practical aspects of epidemiological investigations: study-planning and analysis

Dentist's task on prevention of non-communicable diseases I.: smoking, alcohol consumption and drug-prevention

Dentist's task on prevention of non-communicable diseases II: HBP-prevention

Dentist's task on prevention of non-communicable diseases III: cancer-prevention  
Screening-screening programs

Environmental health : water, soil, air	Dentist's task on environmental health problems
Occupational health	Dentist's task on occupation diseases prevention
Basics of healthy diet; Nutrition disorders	Assessment of nutritional status; nutritional disorders;
Mother-, child and youth health care	Basics of healthy diet; Computer planning and controlling diet in public catering
General Epidemiology of communicable diseases - International and Hungarian aspects	Family planning, Youth health
Nosocomial Infections Reemerging, emerging and deliberately emerging infections	General epidemiology of communicable diseases Immunization, Vaccination programs
Ethic of Public Health	Sterilization, disinfection Laboratory investigations in case of communicable diseases
	Nosocomial infections
Structure and financing of Health Care Systems	Food-hygiene; food-borne diseases

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

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:**

**Behavior & Medicine, 3<sup>rd</sup> Edition, Danny Welding**, Hogrefe & Huber Publishers, Seattle, 2001, ISBN 0-88937-238-1

Kopp M, Skrabski Á.: Behavioural Sciences Applied in a Changing Society, Corvina, 1996

Fadem B: Behavioural Science. Harwal, 2<sup>nd</sup> ed., 1994,

Stoudemire A: Human Behavior: An introduction for Medical Students, Lippincott Co., 1994

Gatchel R.J, Baum A, Krantz D.S.: An Introduction of Health Psychology. McGraw-Hill, 1989.

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

## 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 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 dental ethics.**

The principle of respect for autonomy.  
 The principle of non-maleficence.  
 The principle of beneficence.  
 The principle of justice.  
 Arguments against „principalism“.

**4. week** (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?

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

Refusal of life sustaining treatment by competent and incompetent patients.

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

The concept of medically futile treatment.

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

**12. week** (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 embryo- or foetal tissue in human therapy.

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, 19<sup>th</sup>, 20<sup>th</sup> floor

1089. Budapest, Nagyvárud tér 4.

Tel: 210-2953

Secretary: NET Building, 20<sup>th</sup> floor, Room-2005

##### **List of questions**

1. Deontological theories of ethics.
2. Utilitarian theories of ethics.
3. The principles of dental ethics
4. Justice and dental ethics: the allocation of scarce medical resources.
5. Paternalism in dental practice
6. Informed consent
7. Information disclosure for terminally ill patients
8. Advance Directives
9. Experimentation on human subjects
10. Objection to Transplantation of Organs and Counterarguments
11. Ethical problems of live organ donation
12. Organd donation from brain-dead donors: the system of donor cards.
13. Organd donation form brain-dead donors: presumed consent
14. Active and Passive Euthanasia
15. Withdrawing and withholding life sustaining rystalli.
16. Models of the dentist-patient relationship
17. Ethical issues related to treating patients with partially compromised capacity
18. Professional norms and bad outcomes
19. Ethical questions raised by HIV and AIDS in dental practice
20. Confidentiality issues in dental practice

21. Moral issues related to the HIV positive dentist
22. Possible criteria for distributing the society's resources
23. Social justice – the free market view of justice
24. Ethical issues in advertising dental services
25. Professional obligations in dentistry

**Textbook:**

D. T. Ozar—D. J. Sokol (2002): Dental Ethics at Chairside: Professional Principles and Practical Applications. 2<sup>nd</sup> edition. Georgetown University Press. ISBN: 0-8784-0376-0

## MEDICAL SOCIOLOGY

Tutor: **Dr. József Kovács**

- 1 Introduction. Health and illness behaviour.
- 2 The social structure and health.
- 3 Social aspects of disease.
- 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**

<b>Week</b>	<b>Lecture</b>
1.	Introduction into the physiology of the stomatognathic system. Morphology of the masticatory system. Occlusion.
2.	Mandibular positions. Centric occlusion.
3.	Movements of the mandible. Occlusal concepts. Role of occlusion in the clinical practice.
4.	Types of articulators. Mounting of the articulators.
5.	Mounting of the adjustable articulator: Arcus Digma

- 6. Complete denture fabrication in the articulator.
- 7. Diagnosis and management of the problems related to the temporomandibular joint.
- 8. Traumatic occlusion – Occlusal trauma
- 9. Periodontological aspect of gnathology
- 10. Examination of patients. Occlusal diagnostics.

**Week****Practice**

- 9. Facebow transfer. Mounting of semiadjustable articulators.
- 10. Occlusal analysis in the articulator.
- 11. Occlusal adjustment.
- 12-13-14 Waxing up occlusal surface of different teeth: maxillary incisor and canine and occlusal surface of premolar and molar.
- 15. Practical examination

**ORAL IMPLANTOLOGY – lecture**

Department of Oral and Maxillofacial Surgery and Dentistry

Lecturer: **Prof. Dr. Tamás Divinyi**

Course Syllabus:

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

**COMPULSORY SUMMER PRACTICE**

4-weeks at a Dental Office

(Conservative Dentistry of Periodontology)

The student has to practice whole-scale comprehensive dental treatment including: Oral Prophylaxis, Restorations, Root Canal Therapy and Minor Prosthodontics as well as Er. Management.





*Faculty of Dentistry*  
*5<sup>th</sup> year*

**STUDY PROGRAMME**

**Fifth Year**

		9th semester		CLINICAL MODULE	
subjects code	subjects	Creditcode	examination	prerequisites	
	<b>Compulsory</b>	<b>C41</b>			
FOPKFL1A	Clinical Dentistry I. *	C6LOP6	pract.mark	Prosthodontics III.and	
FOKFKLF21A	Clinical Dentistry I. *	C6LOP6	pract.mark	Conservative Dentistry and Endodontics III.	
FOKFKKOF_4A	Conservative Dentistry and Endodontics IV	C3LOP3	pract.mark	Conservative Dentistry and Endodontics III.	
FOSZBSZB_4A	Oral and Maxillofacial Surgery IV.	C6LIP5	pract.mark	Oral and Maxillofacial Surgery III.	
FOPDKOME_1A	Oral Medicine I.	C1LIP0	pract.mark	Internal Medicine III.	
FOPDKFSZ_1A	Orthodontics I	C6LIP5	pract.mark	Conservative Dentistry and Endodontics III.	
FOPFKGYF_1A	Pedodontics I	C6LIP5	pract.mark	Conservative Dentistry and Endodontics III.	
FOPDKPAD_3A	Periodontology III.	C3LIP2	pract.mark	Periodontology II.	
FOSZBIMP_2A	Implantology II.	C1LIP0	semifinal	Oral and Maxillofacial Surgery III.	
FOPKFOF_4A	Prosthodontics IV.	C3LOP3	pract.mark	Prosthodontics III.	
	<b>Obligatory Elective</b>	<b>C8</b>			
FOFULFUL_1A	Otorhinolaryngology	C2LIP1	final#	Pathology II.	
FOSZSZE_1A	Ophthalmology	C2LIP1	final#	Pathology II.	
FOIGSIGS_1A	Forensic Dentistry	C1LIP0	semifinal	Pharmacology, Toxicology II.	
FOPY2GYE_1A	Pediatrics	C2LIP1	semifinal	Internal Medicine III.	
FOOWSOXY_1A	Prehospital Emergency Medicine	C1LIP0	semifinal	Internal Medicine III.	
	<b>Electives</b>	<b>C6</b>			
	Anesthesiology and Intensive Therapy	C2L2P0	pract.mark	for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year students	
	Traditional Chinese Medicine	C2L2P0	pract.mark	for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year students	
	Antibiotic Therapy and Infectology	C2L2P0	pract.mark	for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year students	
	<b>Total Credit</b>	<b>55</b>			



10th semester		CLINICAL MODULE
subjects code	subjects	examination
		prerequisites
	<b>Compulsory</b>	<b>C36</b>
FOPFKKLF12A	Clinical Dentistry II. *	pract.mark
FOPFKKLF22A	Clinical Dentistry II. *	pract.mark
FOPFKKOF_5A	Conservative Dentistry and Endodontics V	final#
FOSZBSZB_5A	Oral and Maxillofacial Surgery V.	final#
FOPDKOME_2A	Oral Medicine II.	final#
FOPGKFSZ_2A	Orthodontics II	final#
FOPGKGYF_2A	Pedodontics II	final#
FOPFKFOP_5A	Prosthodontics V.	final#
FOPDKPAD_4A	Periodontology IV.	final#
	<b>Obligatory Elective</b>	<b>C23</b>
FOXXXSZD_NA	Diploma Work	defense
FOBORBOR_1A	Dermatology	final#
FONO2SCS_1A	Obstetrics and Family Planning	semifinal
	<b>Electives</b>	<b>C16</b>
	Clinical Endocrinology	pract.mark
	Clinical Hematology	pract.mark
	Tropical Medicine	pract.mark
	Ultrasonography	pract.mark
	Medical Epidemiological and Social Aspect of Drug Abuse	pract.mark
	Emergency in Surgery	pract.mark
	Environment Protection - Ecology	pract.mark
	History of Medicine	pract.mark
	Total Credit	<b>75</b>

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 = Practise (hours/week)

## LIST OF TEXTBOOKS

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

### Recommended textbooks:

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

# OTORHINOLARYNGOLOGY AND HEAD AND NECK SURGERY

Lecturer: **Prof. Dr. Gábor Répássy**

Tutor: **Dr. László Noszek**

## First Semester

---

**Lectures** (2 hours per every 2<sup>nd</sup> week)

The role of otorhinolaryngology in dentistry and medicine. Clinical anatomy of the ear. Diseases of the external ear.

Acute and chronic otitis media. Etiology, diagnosis, complications and therapy.

Types of hearing losses. Fundamental audiological diagnostic methods. Surgical management of hearing losses. Otosclerosis and cochlear implant.

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

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

Clinical aspects of diseases of the mouth and pharynx. Diseases of the labial, oral and laryngeal mucosa.

Anatomy and physiology of the larynx. Disorders of the voice. Infections and tumors of the larynx and their management.

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

**Practices** (2 hours per every 2nd week)

Routine clinical examinations in practice.

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

Routine audiology. Operating theater. Video demonstration.

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

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

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

Direct and indirect laryngoscopy. Videostroboscopy and fiberoscopy.

## **PEDIATRICS AND INFECTIOUS DISEASES**

2<sup>nd</sup> Department of Pediatrics

Tutors: **Dr. Tamás Bense**  
**Dr. András Kelecsényi**

### **First Semester**

---

#### **Lectures**

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

## **PROSTHODONTICS**

### **First Semester**

---

Clinical practices: 2 hours/week. Integrated practices: 5 hours/week.  
Treatment of partial edentulousness, fixed and removable dentures.  
No lectures.

### **Second Semester**

---

Clinical practices: 2 hours/week, and 4 hours/week practices integrated with the conservative dentistry. Complex treatment of different cases.  
No lectures.

## CONSERVATIVE DENTISTRY

Tutor: *Dr. Júlia Nemes*

### First Semester

---

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

### Second Semester

---

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

During the first semester the students have to make:

5 amalgam fillings, 7 esthetic restorations, 2 root-canal fillings, 1 inlay

During the second semester the students have to make:

5 amalgam fillings, 7 esthetic restorations, 2 root-canal fillings, 1 inlay

## ORAL AND MAXILLOFACIAL SURGERY

Tutor: Dr. *Attila Szűcs*

### First Semester

---

**Lectures** (1 hour / week)

Precanceroses.

Benign tumors of the soft tissues in the head and neck region.

Benign tumors of the bone tissues in the head and neck region.

Malignant tumors of the head and neck region. I.

(Diagnostics, pathology, epidemiology)

Malignant tumors of the head and neck region. II.

(Surgical therapy)

Malignant tumors of the head and neck region. III.

(Complex therapy)

Secondary treatment of cleft lip and palate. Orthognatic Surgery

Biomaterials.

Esthetical consideration in maxillofacial surgery

Risk patient treatment in oral surgely I.

(internal diseases, fainting, antifebrile and painkiller treatment)

Ambulatory narcosis in head and neck surgery, coagulopathies, anticoagulant 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

Practicing minor oral surgery

**Lectures** (1 hour / week)

Sinus lifting.  
Dentoalveolar deformities.  
Guest speaker  
Consultation

**Practices** (2 hours / week)

Practicing minor oral surgery  
**Midterm Demonstration**  
Practicing minor oral surgery  
Practicing minor oral surgery

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

## ORAL AND MAXILLOFACIAL SURGERY

### Second Semester

---

**Lectures** (1 hour / week)

Diseases of the temporomandibular joint Part I. (Pathology, diagnostics)  
Diseases of the temporomandibular joint Part II. (Therapy)  
Peripheral nerve disorders in the head and neck region. Rehabilitation after the paresis of the Facial nerve  
Antibiotic treatment in dental surgery  
Maxillofacial reconstructive surgery Part I. (Reconstruction of soft tissues and bone by local flaps)  
(Reconstruction by microvascular grafts)  
Modern diagnostic methods in oral and maxillofacial surgery  
Systematic diseases in the head and neck region  
The promotion of the osteogenesis by distraction methods  
Biomaterials in the maxillofacial surgery  
Guest speaker  
Consultation

**Practice**

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

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

# PEDODONTICS

Department of Orthodontics and Pediatrics Dentistry

## First Semester

---

### **Lectures** (1 hour/week)

The subject, the connection and significance of pedodontics.

Induction of caries, caries theories, and indices.

General aspects of caries prevention.

Possibilities of caries prevention and fluorideprophylaxe.

Development of the teeth, anatomy and dentition of primary teeth.

Structure and physiology of the hard dental tissues, and its practical significance.

Disturbances of development of the permanent and primary teeth.

Caries of primary teeth. Treatment of caries of primary teeth.

Consecutive illnesses of caries of primary teeth.

Mechanism of second dentition.

Physiological and pathological phenomena in second dentition.

Caries and treatment of permanent teeth.

Secondary disease of caries of permanent teeth, endodontic treatment.

Endodontic treatment of immature teeth.

Consultation.

### **Practice** (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 Prothesis in pedodontics.

5 Traumatic injuries of primary and permanent teeth.

6 Complex therapy of traumatic injuries of permanent teeth.

7 Parodontology and oral diseases in childhood.

9 Administration of medicine in pedodontics.

**Week Lectures** (1 hour/week)

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

**Practice** (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 telerradiogram.

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

---

### Week Lectures (1 hour/week)

- 1 Direct bonding.
- 2 Treatment of Angle class I. anomalies. Local anomalies.
- 3 Treatment of Angle class I. general anomalies.
- 4 Treatment of Angle class II. anomalies.
- 5 Treatment of Angle class III. anomalies.
- 6 Orthodontic treatment by missing teeth.
- 7 Complex therapy of cleft lip and palate.
- 8 Extraction in orthodontics.
- 9 Ambulant surgical interventions in orthodontics.
- 10 Surgical and orthodontic treatment of mandibular and maxillar prognathism.
- 11 Adult treatment in orthodontics.
- 12 Early treatment in orthodontics.

### Practice (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 hygienic, Gingival and Periodontal indices  
 The treatment of periodontal emergency cases  
 The stages of the comprehensive periodontal treatment I.  
 The stages of the comprehensive periodontal treatment II.  
 Professional oral hygiene I. Supragingival scaling  
 Professional oral hygiene II. Supragingival scaling  
 Professional oral hygiene III. Correcting plaque retention factors  
 Oral hygienic education, tooth brushing

### Practices (2 hours/week)

Clinical practice  
 Clinical practice  
 Clinical practice  
 Clinical practice  
 Clinical practice

### Midterm Demonstration

Clinical practice  
 Clinical practice  
 Clinical practice  
 Clinical practice  
 Clinical practice

**Lectures** (1 hour/week)

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

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

**Practices** (2 hours/week)

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

## PERIODONTOLOGY

### Second Semester

---

**Lectures (1 hour / week)**

**Week Lectures** (Part One)

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

**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

**Seminar** (1 hour/week )

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

**Midterm Demonstration**

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

## ORAL MEDICINE

Head of department: **Prof. Dr. István Gera**

Lecturer: Dr. **Péter Windisch**

### First semester

---

#### Lectures (1 hour / week)

Introduction: The role of Oral Medicine in the whole discipline of stomatology

The significance of laboratory investigation in dentistry

Primary and secondary basic lesions The signs and symptoms of drug side effects

Mucous membrane immunity (in details : alimentary track)

Mucous membrane immunity II. Its clinical relevance

The biochemistry and immunology of inflammation

Inflammation of bacterial origin in the oral cavity

Oral signs of neuro endocrine diseases

Viral diseases

Fungal diseases

The signs and symptoms of temporomandibular joint disorders

Oral manifestations of immuno deficiencies

Allergic diseases in the oral cavity

Autoimmune diseases in the oral cavity

Aphthous ulcers in the oral cavity

#### Practice within the period

#### Midterm Demonstration

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

More than 3 absences invalidate the semester.

During the semester two midterm demonstrations should be passed.

Practical course grade

## ORAL MEDICINE

### Second Semester

---

#### Lectures (1 hour/week)

##### Week Lectures (Part One)

1. Vesiculo-bullous oral diseases
2. Oral signs and symptoms of benign tumors
3. Precancerous conditions in the oral cavity
4. Leukoplakia
5. Malignant tumors of the oral mucous membrane
6. Oral signs and symptoms of hematological diseases
7. Clinical differential diagnosis of gingival enlargements
8. Lichen oris

##### Seminar (1 hour/week)

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

##### Midterm Demonstration

- Clinical case conference
- Clinical case conference

**Week Lectures** (Part One)

**Seminar** (1 hour/week)

9. The diseases of the lip
10. The diseases of the tongue
11. The diseases of the salivary glands
12. The oral considerations of HIV infection and viral hepatitis
13. The role of the vitamins in the etiology of oral mucosal disorders
14. Written final exam

Literature review  
Literature review  
Differential diagnosis

**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 oxyology  
Obstetrical first aid  
CPR revision

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

# DERMATOLOGY

Lecturer: Dr. **Márta Marschalkó**

Tutor: **Dr. Nóra Erős**

Department of Dermatology, Venerology and Dermatoooncology  
Mondays 13.00 – 14.45

## Second Semester

---

### Lecture

### Lecturer

**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.**

**Cutaneous and oral manifestations of internal diseases.**

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

## **OBSTETRICS AND FAMILY PLANNING**

2<sup>nd</sup> Dept. of Obstetrics and Gynaecology  
Head of Department: Prof. Dr. **Attila Pajor**  
Tutor: **Dr. Nándor Ács**

### **Second Semester**

---

#### **Lectures** (1 hour/week)

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

## **OPHTHALMOLOGY**

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

### **First Semester**

---

#### **Lectures** (1 hour/week)

Introduction. History of ophthalmology.  
Conjunctivitis ("red eye").  
Keratitis ("red eye").  
Uveitis ("red eye").  
Differential diagnostic approach of the "red eye".  
Basics of optics.  
Diseases of the crystalline lens. Cataract surgery.  
Diseases of the retina  
Intraocular tumours  
Glaucoma (pathomechanismus).

Glaucoma (conservative and surgical treatment).  
Diseases of the eyelids.  
Ocular injuries.  
Sudden visual loss.  
First aid in ophthalmology.

**Practical guide** (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. **Márta Hubay**

### First Semester

---

**Lectures** (1 hour/week)

The discipline of forensic medicine, relation to law, the legal aspects of dentistry  
Injuries  
Asphyxia  
Identification  
Toxicology I.  
Toxicology II.  
Alcohol and narcotics  
The legal aspects of clinical medicine I.  
The legal aspects of clinical medicine II.  
Facial and cranial injuries  
Sudden death, SIDS  
Risk and malpractice in dentistry  
Forensic psychiatry  
Autopsy demonstration  
Autopsy demonstration





# FACULTY OF PHARMACY



*Faculty of Pharmacy*  
*1<sup>st</sup> year*

## STUDY PROGRAMME

### First Year

Subjects	1 <sup>st</sup> semester			
	Lectures	Practicals	Credit Points	Examination
Mathematics I. Practice	–	2	2	practical course grade
Mathematics I.	2	–	2	semi-final
Biophysics I. Practice	–	3	2	practical course grade
Biophysics I.	2	–	3	semi-final
General and Inorganic Chemistry I. Practice	–	5	5	practical course grade
General and Inorganic Chemistry I.	4+1	–	5	semi-final
Biology I. Practice	–	2	2	practical course grade
Biology I.	1,5	–	2	semi-final
Introduction to Health Informatics I. Practice	–	1	–	signature
Introduction to Health Informatics I.	1	–	2	semi-final
History of Sciences, Propedeutics	2	–	2	semi-final
Hungarian Language*	–	4	4	practical course grade
Physical Education I.	–	1	0	signature
Medical Terminology**	–	2	2	practical course grade
	13,5	20	33	
	32,5+1			
Subjects	2 <sup>nd</sup> semester			
	Lectures	Practicals	Credit Points	Examination
Mathematics II. Practice	–	1	1	practical course grade
Mathematics II.	2	–	2	semi-final
Biophysics II. Practice	–	3	2	practical course grade
Biophysics II.	2	–	3	final #
General and Inorganic Chemistry II.	3	–	3	final #
Analytical Chemistry (qualitative)	2	5	5	practical course grade
Biology II. Practice	–	1,5	1	practical course grade
Biology II.	1,5	–	2	final #
Pharmaceutical Botany I.	1	2	3	practical course grade
Anatomy	2	–	4	semi-final
Anatomy Practice	–	2	–	signature
Introduction to Health Informatics II. Practice	–	1	–	signature
Introduction to Health Informatics II.	1	–	2	semi-final
First Aid***	1	–	0	signature
Physical Education II.	–	1	0	signature
	15,5	16,5	28	
	32			

- # 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 4<sup>th</sup> 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

subjects code	subjects	credit code*	prerequisites
GYEGYMATG1A	Mathematics I. Practice	C2L0P2	
GYEGYMATE1A	Mathematics I.	C2L2P0	
GYFIZBIFG1A	Biophysics I. Practice	C2L0P3	
GYFIZBIFE1A	Biophysics I.	C3L2P0	
GYASKASKG1A	General and Inorganic Chemistry I. Practice	C5L0P5	
GYASKASKE1A	General and Inorganic Chemistry I.	C5L4+1P0	
GYGENBIOG1A	Biology I. Practice	C2L0P2	
GYGENBIOE1A	Biology I.	C2L1,5P0	
GYINFBEIG1A	Introduction to Health Informatics I. Practice	C0L0P1	
GYINFBEIE1A	Introduction to Health Informatics I.	C2L1P0	
GYEGYTTPE1A	History of Sciences, Propedeutics	C2L2P0	
GYNYEMAGG1A	Hungarian Language	C4L0P4	
GYTRAE LSE1A	First Aid	C0L1P0	
GYTSITSNG1A	Physical Education I.	C0L0P1	
AOLEKOTR_1A	Medical Terminology	C2L0P2	

\*C-Credit, L-Lecture, P-Practice

**2nd semester**

<b>subjects code</b>	<b>subjects</b>	<b>credit code*</b>	<b>prerequisites</b>
GYFIZBIFE2A	Biophysics II.	C3L2P0	Biophysics I. Biophysics I. practice
GYFIZBIFG2A	Biophysics II.pracice	C2L0P3	Biophysics I. Biophysics I. practice
GYEGYMATE2A	Mathematics II.	C2L2P0	Mathematics I., Mathematics I. practice Introduction to Health Informatics I.
GYEGYMATG2A	Mathematics II.practice	C1L0P1	Mathematics I., Mathematics I. practice Introduction to Health Informatics I.
GYGENBIOE2A	Biology II.	C2L1,5P0	Biology I. Biology I. practice
GYGENBIOG2A	Biology II. practice	C1L0P1,5	Biology I. Biology I. practice
GYHUMANAE1A	Anatomy	C4L2P0	Biology I. Biology I. practice
GYHUMANAG1A	Anatomy Practice	C0L0P2	Biology I. Biology I. practice
GYNOVGYNG1A	Pharmaceutical Botany I.	C3L1P2	Biology I. Biology I. practice
GYINFBEIE2A	Introduction to Health Informatics II.	C2L1P0	Introduction to Health Informatics I.
GYINFBEIG2A	Introduction to Health Informatics II. Practice	C0L0P1	Introduction to Health Informatics I. Practice
GYASKANKG1A	Analytical Chemistry I. (qualitative)	C5L2P5	General and Inorganic Chemistry I., General and Inorganic Chemistry I. practice
GYASKASKE2A	General and Inorganic Chemistry II.	C3L3P0	General and Inorganic Chemistry I. General and Inorganic Chemistry I. practice
GYTSITSNG2A	Physical Education II.	C0L0P1	Physical Education I.

\*C-Credit, L-Lecture, P-Practice

## LIST OF TEXTBOOKS

- 1 Alberts et al.: Essential Cell Biology. Garland Pub. 2004.
- 2 Thompson & Thompson: Genetics in Medicine. 6<sup>th</sup> ed. Saunders. ISBN 0721602444
- 3 Vígh B: The Construction of the Human Being. Short anatomy. (Bp.) 1999. Magánkiad.
- 4 Rontó-Tarján (eds): An Introduction to Biophysics with Medical Orientation 3<sup>rd</sup> ed. Bp. 1999. Akadémiai K. ISBN 963-05-7607 4
- 5 Laboratory Manual of Medical Physics and Statistics. Bp. Semmelweis University, 2005.
- 6 Rost et al.: Botany, a brief introduction to plant biology. Wiley.
- 7 Mihalik: Botany for Students of Pharmacy. (Szeged)
- 8 Lásztity-Noszál: Practical Inorganic and General Chemistry. Bp. (SOTE)
- 9 Lásztity-Gyimesi: Qualitative Inorganic Analysis. Bp. (SOTE)
- 10 Kőrös: General Chemistry. Bp. (SOTE)
- 11 Kőrös: Inorganic Chemistry. (Szeged)
- 12 Masterton-Hurley: Chemistry. Principles and Reactions. Saunders College Publishing, 1998.

### Recommended textbooks:

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

## MATHEMATICS

University Pharmacy, Department of Pharmacy Administration

Tutor: **Dr. Andrea Meskó**

In the first year of the curriculum two hours of lectures are given to pharmacist students under the title above. The lectures are accompanied by practicals to help a better understanding and to get experienced in solving problems and exercises.

The title covers two, more or less independent, subjects. The majority of the lectures (over 60 per cent) is devoted to (classical) mathematics, the smaller part, however, in which biostatistics are given, is not of less importance.

The aim of learning classical mathematics is to understand biological, chemical, and physical processes dealt with in the subjects mentioned. The most appropriate mathematical model for the processes in nature are functions of one or more variables. To obtain the proper function for a particular process a differential equation is to be solved. The notion and the way of solution of differential equations is the central point of the course. The others namely limits, differential and integral calculus, discussion of functions, series etc. are, however, necessary preparatory steps for getting acquainted with differential equations.

Biostatistics, the other subject under this title, is a more recent branch of sciences. Its importance is permanently increasing in each field where data are present, i.e. quite everywhere in scientific work. Pharmacological investigations, clinical trials, epidemiological studies (etc, etc.) cannot be carried on without the statistical analysis of the data obtained. The results of the above mentioned studies are always derived by statistical inference. Statistics is an indispensable part of any research from planning the experiment to interpretation of the results. Statistical methods are essential even for students in their laboratory work.

## MATHEMATICS

University Pharmacy, Department of Pharmacy Administration

Tutor: **Dr. Andrea Meskó**

### First Semester

---

**Lectures:** 2 hours per week

**Practicals:** 2 hours per week

Differential and differential coefficient. Rules for derivations of functions.

The derivative of the power function.

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

Application of differentiation for calculation of limits of fractions.

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

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

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

The multiplicity of a root.

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

## MATHEMATICS

University Pharmacy, Department of Pharmacy Administration

Tutor: **Dr. Andrea Meskó**

### Second Semester

---

**Lectures:** 2 hours per week

**Practicals:** 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.  
 Standard deviation and variance. The coefficient of variation. Error bounds.  
 The standard error of the mean.  
 The concept of "regression line". The linear regression: coefficients, interpretation, application.  
 The correlation coefficient: formula and interpretation. Uses and misuses of correlation coefficient. Lack of correlation vs. independence.  
 Spurious correlations. Coefficient of determination.  
 Sampling distributions. Important distributions derived from the normal one: t F, and chi-squared distributions. The use of statistical tables.  
 Theoretical background of statistical inference. Qualitative and quantitative conclusions. Estimation; confidence interval for the expected value.  
 Testing hypotheses. The concept of "significance". Errors of the first and of the second kind. The t-tests.

Analysis of variance. The F-test. Discrete and dichotomous distributions; variables on a nominal scale. The Poisson distribution.  
 Analysis of qualitative data. Counting tables. Measures of association and statistical tests in fourfold tables.  
 Sets (finite and infinite). Natural, integral, rational, real and complex numbers.  
 Definition of a function.  
 General attributes of the functions. Classification of elementary functions.  
 Rational and irrational functions.  
 Transcendent functions: exponential, logarithmic, trigonometric and cyclometric functions. Limits of functions. Continuous functions.  
 Sequences and series. Series of functions. Power series.  
 Radius of convergency.

## BIOLOGY I.

Tutor: Dr. **Valéria László**

### 1<sup>st</sup> Semester

---

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



**BIOLOGY II.****Second Semester**

---

<b>Week</b>	<b>Lectures</b>	<b>Practices</b>
	<i>Tuesday 8<sup>40</sup>-9<sup>10</sup> Sz6 in NET building</i>	
1.	Meiosis	<b>Typical and atypical mitosis</b>
2.	<b>Introduction to human genetics; human genom</b>	Meiosis and gametogenesis
3.	<b>Mutations and polymorphisms I.</b>	<b>Cytogenetics I</b>
4.	Mutations and polymorphisms II.	Cytogenetics II
5.	Epigenetics	Introduction to humangenetics; special methods of humangenetics
6.	Cytogenetics I	Molecular genetics I
7.	Cytogenetics II	Midterm I (written)
8.	Autosomal (monogenic) inheritance	Molecular genetics II
9.	Role of sex in inheritance	Gene expression analysis on protein level
10.	Genetics of sex	Medical applications of genetic methods : monogenic inheritance
11.	<b>Genetics and genomics of complex traits (disorders)</b>	Medical application of genetic methods: complex traits (disorders)
12.	<b>Genetic aspects of development and cancer</b>	Medical applications of genetic methods: practice
13.	Gene and genome manipulations	Midterm II (written)
14.	Theoretical background of reparative medicine	<b>Consultation</b>

## BIOPHYSICS

Tutor: *Dr. Károly Módos*

### First Semester

---

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

Introduction; structure of matter; interactions  
Gases, crystals, liquids, Boltzmann distribution  
Properties of condensed matter  
Liquid crystals, membranes  
Structural organization of macromolecular systems  
Radiations, light, optics  
Wave and corpuscular nature of light  
Light absorption and emission, light scattering, vision  
Electromagnetic radiations, thermal radiation  
Luminescence  
Lasers

#### X-radiation

Ionizing radiations, radioactive decay

#### Dosimetry

Sound, ultrasound, hearing

#### **Laboratory** (3 hours per week)

Laboratory safety rules  
Data processing  
Emission spectroscopy. Light sources  
Spectrophotometry  
Optical lenses; light microscope

Detection of nuclear radiations  
Oscilloscope

Radioactive power of an X-ray tube

Special light microscopes  
Gamma energy determination  
Electronic blood particle counting  
Picoscale  
Determination of skin-impedance  
Concentration determination with refractometer  
Isotope diagnostics  
Repetition, consultation

## BIOPHYSICS

### Second Semester

---

#### **Lecture** (2 hours per week)

Transport phenomena, flow of fluids and gases  
Diffusion, osmosis  
Thermodynamic aspects of transport processes  
Laws of thermodynamics  
Membrane potential  
Signals as information carriers, signal processing  
Detectors, transducers, displays  
Basic electronic units and circuits  
Physical methods for structural analysis I  
Physical methods for structural analysis II  
Regulatory system in technics and b  
Some diagnostic methods, endoscopy, thermography, ultrasound echo, Doppler, X-ray

#### **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

Isotope diagnostics  
 Magnetic resonance imaging  
 Some therapeutic methods, laser surgery,  
 radiation therapy  
 Research fields in the Department of  
 Biophysics and Radiation Biology

Diffusion  
 Sensory function  
 Repetition  
 Repetition

## GENERAL AND INORGANIC CHEMISTRY

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

Tutor: **Dr. Krisztina Kurin-Csörgei**

### First Semester

---

#### Lectures (3 hours per week)

Elementary particles: quarks, leptons, gauge particles, electron, proton, neutron.  
 The Bohr model of the atom.  
 Properties of the electron. Heisenberg's uncertainty principle. Schrödinger's equation and the quantum numbers. Pauli's exclusion principle and Hund's rule.  
 Periodic table and periodic properties. Ionic bond and the types of ions.  
 Covalent bond and its representation in Lewis structures. Hybridization of orbitals. The valence bond theory.  
 Molecular geometry, the VSEPR theory. The formation of molecular orbitals.  
 Bond polarity and moleculepolarity. Single and multiple bonds.  
 Electronegativity and its determination. The ionic character of covalent bonds.  
 Covalent radius, bonding energy, network covalent bonds. Metallic bonding.  
 Weak bonding forces. Dispersion, dipole forces and hydrogen bonding.  
 Multicentered bonds.  
 Chemical equilibria, the law of mass action.  $K_p$  and  $K_c$ . The Le Chatelier principle. The temperature and pressure dependence of the equilibrium constant.  
 Acid/base equilibria. Conjugated acid-base pairs and their strengths.  
 The acid/base equilibria of water. The pH and its calculation. Strength of acids and bases. Hydrolysis. Buffer systems.  
 Complex formation equilibria. Types of ligands. Mass balance equations, calculation of complex equilibria. Heterogeneous equilibria, the solubility product constant, solubility.  
 Chemical kinetics. Reaction order and molecularity. First order reactions. Age determinations based upon radioactive decompositions. Second order, pseudofirst order and zero order reactions. Reaction mechanisms.  
 The temperature dependence of the reaction rate, collision theory.  
 Catalysis. catalysts. Autocatalytic reactions. Enzyme catalysed, induced and oscillatory reactions.  
 Thermochemistry. Hess's law. Internal energy and enthalpy changes of reactions.  
 Entropy. Spontaneity of chemical reactions, the free energy. Coupled reactions and their spontaneity.  
 Photochemistry and radiation chemistry. States of matter. Properties and kinetic

theory of gases. Properties of liquids. The surface tension. Freezing, boiling.  
 The phase diagram of water. Crystal structures, unit cell. The rate of crystallization. Sublimation.  
 The mechanism of dissolution. Types of concentrations. Rules of dilute solutions.  
 Determination of MM by colligative properties.

## PRACTICAL GENERAL AND INORGANIC CHEMISTRY

Tutor: Dr. **Zoltán Szakács**

### First Semester

---

#### Lectures (2 hours per week)

Methods of purification of chemical substances. Recrystallization.  
 Sublimation.

Ion exchange. Distillation.  
 Chemical purification.

Preparation of inorganic compounds.  
 Stoichiometry of chemical reactions.  
 Theoretical yield, actual yield and percent yield. Types of chemical reactions.  
 Acid-base reactions. Preparation of inorganic compounds by acid-base reactions.  
 Acid-base properties of salt solutions, hydrolysis.

Thermal decomposition of inorganic compounds (acids, bases, salts).  
 magnesium metal sample.

Oxidation-reduction reactions. Balancing redox equations.

Preparation of inorganic compounds by oxidation-reduction reactions.

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

Calculation of pH in solutions of acids and bases.  
 Buffer solutions and their functions, calculation of pH of buffer solutions.

Precipitation reactions. Equilibria in precipitation reaction.

#### Practicals (5 hours per week)

Safety instructions. General instructions on the requirements. Recrystallization of  $\text{KA}(\text{SO}_4)_2 \cdot 12 \text{H}_2\text{O}$ . Sublimation of iodine.

Chemical purification of sodium chloride.  
 Water purification using ion exchange resins.  
 Distillation of hydrochloric acid.  
 Preparation of  $\text{CuSO}_4 \cdot 5 \text{H}_2\text{O}$

Preparation of  $(\text{NH}_4)_2\text{SO}_4$ ,  $\text{H}_3\text{BO}_3$  from borax ( $\text{Na}_2\text{B}_4\text{O}_7$ )  
 Preparation of  $\text{CaHPO}_4$ . Observation of hydrolysis of some salts.  
 Observation of thermal decompositions.  
 Determination of the mass of a

Observation of some oxidation-reduction Reactions.

Preparation of metallic copper and metallic manganese.  
 Reactions of metals.  
 Preparation of  $\text{Cu}_2\text{O}$  and  $\text{FeSO}_4$

Preparation of precipitated sulfur.  
 Experimental observation of direction of redox reactions (standard potentials).  
 Preparation of a double salt (Mohr salt,  $(\text{NH}_4)_2 \text{Fe}(\text{SO}_4)_2 \cdot 6 \text{H}_2\text{O}$ )  
 Preparation of a buffer solutions.  
 Preparation of  $\text{Cu}(\text{NH}_3)_4 \text{SO}_4$  and  $\text{Co} \text{Hg}(\text{SCN})_4$  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 metalloids. Trends in metallic and nonmetallic character.
  - 2 **Chemistry of hydrogen, oxygen, nitrogen and carbon.**  
Hydrogen: occurrence, preparation, chemical properties, uses. Binary hydrogen compounds (hydrides). Oxygen: occurrence, preparation, chemical properties, uses. Ozone. Peroxides, superoxides.
  - 3 Nitrogen: occurrence, chemical properties. Hydrogen compounds of nitrogen. Oxides and oxyacids of nitrogen. The nitrogen cycle in nature.  
Carbon: elemental forms of carbon. Inorganic compounds of carbon. The carbon-oxygen cycle in nature.
  - 4 **Chemistry of other nonmetallic elements**  
The noble gases. (He, Ne, Ar, Kr, Xe, Rn) and their compounds. The halogens (F, Cl, Br, I, At): occurrences, preparation, properties and uses. Oxyacids and oxyanions. The biological role of halogens.
  - 5 The group 6A elements (S, Se, Te). General characteristics, occurrences, preparation, properties. Oxides, oxyacids and oxyanions of sulfur and selenium. Sulfur and selenium in biology.
  - 6 The group 5A elements (P, As, Sb, Bi). General characteristics, occurrences, preparation, properties. The oxycompounds of phosphorus. – The biological significance of the P–O bond. Silicon. The major element of the geosphere. Silicates. Clay minerals. Glass. – A comparison of the properties of carbon and silicon. Boron and its compounds.
- Metals**
- 7 Occurrence and distribution of metals. Metallurgy. The physical and chemical properties of metals and alloys. The alkali metals (Li, Na, K, Rb, Cs). General characteristics. Some important compounds of sodium and potassium.
  - 8 The alkaline earth metals (Be, Mg, Ca, Sr, Ba). General characteristics.

- Some important compounds of magnesium and calcium. The zinc-group metals (Zn, Cd, Hg). Occurrences, chemical properties.
- 9 The transition metals. Physical properties, electron configurations and oxidation states. The chemistry of selected transition metals: chromium, manganese, iron, copper, molybdenum, platinum.
- Chemistry of coordination compounds**
- 10 The structure of complexes. Types of ligands. Chelates. Isomerisms. Bonding in complexes. The magnetic and optical properties of complexes.
- 11 The dynamics of coordination compounds: Complex equilibria, ligand exchange rates. The coordination chemistry of alkali metal ions. (Host-guest complexation.)
- Metals in biology**
- 12 Life essential metals and ligands in biosystems. Metals in enzymatic and trigger processes. Metals in oxygen and nitrogen biochemistry.
- 13 Metals in biomineralization. Metal-induced toxicity. The biomedical use of metal complexes and metal complexation.
- The chemistry of the environment**
- 14 A brief overview of the chemistry of the lithosphere, hydrosphere and atmosphere.

## ANALYTICAL CHEMISTRY I.

Qualitative Chemical Analysis

Lecturer: Dr. **István Szalai**

Practical: Dr. **István Szalai**

Tutor: Dr. **Krisztina Kurin-Csörgei**

### Second Semester

---

#### Lectures (2 hours per week)

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

#### Practicals (5 hours per week)

General rules of work in the laboratory of analytical chemistry. Study of reactions of Group I cations. Part I:  $\text{Bi}^{3+}$ ,  $\text{Pb}^{2+}$ ,  $\text{Cd}^{2+}$ . Study of reactions of Group I cations. Part II:  $\text{Hg}_2^{2+}$ ,  $\text{Hg}_2^{+}$ ,  $\text{Ag}^{+}$ ,  $\text{Cu}^{2+}$ . Identification of cations in mixture of Group I cations. Study of ion reactions of Group II cations:  $\text{As}^{III/}$ ,  $\text{V/}$ ,  $\text{Sb}^{III/}$ ,  $\text{V/}$ ,  $\text{Sn}^{II/}$ ,  $\text{V/}$ .

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

of properties of elements and reactions of Group II cations.

Complex formation reactions. Complex equilibria. Pearson classification of acids and bases.

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.

group of cations in mixtures.

Study of ion reactions of Group III cations. Part I:  $\text{Co}^{2+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Fe}^{2+}$ ,  $\text{Fe}^{3+}$ ,  $\text{Cr}^{3+}$ .

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

Study of ion reactions of Groups IV–V cations.

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

Analysis of unknown samples containing cations of the Groups I–V.

Study of reactions of the first analytical group anions.

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

Study of reactions of the fourth group of anions.

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

Special tests for mixture of anions.

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

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

Analysis of unknown simple substances.

## PHARMACEUTICAL BOTANY

Department of Plant Anatomy

Tutor: **Dr. Béla Dános**

### Second Semester

---

#### Week Lectures

- 1 Introduction. The Plant Kingdom. The botanical sciences. Pharmaceutical Botany, the program of the lectures.
- 2 Compartmentalization and metabolic pathways in plant cells.
- 3 Chloroplast and photosynthesis. Starch formation and degradation.
- 4 Synthesis of cell wall polysaccharides. Cell wall formation and architecture. Plasmodesmata. Mucilage synthesis and the dynamics of hydrophilic secretion.
- 5 Mitochondrion and respiration.
- 6 Lipid metabolism. Fatty acid polymers: cutin, suberin. Wax. Terpenoids. The lipophilic secretion.
- 7 Amino acid and protein metabolism. The N cycle. Protein bodies, protein mobilization. Protein secretion.
- 8 Formation of alkaloids and phenolics. Lignification. Vacuole, cell sap, osmoregulation, crystal formation, autophagy, autolysis.
- 9 Nucleic acid metabolism. The nucleus. Plant specificities of mitosis and meiosis.
- 10 Organizational types of plants. The cormophyte plant body. Tissues, tissue system. Meristems.
- 11 Dermal tissue system.
- 12 Conductive tissue system.
- 13 Ground tissue system.
- 14 Secretory structures.

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

Fundamentals in Botany. The use of the light microscope. Knowledge of the medicinal plants  
Plant cells (plasmolysis, cycloses).

Plastids, reserve polysaccharides, protein bodies.  
Cell wall, structural polysaccharides and other wall substances.

Vacuole, crystals, lipid bodies.  
1<sup>st</sup> Test Work. Stem morphology (buds).  
Monocots: analysis of a living plant.

Analysis of dicots representing ancestral type (Ranunculaceae).

Simple tissues, meristems.

Dermal tissue system, trichomes.

2<sup>nd</sup> Test Examination  
Analysis of living plants (Rosaceae, Apocynaceae), medicinal plants.  
Conductive tissue system.  
Ground tissue system.  
Analysis of living plants (Papaveraceae, Primulaceae).  
3 Test Work  
Knowledge of the medicinal plants.  
Pteridophyta.

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



# ANATOMY

Tutor: Dr. *Ágnes Csáky*

## Second Semester

---

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

### Lecture

- 1 Introduction, general Embryology
- 2 Basic tissue
- 3 Bone, joint and muscle types
- 4 Ossification, development of the vertebral column
- 5 Heart and its development
- 6 Blood vessels
- 7 Blood, development of the blood cells
- 8 Lymphatic organs
- 9 Respiratory system
- 10 Development of lung and intestines
- 11 Intestinal tract.
- 12 Digestive glands
- 13 Kidney
- 14 Ureter, urinary bladder, urethra
- 15 Inner and outer genitals
- 16 Development of the urogenital organs
- 17 Endocrine gland
- 18 Development of the nervous system
- 19 Spinal cord.
- 20 Oblongate medulla, pons, mesecephalon
- 21 Diencephalon, neurosecretion
- 22 Cerebral cortex
- 23 Cerebellum, extrapyramidal system
- 24 Olfactory and limbic systems
- 25 Eye, optic tracts and centers
- 26 Auditory and static system
- 27 Gustatory buds, skin and accessory organs
- 28 Development of the sensory organs
- 29–30 Repetition, complementary day for holidays

### Practice

- Microscopy: stratified epithelium, connective tissue, cartilage, bone
- Macroscopy: bones and joints of the shoulder girdle and upper limb
- Microscopy: artery and vein, blood, lymph node spleen, palatine, tonsil
- Macroscopy: bones and joints of the pelvis girdle and lower limb
- Microscopy: lung, submandibular gland, liver, pancreas
- Macroscopy: vertebral column and skull
- Microscopy: stomach ileum, kidney, ureter
- Macroscopy: muscles, vessels and nerves of the upper limb.
- Microscopy: ovary, uterus, placenta, testis, penis
- Macroscopy: muscles, vessels and nerves of the lower limb.
- Microscopy: hypophysis, thyroid, adrenal gland, cerebellum, spinal cord.
- Macroscopy: intestinal complex
- Microscopy: eye, organ of Corti
- Macroscopy: brain and spinal cord.

# HISTORY OF PHARMACY, PROPEDEUTICS

University Pharmacy, Department of Pharmacy Administration

Lecturer: **Prof. Dr. Ágnes Kéry**

Tutor: **Dr. Andrea Balázs**

## First Semester

---

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

- 1        The place and importance of the subject in the curriculum.  
          Profession's history as bridge, methods, main fields.  
          Symbols of medicine and pharmacy.
- 2        Knowledge of medicine and pharmacy in Babylonia-Assyria.  
          Knowledge of medicine and pharmacy in Egypt.
- 3        Knowledge of medicine and pharmacy in Greece. Hippocratic medical writing.  
          Knowledge of medicine and pharmacy in Rome. Galen.
- 4        The Arabs and the European Middle Ages. Transit ways of knowledge.  
          Monastic medicine and pharmacy. The School of Salerno.  
          Universities emerge, the birth of European professional pharmacy.
- 5        The idea of renaissance. Paracelsus and chemical drugs.  
          Homeopathy as an example of medical sectarianism.
- 6        Development of pharmacy in Italy and France.  
          Development of pharmacy in Germany and Britain.
- 7        Development of Pharmacy in Hungary.
- 8        Pharmaceutical education in Europe. Development of education.
- 9        Definition of drugs. Aspects of classification.
- 10      Classification of drugs according to their origin and on the basis of strength.  
          Classification of drugs by their pharmaceutical action, use and by the place of  
          application.
- 11      Drug and doses. Specially named doses.  
          Drug utilization. How could be influenced the increased drug consumption?  
          Drug abuse. Prevention of drug abuse.  
          Narcotic controls.
- 12      International professional trends. F.I.P., I.P.S.F.. Unification of drug standards.  
          Pharmaceutical literature: treatises, pharmacopeias, formularies, journals,  
          periodicals.
- 13      Ordering of drug preparation. Pharmacy, galanic laboratories, pharmaceutical  
          factories.
- 14      Pharmacists, connections with physicians, etc.  
          Health for all – all for health by the year 2000.

# FIRST AID

Institute of Traumatology

Tutor: **Dr. Miklós Szebeny**

## 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.
9–10	Shock. Management of hypovolemic shock. Cardiorespiratory emergencies.
11–12	Resuscitation theory and practice.
13–14	Thermal and chemical injuries. Transport of injured patients.

## INTRODUCTION TO HEALTH INFORMATICS

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

Director: **Dr. András Jávör**

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

1<sup>st</sup> semester: presented the masterwork completed during the practices and his/her absences did not exceed 25% of all practices.

2<sup>nd</sup> 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.

<b>THEME/ 1. semester</b>	
1. e-HEALTH	lecture
2. Networks and telecommunication. The Internet	lecture
3. Data handling by computer	lecture
4. The World Wide Web – WEB 2.0 and the health care system	lecture
5. Data manipulation	lecture
6. Databases	lecture
7. Digital signature, e-card	lecture
<hr/>	
1.2 Computer platforms and computer architectures	practice
2. Getting familiar with the Internet (E-mail, news groups, Telnet, FTP)	practice
3. Browsing and searching on the Web	practice
4. Hypertext document. How to create Web pages	practice
5. Handling text, image, sound and moving images in computers	practice
6. Creating database	practice
7. Working with clinical trial database using Excel	practice
8. JAVA, AJAX and RSS in WEB 2.0 applications	practice
<hr/>	
<b>THEME/ 2. semester</b>	
1. The knowledge in medicine and pharmacy	lecture
2. Drug and pharmacotherapeutic databases on the Net	lecture
3. Statistical tools of drug development	lecture
4. Wireless Communication	lecture
5. Computer-aided drug design	lecture
6. Data Analysis with SPSS	lecture
7. How to read scientific articles?	lecture
<hr/>	
1. Electronic medical knowledge bases practice (Medline, Micromedex, Cochrane Library, ...)	practice
2. Diet planning using Excel	practice
3. Mobile communication	practice
4. How to create a presentation. Electronic slide show and animation. Presentation with PowerPoint.	practice

**HUNGARIAN LANGUAGE, TERMINOLOGY – See information before the Study Programs!**



*Faculty of Pharmacy  
2<sup>nd</sup> year*

## STUDY PROGRAMME

### Second Year

Subjects	1 <sup>st</sup> semester			
	Lectures	Practicals	Credit Points	Examination
600Analytical Chemistry (quantitative) I.	2	5	7	practical course grade
Organic Chemistry I. Practice	–	5,5	5	practical course grade
in0Organic Chemistry I.	4	–	5	semi-final
Physical Chemistry I.	4	–	4	semi-final
Pharmaceutical Botany II. Practice	–	3	2	practical course grade
Pharmaceutical Botany II.	1	–	2	final #
Physical Education III.	–	1	0	signature
	11	14,5	25	
	25,5			
Subjects	2 <sup>nd</sup> semester			
	Lectures	Practicals	Credit Points	Examination
Analytical Chemistry (quantitative) II. Practice	–	5	3	practical course grade
Analytical Chemistry (quantitative) II.	2	–	6	final #
Organic Chemistry II. Practice	–	5,5	4	practical course grade
Organic Chemistry II.	4	–	5	final #
Physical Chemistry II.	1	4	5	practical course grade
Colloid Chemistry I.	2	–	2	semi-final
Biochemistry I.	3	–	3	semi-final
Physical Education IV.	–	1	0	signature
	12	15,5	28	
	27,5			

# 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.

**CREDIT****Faculty of Pharmacy 2<sup>nd</sup> year****3<sup>rd</sup> semester**

<b>Subjects code</b>	<b>Subjects</b>	<b>Credit code*</b>	<b>Prerequisites</b>
GYASKAKKG1A	Analytical Chemistry I. (quantitative)	C7L2P5	Mathematics II.
			Mathematics II. practice,
			General and Inorganic Chemistry II.
			Analytical Chemistry (qualitative)
GYSZKSZKE1A	Organic Chemistry I.	C5L4P0	General and Inorganic Chemistry II
			Analytical Chemistry I. (qualitative)
GYSZKSZKG1A	Organic Chemistry I. practice	C5L0P5,5	General and Inorganic Chemistry II
			Analytical Chemistry I. (qualitative)
GYFKTFIKE1A	Physical Chemistry I.	C4L4P0	General and Inorganic Chemistry II.
			Mathematics II.
			Mathematics practice II.
			Biophysics II.
			Biophysics II. practice
GYNOVGYNE2A	Pharmaceutical Botany II.	C2L1P0	Biology II.
			Biology II.practice,
			Pharmaceutical Botany I.
GYNOVGYNG2A	Pharmaceutical Botany II. practice	C2L0P3	Biology II.
			Biology practice II.
			Pharmaceutical Botany I.
GYTSITNG3A	Physical Education III.	COLOP1	Physical Education II.

\*C-Credit, L-Lecture, P-Practice

**4<sup>th</sup> semester**

<b>Subjects code</b>	<b>subjects</b>	<b>Credit</b>	<b>Prerequisites</b>
GYASKAKKE2A	Analytical Chemistry II. (quantitative)	C5L2P0	Organic Chemistry I., Organic Chemistry I. practice Analytical Chemistry I. (quantitative),
GYASKAKKG2A	Analytical Chemistry II. (quantitative) practice	C2L0P5	Organic Chemistry I., Organic Chemistry I. practice Analytical Chemistry I. (quantitative)
GYSZKSZKE2A	Organic Chemistry II.	C4L4,5P0	Organic Chemistry I., Organic Chemistry I., practice
GYSZKSZKG2A	Organic Chemistry II. practice	C5L0P5	Organic Chemistry I., Organic Chemistry I., practice
GYFKTFIKG2A	Physical Chemistry II.	C5L1P4	Physical Chemistry I.
GYKOLKOLE1A	Colloid Chemistry I.	C2L2P0	Physical Chemistry I.
GYOBIBKME1A	Biochemistry I.	C3L3P0	Organic Chemistry I., Organic Chemistry I. practice Biophysics II. Biophysics II. practice, Biology II. Biology II. practice, Anatomy
GYOBIBKME1A	Biochemistry I. practice	C3L0P1	Organic Chemistry I., Organic Chemistry I. practice Biophysics II. Biophysics II. practice, Biology II. Biology II. practice, Anatomy
GYTSITSNG4A	Physical Education IV.	C0L0P1	Physical Education III.
GYXXQGGY_NA	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.		

\*C-Credit, L-Lecture, P-Practice



## LIST OF TEXTBOOKS

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

### Recommended textbooks:

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

**QUANTITATIVE ANALYTICAL CHEMISTRY**Tutor: Dr. *Krisztina Kurin-Csörgei***First Semester****Lectures** (2 hours per week)

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

Acid-base reactions, repetition of different calculations. Titration curves in acid-base titration.

End point detection

Acid-base indicators.

Standard solutions in acid-base acid titrations and the survey of the most important methods.

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

Effects of common ion, pH, complex formation and redox processes on precipitation.

Formation and morphology of precipitates. Development and treatment of precipitates.

Important methods in precipitation gravimetry. Precipitation titrimetry.

Complex formation, chelate effect. Stability constant. Complexometric and chelatometric titrations.

Effect of pH and foreign ligands on the apparent stability constant.

Chelatometric titrations. Titration curves. Methods of end point detection.

Types and applicability of EDTA titrations.

Redox reactions and their mechanism. The redox potential and its calculation.

The effect of pH, the complex and precipitate formations on redox potential. Redox equilibria.

**Practicals** (5 hours per week)**Topic****Task**

Introduction.

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

Calibration

Acidi-Alkalimetry

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

Acidi-Alkalimetry

Standardization of » 0.1N hydrochloric

Acidi-Alkalimetry

Test I.

Determinations of hydroxide and carbonate ions in the presence of each other

Acidi-Alkalimetry (Instrumental)

Potentiometric titration of acetic acid; Conductometric determination of Betaine hydrochloride

Acidi-Alkalimetry

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

Acidi-alkalim.;  
Chelatometry  
Chelatometry

Determination of lactic acid;  
Chelatometric determination of lead.

Chelatometry

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

aceticum

Gravimetry

Gravimetric determination of sulfate ions in the form of BaSO<sub>4</sub>; (precipitation, preparation of filter) filtration, washing, weighing of BaSO<sub>4</sub> precipitate; Determination of chloride ions by Mohr's method

Gravimetry;  
Argentometry

Argentometry

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

Komplexometry

Determination of cyanides by Liebig-Denigees' Method;

Supplements

Supplements

Supplements

Supplements;

Closing

Closing

# QUANTITATIVE ANALYTICAL CHEMISTRY

## Second Semester

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

**Lectures** (2 hours per week)

Different planar chromatographic methods and their use in pharmaceutical analyses. Gas chromatographic methods.  
High performance liquid chromatography. Supercritical fluid extraction and chromatography.  
HPCE and its future application.  
Survey on analytical chemistry.

**Practicals** (5 hours per week)**Topic****Task**

phosphate	Spectrophotometric determination of content in egg shell
Semi-quantitativ* analysis	Semi-quantitative analysis using "Merkoquant" testpapers (Public) Holiday
Optional measurements*	From "Potentiometric determinations" From "Other determinations"
Final test	<b>TEST III.</b> (Qualitative and quantitative analysis of complex samples)
+ Determination	Quantitative determination of the sample
Summary.	Supplements Closing

**Potentiometric determinations:**

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

**Other determinations:**

1. Complexometric determination of metals in coins: (e.g..1,- Ft; 2,- Ft; 5,- Ft; US cent; Groschen) ( $\text{Cu}_2^+$  -  $\text{Ni}_2^+$ ;  $\text{Cu}_2^+$  -  $\text{Ni}_2^+$  -  $\text{Zn}_2^+$ ;  $\text{Cu}_2^+$ ;  $\text{Al}_3^+$ )
2. Determination of calcium and magnesium ions in mineral water (e.g.. Römerquelle, Teodora Quelle, Margitszigeti), in bitter water (Mira) and in tap water
3. Chelatometric determination of aluminium ions in "Aluminium aceticum tartaricum solutum"
4. Iodometric determination of  $\text{Cr}_3^+$  ions
5. Permanganometric determination of hydrogen peroxide content in tablet "Hyperol"
6. Complex analysis of "Solutio iodi alcoholica"
7. Determination of "Papaverinium chloride" in nonaqueous solution (glacial acetic acid)
8. Conductometric determination of acid contents in red wine

**ORGANIC CHEMISTRY**Lecturer: **Prof. Dr. Péter Mátyus**Tutor: **Dr. Péter Tétényi****First Semester**

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

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

**ORGANIC CHEMISTRY****Second Semester**

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

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

Compounds of the main classes are discussed according to the following aspects: structure, nomenclature, physical properties, preparation/synthesis, chemical properties, some important individual compounds (particularly in respect to the medicinal chemistry).

**PHYSICAL CHEMISTRY**Lecturers: *Prof. Dr. Tamás Turányi, Dr. Mihály Takács***First Semester**

---

**Week Lectures** (4 hours per week)

- 1 Selection rules and intensity. Anharmonicity. The vibrations of polyatomic molecules. Normal modes. Vibrational Raman spectra.
- 2 Chromophores. The fate of electronically excited states: Fluorescence, Phosphorescence, laser action.  
Photoelectron spectroscopy: UPS, XPS, ESCA
- 3 Nuclear magnetic resonance: The technique, the chemical shift.  
Electron spin resonance. Mass spectroscopy.
- 4 The permanent electric dipole moment. Polarizability. Polarizabilities at high frequencies. The refractive index. Additive properties.  
Heat, work and the conservation of energy.  
Heat capacity enthalpy. State functions.
- 5 Changes in internal energy. The temperature dependence of the internal energy and enthalpy. The relation between  $C_v$  and  $C_p$ .  
The reaction enthalpy. Hess's law and reaction enthalpies.  
The temperature dependence of reaction enthalpies. (Kirchoff's law).
- 6 The definition of entropy. The entropy change in the system.  
Carnot efficiency. The Helmholtz and Gibbs functions. Maximum work.  
The third law of thermodynamics.  
Standard molar Gibbs function.
- 7 The temperature and pressure dependence of the Gibbs function.  
The chemical potential of a perfect gas. The solid-liquid boundary.  
The liquid – vapour boundary. The solid-vapour boundary.  
The solid – liquid – vapour equilibrium.
- 8 Partial molar volume. Partial molar Gibbs function.  
The thermodynamics of mixing. The elevation of boiling point.  
The depression of freezing point. Solubility. Osmosis.
- 9 Vapour pressure diagrams. The representation of distillation. Azeotropes.  
The solvent and solute activities. The phase rule.
- 10 The Gibbs function minimum. Exergonic and endergonic reactions.  
Perfect gas equilibria. A recipe for equilibrium constants.  
The response of equilibrium to the conditions (temperature and pressure).  
Reaction rate. Rate laws and rate constants. The determination of the rate law.  
First-, second- and higher order reactions, half lives.
- 11 The temperature dependence of reaction rates. Reactions approaching equilibrium.  
Consecutive reactions and parallel processes. The steady-state approximation.  
Chain reactions. Photochemical reactions, radiolysis.
- 12 Catalysis. Fast reactions. Collision theory. Activated complex theory.  
Thermodynamic aspects. Adsorption at surfaces. Catalytic activity at surfaces.

**Week Lectures** (4 hours per week)

- 13 Mean activity coefficients. Debye–Hückel theory. The ionic strength. The mobilities of ions. The measurement of transport numbers. Conductivities and ion-ion interactions. Diffusion and transport. The metal ion/metal electrode. The ion (insoluble salt) metal electrode. Oxidation-reduction electrodes. Liquid junctions and membrane potentials.
- 14 Kinds of cell. E.m.f. and electrode potentials, the sign convention. The concentration dependence of the e.m.f. Standard electrode potentials. Thermodynamic data from cell e.m.f.-s and applications of e.m.f. measurement. The rate of charge transfer. The current density. Overpotential. Polarography.

## PHYSICAL CHEMISTRY

### Second Semester

---

**Week Practicals** (4 hours per week)

- 1 Determination of freezing point depression.
- 2 Calibration of a thermometer. Determination the temperature of a phase transition.
- 3 Studying IR Spectra.
- 4 Spectrophotometric investigations in the ultraviolet region.
- 5 Determination of ionization constant of indicators by spectrophotometric method.
- 6 Solubility product determination by potentiometric method.
- 7 Measurement of pH by hydrogen-electrode, measurement of redox potential.
- 8 Deadstop titration, determination of ionization constant of a weak acid.
- 9 Computer assisted conductimetric titration.
- 10 Polarography.
- 11 Studying the kinetics of the hydrolysis.
- 12 Investigation of stressed decomposition of a medicine.
- 13 Studying of the surface tension.
- 14 Supplementary lab.



**COLLOID CHEMISTRY**Lecturer: **Dr. Ferenc Csempesz****Second Semester**

---

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

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

## PHARMACEUTICAL BOTANY

Department of Plant Anatomy

Tutor: **Dr. Béla Dános**

### First Semester

---

#### Weeks Lectures (1 hour per week)

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

#### Practicals (3 hours per week)

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

**Visit in the Botanical Garden of Eötvös Loránd University to learn taxonomy of higher plants. Field trip (1 day) to learn medicinal plants and fungi in the wild. Handing in of your own herbarium (collection of 30 medicinal plants, pressed and dried, mounted for permanent display with references).**

# BIOCHEMISTRY

Department of Medical Biochemistry

Tutor: **Dr. Erzsébet Maróthy-Tóth**

## Second Semester

---

### Lectures (3 hours per week)

Proteins. The amino acids building blocks of proteins. Determination of amino acid composition and primary structure of proteins.

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

Myoglobin and hemoglobin. Structure of myoglobin and hemoglobin.

Fetal hemoglobin. Molecular pathology of hemoglobin.

Purification and characterization of proteins.

Separation procedures based on molecular size, solubility differences, electric charge and selective adsorption.

Enzymes. Identification of functional groups essential for catalysis. Kinetics of enzyme-catalyzed reactions: The Michaelis-Menten equation. Transformation of the Michaelis-Menten equation.

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

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

Mechanism of acetylcholinesterase catalysis.

Bioenergetics. Introductory remarks. High energy compounds. Glycolysis.

Oxidative decarboxylation of pyruvate

Citric acid cycle.

Metabolic transport through the mitochondrial membranes. Respiratory chain.

Oxidative phosphorylation. Mitochondrial import and export of reductive equivalents.

Energetics of glucose oxidation. Pasteur effect. Heat production by the brown adipose tissue.

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

Glycogen metabolism. Blood glucose and regulation of glycogenolysis and glycogenesis. Hexose interconversions. Galactosemia and galactosuria. Fructosuria and fructose intolerance.

The phosphogluconate oxidative pathway. Significance and regulation of the pentose phosphate pathway.

Biosynthesis of hexosamines. Biological role and synthesis of glycoproteins and glycolipids

### 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)

Betaoxidation of fatty acids.  
Metabolism of ketone bodies.  
Digestion of lipids. Synthesis of triglycerides and phospholipids.  
Synthesis of fatty acids.  
Biosynthesis of cholesterol and bile acids.

**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.
- 7 Drug dispensing according to regulations. Corking of flasks for solutions, signal-signature, packing, presentation. Esthetic demunt.
- 8 Labour safety in a pharmacy. (Inflammable, explosive goods, acids, corrosive chemicals etc.)



Faculty of Pharmacy  
3<sup>rd</sup> year

## STUDY PROGRAMME

### Third Year

Subjects	1 <sup>st</sup> semester			
	Lectures	Practicals	Credit Points	Examination
Pharmaceutical Chemistry I.	4	5	8	practical course grade
Pharmaceutical Technology I.	2	3	5	practical course grade
OBiochemistry II. Practice	--	1	0	signature
Biochemistry II.	2	--	3	final #
Physiology I. Practice	--	1	2	practical course grade
Physiology I.	5	--	4	semi-final
Colloid Chemistry I.	--	2	2	practical course grade
Basic Immunology	1,5	--	2	semi-final
	14,5	12	26	
	26,5			
Subjects	2 <sup>nd</sup> semester			
	Lectures	Practicals	Credit Points	Examination
Pharmaceutical Chemistry II. Practice	--	5	4	practical course grade
Pharmaceutical Chemistry II.	4	--	4	semi-final
Pharmaceutical Technology II. Practice	--	5	4	practical course grade
Pharmaceutical Technology II.	2	--	3	semi-final
Pharmacognosy I. Practice	--	4	3	practical course grade
Pharmacognosy I.	2	--	3	semi-final
Physiology II. Practice	--	1	2	practical course grade
Physiology II.	5	--	4	final #
Pharmaceutical Microbiology Practice	--	2	--	signature
Pharmaceutical Microbiology	3	--	5	final #
	16	17	32	
	33			

# The grade influences the qualification of the diploma

The prerequisite to start 4<sup>th</sup> 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

5<sup>th</sup> semester

subjects code	subjects	credit code*	prerequisites
GYGYKGYKG1A	Pharmaceutical Chemistry I.	C8L4P5	Analytical Chemistry II. (quantitative)
			Analytical Chemistry II. (quantitative) practice
			Organic Chemistry II.
			Organic Chemistry II. practice
			Physical Chemistry II.
GYGYIGYTG1A	Pharmaceutical Technology I.	C5L2P3	Physical Chemistry II.
			Organic Chemistry II.
			Organic Chemistry II. practice
			Colloid Chemistry I.
GYOBIBIKE2A	Biochemistry II.	C3L2P0	Biochemistry I.
			Biochemistry I. practice
			Organic Chemistry II.
			Organic Chemistry II. practice
GYOBIBIKG2A	Biochemistry II. practice	C0L0P1	Biochemistry I.
			Biochemistry I. practice
			Organic Chemistry II.
			Organic Chemistry II. practice
GYKIKGELE1A	Physiology I.	C4L5P0	Biochemistry I.
			Biochemistry I. practice
GYKIKGELG1A	Physiology I. practice	C2L0P1	Biochemistry I.
			Biochemistry I. practice
			Latin Language II.
GYKOLKOLG2A	Colloid Chemistry II.	C2L0P2	Organic Chemistry II.
			Organic Chemistry II. practice
			Physical Chemistry II.
			Colloid Chemistry I.
GYGENIMME1A	Basic Immunology	C2L1,5P0	Biology II.
			Biology II. practice
			Anatomy

\*C-Credit, L-Lecture, P-Practice

**6<sup>th</sup> semester**

<b>subject code</b>	<b>subjects</b>	<b>credit code*</b>	<b>prerequisites</b>
GYGYKGYKE2A	Pharmaceutical Chemistry II.	C4L4P0	Colloid Chemistry II. Biochemistry II. Biochemistry II. practice Pharmaceutical Chemistry I.
GYGYKGYKG2A	Pharmaceutical Chem. II. practice	C4L0P5	Colloid Chemistry II. Biochemistry II. Biochemistry II. practice Pharmaceutical Chemistry I.
GYGYIGYTE2A	Pharmaceutical Technology II.	C3L2P0	Pharmaceutical Chemistry I. Colloid Chemistry II. Pharmaceutical Technology I.
GYGYIGYTG2A	Pharmaceutical Technology II. practice	C4L0P5	Pharmaceutical Chemistry I. Colloid Chemistry II. Pharmaceutical Technology I.
GYFMGGNDE1A	Pharmacognosy I.	C3L2P0	Biochemistry II. Biochemistry II. practice Pharmaceutical Chemistry I. Pharmaceutical Botany II. pract. Pharmaceutical Botany II.
GYFMGGNDE1A	Pharmacognosy I. practice	C3L0P4	Biochemistry II. Biochemistry II. practice Pharmaceutical Chemistry I. Pharmaceutical Botany II. pract. Pharmaceutical Botany II.
GYMIKGMIE1A	Pharmaceutical Microbiology	C5L3P0	Biochemistry II. Biochemistry II. practice Physiology I. Physiology I. practice Basic Immunology
GYMIKGMIG1A	Pharmaceutical Microbiology Practice	C-L0P2	Biochemistry II. Biochemistry II. practice Physiology I. Physiology I. practice Basic Immunology
GYKIKGELE2A	Physiology II.	C4L5P0	Physiology I.



subject code	subjects	credit code*	prerequisites
			Physiology II. practice
			Biochemistry II.
			Biochemistry II. practice
GYKIKGELG2A	Physiology II. practice	C2L0P1	Physiology II.
			Physiology I. practice
			Biochemistry II.
			Biochemistry II. practice
GYXXQGGY_NA	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.		

\*C-Credit, L-Lecture, P-Practice

## LIST OF TEXTBOOKS

- 1 Falus A.: Immunology. Bp. Semmelweis K. 2001.
- 2 Csemesz: Experimental Colloid Chemistry. Bp. (SOTE)
- 3 Szász, Takács, Végh: Pharmaceutical Chemistry Lecture Notes I-II. (Bp.) SOTE
- 4 Szász, Budvári: The Quality Control of Medicinal Compounds. (Bp.) SOTE
- 5 Szász, Budvári: The Quality Control of Pharmaceutical Preparations. (Bp.) SOTE
- 6 Rác: Drug Formulation (Bp.)
- 7 Rác: Pharmaceutical Technology - Part One (Bp.)
- 8 Rác: Pharmaceutical Technology - Part Two (Bp.)
- 9 Rác: Pharmaceutical Technology - Part Three (Bp.)
- 10 Levinson, W.-Jawetz, E.: Medical Microbiology and Immunology. 7<sup>th</sup> ed. McGraw-Hill Co. 2002. ISBN 0-07-138217-8
- 11 Bruneton J.: Pharmacognosy Phytochemistry Medicinal Plants. Lavoisier Publ. 2<sup>nd</sup> ed. Paris, 1999. ISBN 1-898298 637
- 12 Principles of Medical Physiology. Ed. Fonyo A. Bp. Medicina Publ. House, 2001.
- 13 Bray, J.J.-Cragg, P.A.-Anthony D.C: Macknight, Roland G. Mills: Lecture notes on human physiology. 4<sup>th</sup> ed. 1999. Blackwell Science. ISBN 086542-775-5

### Recommended textbooks:

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

**PHARMACEUTICAL CHEMISTRY**Director: **Prof. Dr. Noszál Béla**Tutor: **Prof. Dr. Krisztina Takács–Novák****First Semester**

---

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

# PHARMACEUTICAL CHEMISTRY

## Second Semester

---

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

# PHARMACEUTICAL TECHNOLOGY

Department of Pharmaceutics

Director: **Prof. Dr. Imre Klebovich**

Tutor: **Dr. 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, klysmá.

Drops for internal and external use.

Principle and practice of aseptic preparation. Eye drops.

Preparations made by extraction.

Disperse systems and their physical chemical characteristics.

Emulsions.

Suspensions.

### **Practice**

Introduction, general information, labour safety.

The prescription. Nomenclature.

Weighing and balances. Control and measuring.

Dose calculations. Reading prescriptions.

Computer in the pharmacy practice.

Preparation of simple solutions.

Preparation of composite solutions.

Preparation of drops.

Preparation of ophthalmic solutions

Preparation of decoctions and infusions.

Preparation of suspensions without excipients.

Preparation of suspensions with excipients.

Preparation of emulsions

Dispensing a test preparation independently.

# PHARMACEUTICAL TECHNOLOGY

## Second Semester

---

### **Lectures**

Dosage forms with coherent structure  
 Semi-solid preparations. Classification and preparation.  
 Ointments, gels, pastes. Eye ointments.  
 Tests of semisolid preparations. Rheology and other characteristics.  
 Cosmetics.  
 Rectal and vaginal preparations.  
 Tests of suppositories.  
 Dosage forms prepared by aggregation. Pills, boluses, sticks, foams, medicated chewing gums.  
 Compounding powder preparations.  
 Compounding veterinary preparations.  
 Incompatibility problems I. Solutions.  
 Incompatibility problems II. Solid dosage forms  
 Incompatibility problems II. Other dosage forms and role of excipients.  
 Good Pharmacy Practice.  
 Laws governing the pharmacy practice.

### **Practice**

Formulae Normales: the guide for pharmaceutical compounding in Hungary.  
 Preparation of ointments of solution and emulsion type.  
 Preparation of ointments of emulsion and suspension.  
 Preparation of ointments of composite type.  
 Directions of eye ointments and gels. Preparations of eye ointments.  
 Preparation of pastes.  
 Preparation of cosmetics.  
 Preparation of suppositories by cold compression and by moulding.  
 Preparation of vaginal preparations.  
 Preparation of pills.  
 Preparation of multidose powders. Topical powders.  
 Preparation of single-dose powders. Division of powders. Manual capsule filling machine.  
 Preparations of veterinary preparations.  
 Guidelines for the preparation of incompatible drugs.  
 Incompatibility problems of solutions  
 Incompatibility problems of powder mixtures.  
 Incompatibility problems of emulsions.  
 Incompatibility problems ointments.  
 Health accessories in pharmacy.  
 Dispensing a test preparation independently.

# PHARMACOGNOSY

Director: Prof. Dr. **Éva Szőke**

Tutor: Dr. **Andrea Balázs**

## Second Semester

---

### Lectures (2 hours per week)

Pharmacognosy, History of pharmacognosy.  
Medicinal plant - vegetable drug.  
Nomenclature. Classification of vegetable drugs.  
From plant to phytopharmaceutical (phytotherapy).

Sources of drugs, factors involved in the production of drugs. Quality control.

Compounds of primary metabolism.

Carbohydrates. Mono- and oligosaccharides and their drugs. Homogenous polysaccharides and their drugs.

Heterogenous polysaccharides: gums, neutral and acidic mucilages, pectins; polysaccharides from microorganisms and fungi. Algae polysaccharides.

Lipids. Generalities, vegetable oils, alkyne derivatives.

Amino acids (which are not constituents of proteins).

Cyanogenic glycosides, glucosinolates. Betalains.

Protein sweeteners. Lectins. Enzymes.

Compounds of special (secondary) metabolism.

Plant phenolics in general. Phenols, phenolic acids, derivatives and crude drugs.

Coumarins and coumarin containing drugs.

Medicinal application and toxicity.

Lignans, lignan containing drugs. Biological interest of lignans. Silybum marianum and its significance.

Flavonoids, chemical structure and classification, biological properties, use of flavonoid-containing drugs, therapeutical significans.

Chief flavonoid containing vegetable drugs.

(Crataegus species, Ginkgo biloba, etc.)

Isoflavonoids, rotenoids, biological significance.

Anthocyanins, chief anthocyanin-containing drugs.

Phenoloids in Zingiberaceae family

(diarylheptanoids and arylalkanones)

Tannins. Classification of tannins. Structures and properties of hydralyzable and condensed tannins, biological significance. Chief tannin -containing drugs.

Polyketides-quinones. Naphthoquinone-containing drugs. Laxative hydroxyanthraquinone glycosides.

Pharmacological properties.

Main hydroxyanthraquinone glycoside-containing drugs.

Naphthodianthrone and diterpene quinone

containing drugs. Hypericum perforatum.

Orcinols and phloroglucinols. Cannabis.

Humulus lupulus.

### Practicals (4 hours per week)

Introduction, safety rules.

General methods in quality control of vegetable drugs.

Vegetable drugs containing carbohydrates.

(Starches, mucilages, etc.)

Plant acids and their drugs.

Vegetable oils.

Flavonoids and chief flavonoid drugs.

Anthocyanins.

Methods, used in flavonoid and phenoloid chemistry.

HPLC of flavonoids.

Tannins and chief tannin drugs.

Methods used in tannin chemistry.

Laxative hydroxy-anthraquinone drugs.

Naphthodianthrone.

Methods used in hydroxyanthraquinone chemistry

Phloroglucinols.

Cannabis sativa.

Personal task.

Consultation.

**BIOCHEMISTRY**

Dept. of Medical Biochemistry

Tutor: **Dr. Erzsébet Maróthy-Tóth****First Semester****Lectures** (2 hours per week)

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

(2)

Metabolism of steroid hormones. Metabolism of arachidonic acid, eicosanoids. Nutritionally essential amino acids. Interconversion of amino acids: transamination. Overall aspects of amino acid metabolism.

Amino acid catabolism. Fate of nitrogen: Deamination.

(4)

Elimination of ammonia: The urea cycle. Biosynthesis of nonessential amino acids.

Metabolic fates of individual amino acids: glycogenic and ketogenic amino acids. Amino acid decarboxylation: biogen amines.

Nucleotide metabolism: biosynthesis and catabolism of purine and pyrimidine nucleotides.

(6)

Physical properties of DNA. Structure of DNA (A, B, Z-DNA).

(8)

Topoisomerases. Supercoiling of DNA. The structure of nucleosome. Replication in prokaryotes.

DNA polymerases. Okazaki fragments. DNA ligase.

The mechanism of replication. Origin of replication.

Replication of eukaryotic cells. The cell cycle. DNA polymerase alpha, beta, gamma and delta. Mutations,

Ames test. The repair processes. Excision repair of UV-induced thymine-thymine dimers.

The different types of RNAs. Prokaryotic transcription.

(10)

The role of sigma factor. The operon model. The lac

and trp operons. Eukaryotic replication. Transcription

factors. Enhancers. The maturation of the different

RNAs. Splicing.

Translation. The genetic code. Initiation, elongation and termination. Signals for protein sorting.

Biochemical preparations in therapy. Biotechnological methods for drug preparation. Recombinant DNA

(12)

technology. Therapy of the diseases (inherited enzymopathies) by biochemical preparations.

**Practicals**

Seminar: Lipoprotein lipase and carnitine deficiency

Seminar: Pyruvate dehydrogenase and pyruvate carboxylase deficiency

Seminar: Liver failure

Midterm: lipids and amino acids

Seminar: Vitami B12 and folate deficiency

Midterm: nucleotides and macromolecules

**Lectures** (2 hours per week)

Microsomal drug metabolism. Microsomal mono-oxygenase system: induction of cytochrome P-450. Conjugation reactions in detoxification. Mechanism of the regulation of biomechanical pathways by hormones. Biochemistry of the hormonal action. Receptors, classification of receptors. The ion channels. Calcium homeostasis. The signal transduction: the G-proteins, role of the adenylate cyclase and phosphoinositol system in signal transduction. The protein kinases and phosphorylation of specific proteins. Interaction of receptors and hormones. Mechanism of neurotransmission. The cholinergic and adrenergic transmission. The insulin and steroid receptors.

(14)

**Practicals**

Seminar: gene therapy

(15)

Consultation.

## COLLOID CHEMISTRY

Tutor: **Dr. Ferenc Csémpesz**

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



**Practice** (2 hours per week)

Association colloids

Determination of critical micelle formation concentration by conductometric titration.

Solubilization of organic acids, determination of solubilization saturation.

Macromolecular colloids

Determination of the relative molecular mass of polymers by viscosity measurements.

Dependence of the viscosity of polyelectrolyte solutions on pH.

Phase states and structures of polymers

Determination of the thermomechanical curve of a polymer by Höppler consistometer.

Determination of the relative deformation of a polymer at various loading times.

**PHYSIOLOGY**

Institute of Human Physiology and Clinical Experimental Research

Tutor: **Dr. Tamás Ivánics**

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

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

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

- 11 Pulmonary circulation. Structure and function of the respiratory system, pulmonary mechanics. Gas transport between the lungs and the tissues. Regulation of RBC count - erythropoietin, acclimatization.
- 12 Regulation of respiration: Neural and chemical control of respiration. Adaptation of cardiorespiratory system and skeletal muscle to physical exercise.
- 13 Whole body metabolism. Gastrointestinal motility and secretions. Innervation of the GI tract. GI hormones. Regulation of GI motility. Regulation of GI secretion: Salivary secretion; Gastric secretion; Exocrine pancreas.
- 14 Liver & biliary system. Digestion & Absorption. Carbohydrates, lipids and proteins. Absorption of water and electrolytes. Absorption of vitamins and minerals.

**Practice and consultation** (2 hours biweekly)

Recording of compound action potential of the frog sciatic nerve, Sim Nerve  
Experiments on the rat nerve-muscle preparation, Sim Muscle  
Experiments on isolated rat heart, Sim Heart  
Smooth muscle activity of isolated, superfused muscle strips, Sim Vessel

## PHYSIOLOGY

### Second Semester

---

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

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

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

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

**Practice and consultation** (2 hours biweekly)

Indirect measurement of arterial pressure and recording heart sounds  
 Kidney function  
 Determination of parameters of acid/base equilibrium  
 Endocrinology lab  
 Electroencephalogram (EEG) experiment

# PHARMACEUTICAL MICROBIOLOGY

Program director: **Prof. Dr. Éva Ádám**

Tutor: **Dr. Zsuzsanna Csukás**

## Second Semester

### Lectures (3 hours per week)

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

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

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

During the semester two midterms should be passed.

Practical course grade. Final examination.

### Practices (2 hours per week)

Introduction to basic microbiology. Laboratory rules. Morphology of bacteria (Microscopic examinations I.) Morphology of bacteria. Staining procedures (Microscopic examinations II.) Methods for cultivation of bacteria. Examination of biochemical activity of microorganisms I. Colony morphology of bacteria. Examination of biochemical activity of microorganisms II. Laboratory procedures of sterilization and disinfection. Antibiotic susceptibility of bacteria. In vitro antigen-antibody reactions (serological reactions). Bacteria causing purulent diseases Bacteria of the respiratory tract I. Bacteria of the respiratory tract II. Normal flora and pathogens of the gastrointestinal tract. Aerobic and anaerobic endospore forming Bacteria. Spirochetes. Chlamydiae. Morphology and cultivation of human pathogen Fungi. Medically important protozoans. Medically important helminths. Cultivation of viruses. Virus-cell interactions. Bacteriophages.

# BASIC IMMUNOLOGY

Tutor: **Dr. András K. Fülöp**

## First Semester

---

**Lecture** (1,5 hours per week)

Principles of immune functions  
 Cells, organs and ontogeny of immune system  
 The major histocompatibility complex  
 Antigen processing and presentation  
 Antigen recognizing molecules  
 Differentiation and function of T-lymphocytes  
 Differentiation and function of B-lymphocytes  
 The complement system  
 Inflammation and acute phase response  
 Immune response in infections  
 Tumor immunology  
 Hypersensitivity reactions  
 Immuno-pharmacology  
 Immunotolerance  
 Natural and pathological autoimmunity

**Notes** The semester is completed with a written exam.  
 Deadline of claims for exemptions: 30<sup>th</sup> September  
 Updated information is available on our web site: [www.dgci.sote.hu](http://www.dgci.sote.hu)

## COMPULSORY SUMMER PRACTICE

Program

**Four weeks:** 35 hours/week; min. 6 max. 8 hours/day.

The aim of summer practical training: to deepen theoretical and practical knowledge of Pharmaceutical Technology learnt in the 3rd year; adaptation of basic knowledge (chemistry, physics, colloids, physiology etc.) to the practical work in pharmacies.

### **Duties and respects:**

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





*Faculty of Pharmacy  
4<sup>th</sup> year*

# STUDY PROGRAMME

## Fourth Year

Subjects	1 <sup>st</sup> semester			
	Lectures	Practicals	Credit	Examination
Pharmaceutical Chemistry III. Practice	–	4	3	practical course grade
Pharmaceutical Chemistry III.	2	–	3	final #
Pharmaceutical Technology III. Practice	–	9	5	practical course grade
Pharmaceutical Technology III.	3	–	4	semi-final
Pharmacognosy II. Practice	–	4	3	practical course grade
Pharmacognosy II.	2	–	3	final #
Pharmacology and Toxicology I. Practice	–	2	2	practical course grade
Pharmacology and Toxicology I.	4	–	4	semi-final
Basic Medical Pathophysiology I.	2	–	2	semi-final
	13	19	29	
	32			
Subjects	2 <sup>nd</sup> semester			
	Lectures	Practicals	Credit	Examination
Pharmaceutical Technology IV. Practice	–	9	6	practical course grade
Pharmaceutical Technology IV.	3	–	4	final #
Pharmacology and Toxicology II. Practice	–	2	2	practical course grade
Pharmacology and Toxicology II.	4	–	4	final #
Basic Medical Pathophysiology II.	2	–	2	final #
Pharmacy Administration I.	2	–	2	semi-final
Public Health Practice	–	2	2	practical course grade
Public Health	2	–	2	final #
OFirst Aid*	1	–	0	signature
Industrial Pharmacy **	3	–	3	semi-final
Written scientific thesis (diploma work) I.	–	4	0	signature
	17	17	27	
	34			

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

Subjects code	Subjects	Credit code	Prerequisites
GYFMGGNDE2A	Pharmacognosy II.	C3L2P0	Pharmacognosy I. Pharmacognosy I.practice Pharmaceutical Chemistry II. Pharmaceutical Chemistry II. practice
GYFMGGNDE2A	Pharmacognosy II. practice	C3L0P4	Pharmacognosy I. Pharmacognosy I.practice Pharmaceutical Chemistry II. Pharmaceutical Chemistry II. practice.
GYGYKGYKE3A	Pharmaceutical Chemistry III.	C3L2P0	Pharmaceutical Chemistry II. Pharmaceutical Chemistry II. practice. Physiology II. Physiology II. practice
GYGYKGYKG3A	Pharmaceutical Chemistry III. practice	C3L0P4	Pharmaceutical Chemistry II. Pharmaceutical Chemistry II. practice. Physiology II. Physiology II. practice
GYGYHHATE1A	Pharmacology and Toxicology I.	C4L4P0	Pharmaceutical Chemistry II. Pharmaceutical Chemistry II. practice. Physiology II. Physiology II. practice Pharmaceutical Microbiology Pharmaceutical Microbiology practice. Basic Immunology
GYGYHHATG1A	Pharmacology and Toxicology I. practice	C2L0P2	Pharmaceutical Chemistry II. Pharmaceutical Chemistry II. practice. Physiology II. Physiology II. practice Pharmaceutical Microbiology Pharmaceutical Microbiology practice. Basic Immunology

<b>Subjects code</b>	<b>Subjects</b>	<b>Credit code</b>	<b>Prerequisites</b>
GYGYIGYTE3A	Pharmaceutical Technology III.	C4L3P0	Pharmaceutical Chemistry II.
			Pharmaceutical Chemistry II. practice.
			Pharmaceutical Technology II.
			Pharmaceutical Technology II. practice.
GYGYIGYTG3A	Pharmaceutical Technology III. practice	C5L0P9	Pharmaceutical Chemistry II.
			Pharmaceutical Chemistry II. practice.
			Pharmaceutical Technology II.
			Pharmaceutical Technology II. practice.
GYGYHKKAE1A	Basic Medical Pathophysiology I.	C2L2P0	Physiology II.
			Physiology II. practice
			Pharmaceutical Microbiology
			Pharmaceutical Microbiology practice.

### Faculty of Pharmacy 4th year

#### 8th semester

<b>Subjects code</b>	<b>Subjects</b>	<b>Credit code</b>	<b>Prerequisites</b>
GYGYHHATE2A	Pharmacology and Toxicology II	C4L4P0	Pharmacology and Toxicology I.
			Pharmacology and Toxicology I. practice
			Pharmaceutical Chemistry III.
			Pharmaceutical Chemistry III. practice
			Pharmaceutical Technology III.
			Pharmaceutical Technology III. practice
			Basic Medical Pathophysiology I.
GYGYHHATG2A	Pharmacology and Toxicology II. practice	C2L0P2	Pharmacology and Toxicology I.
			Pharmacology and Toxicology I. practice
			Pharmaceutical Chemistry III.
			Pharmaceutical Chemistry III. practice
			Pharmaceutical Technology III.
			Pharmaceutical Technology III. practice
			Basic Medical Pathophysiology I.

Subjects code	Subjects	Credit code	Prerequisites
GYGYIGYTE4A	Pharmaceutical Technology IV.	C4L3P0	Pharmaceutical Chemistry III.
			Pharmaceutical Chemistry III. practice
			Pharmaceutical Technology III.
			Pharmaceutical Technology III. practice
			Pharmacognosy II.
			Pharmacognosy II. practice
GYGYIGYTG4A	Pharmaceutical Technology IV. practice	C6L0P9	Pharmaceutical Chemistry III.
			Pharmaceutical Chemistry III. practice
			Pharmaceutical Technology III.
			Pharmaceutical Technology III. practice
			Pharmacognosy II.
			Pharmacognosy II. practice
GYEGYSZE1A	Pharmacy Administration I.	C2L2P0	Introduction to Health Informatics
			History of Sciences, Propedeutics
			Pharmaceutical Technology III.
			Pharmaceutical Technology III. practice
GYKOZKETE1A	Public Health	C2L2P0	Physiology II.
			Physiology II. practice
			Pharmaceutical Microbiology
			Pharmaceutical Microbiology pract.
GYKOZKETG1A	Public Health practice	C2L0P2	Physiology II.
			Physiology II. practice
0			Pharmaceutical Microbiology
			Pharmaceutical Microbiology pract.
GYGYHKKAE2A	Basic Medical Pathophysiology II.	C2L2P0	Pharmacology and Toxicology I.
			Pharmacology and Toxicology I. practice
			Basic Medical Pathophysiology I.
GYXXSZDNA	Diploma Work	COLOP4	
GYTRAEELSE1A	First Aid	COL1P0	
GYGYIIPGE1A	Industrial Pharmacy	C3L3P0	

\*C-Credit, L-Lecture, P-Practice

## LIST OF TEXTBOOKS

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

### Recommended textbooks:

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

## PHARMACEUTICAL CHEMISTRY

Director: **Prof. Dr. Béla Noszál**

Tutor: **Dr. Miklós Józán**

### First Semester

---

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

## PHARMACEUTICAL TECHNOLOGY

Department of Pharmaceutics

Director: **Prof. Dr. Imre Klebóvich**

Tutor: **Dr. István Antal**

### First Semester

---

#### Lectures

Scope of industrial pharmaceutical technology. History and development.

Aspects of the pharmaceutical development. Preformulation studies.

Applying principles of chemical engineering for the manufacturing of pharmaceutical preparations.

Critical manufacturing parameters and principles of scaling up.

Requirements and conditions for manufacturing (Good Manufacturing Practice)

Quality assurance and manufacturing. Safety regulations.

Validation. Concepts of the statistical process control.

Basic procedures: comminution, powdering, sieving.

Basic procedures: separation, filtering, settling, extraction.

Basic procedures: homogenization, dispersing, distillation, evaporation.

Basic procedures: fluidization.

Basic procedures: drying.

Basic procedures: freeze-drying.

Basic procedures: crystallization.  
Sterilization.  
Formulation of parenteral preparations.  
Manufacturing of large and small volume parenterals.  
Pirogenicity. Endotoxins.  
Stability of pharmaceutical preparations. Stability tests. Stabilization methods.  
Preparations for inhalation. Aerosols.

### **Practice**

#### *Pilot plant laboratory*

Controlling the drying process.  
Study of the filtration process.  
Mixing of solids.  
In-process control of the homogenization process.  
Study on parameters of fluidization.  
Investigations of factors affecting the size reduction in ball-mill.  
Control of raw materials.  
Preparation and stability test of emulsions.  
In-process control of manufacturing solid dosage forms.  
Manufacturing suppositories. Determination of the replacing factor.

#### *Laboratory for parenteral preparations*

Aseptic processing.  
Autoclaving.  
Determination of inside pressure of bottles at different filling volumes.  
Preparation of dextrose infusion.  
Preparation of mannitol infusion.  
Filtration by frame filter.  
Control of infusions and injections containing dextrose (pH, refractive index, degradation product).  
Preparation and control of infusions containing electrolytes and sugars.  
Preparation of infusions used in acidosis.  
Determination of endotoxin concentration in parenteral solutions by the quantitative LAL test.  
Adjustment of isotonicity.

#### *Chemical laboratory*

Control of the formation of calcium acetylsalicylate with oscillometry.  
Acid neutralizing tests of antacids (USP tests and "pH-stat" method).  
Determination of the lipase activity.  
Investigation on the catalytic oxydation of ascorbic acid.  
Stability test of hydrocortisone-hemisuccinate solutions.  
Stability test on the decrease of acetic acid content of Spiritus antirheumaticus.  
Stability test of solutions containing penicillin.  
Real-time stability test of tablets containing aspirin.  
Accelerated stability test of solutions containing phenobarbital sodium.  
Computer Aided Practice (accelerated stability testing).

*Physical laboratory*

Test of ion-exchange resins.  
 Determination of the dissociation constant of drugs.  
 Increasing of solubility of salicylic acid by changing permittivity.  
 Concentration determination of sugar syrups by viscometry.  
 Viscometric evaluation of macromolecular colloids used as stabilizers  
 Investigation of phase-inversion of emulsions by viscometry.  
 Determination of the average molecular mass of polyethylene glycols by viscometry.  
 Determination of the critical micelle concentration by stalagmometry.  
 Investigation of surfactants using the Donnan's pipette.  
 Investigation of solubilization of volatile oils by aqueous titration method.  
 Particle size analysis of suspensions by the Andreasen's cylinder.  
 Particle size analysis of suspensions by the the Wiegner's tube.

## Second Semester

---

**Lectures**

Physical chemistry for solid dosage forms.  
 Characterization of particle systems. Powder rheology.  
 Granules and granulation.  
 Pellets and pelletization.  
 Capsules and microcapsules.  
 The tablet compression process.  
 Tablets and their characteristics. Testing tablets.  
 Manufacturing methods and excipients for tablets.  
 Coated dosage forms and the coating procedure. Coating materials.  
 Traditional sugar coating and film-coating. Solvent-free coating.  
 Dosage form design: modified drug release and prolonged action.  
 Dosage form design: improving bioavailability and enhancement of absorption.  
 Modern dosage forms: concepts of the therapeutic systems.  
 Oral preparations with modified release.  
 Locally applied therapeutic systems.  
 Transdermal drug delivery systems.  
 Alternative routes of drug administration.  
 Colloidal drug delivery systems.  
 Micro- and nanofabrication.  
 Molecular pharmaceuticals.  
 Technological aspects of genomics and biopharmaceuticals.  
 Technological aspects of veteriner drug delivery.  
 Innovation and the pharmaceutical technology. Generics and supergenerics.

**Practice***Pilot plant laboratory*

Preformulation studies and product development.  
 Ointment preparation.  
 Preparation of liquid dosage forms (solutions, elixirs, syrups, mixtures).  
 In-process control tests for solutions.

Tablet compression and in-process control of tablet manufacturing.  
Pellet preparation in a high-shear mixer  
Preparation of coating dispersions.  
Coating of pellets in fluid bed.  
Coating of tablets.

*Laboratory for parenteral preparations*

Preparation of injections liable to hydrolysis.  
Determination of the chloride ion concentration by ion selective electrode.  
Filling and closing of ampoules.  
Preparation and control of aerosols.  
Preparation of heat sensitive injections.  
Sterilization by membrane filtration. Integrity testing of membranes.  
Nonaqueous injections.  
Freeze-drying.  
Preparation of injections liable to oxidation  
Control of drug content of ascorbic acid injection  
Preparation of suspension injections  
Color determination of ascorbic acid injections  
Isotonicity setting based on freezing point depression  
Isotonicity setting based on sodium chloride equivalents

*Chemical laboratory*

Testing of containers (hydrolytic resistance; physical resistance; blister closing testing; light transmission test, adsorption test)  
Investigation of the interaction between acetylsalicylic acid and caffeine.  
Investigation of the interaction between papaverine hydrochloride and phenobarbital sodium with potentiometric method.  
Investigation of the interaction between methyl-p-oxy-benzoate and macromolecules by dynamic dialysis.  
Formulation of KCl prolonged release capsules and their dissolution test.  
Dissolution test of aspirin containing tablets with rotating basket method.  
Study on impurities by HPLC, GC/MS and LC/MS analytical methods.  
Preparation of oxytetracycline containing microcapsules.  
Testing dissolution profile of coated pellets.

*Physical laboratory*

Slipping-and drop point determination of ointment and suppository bases.  
Study on drug release of suppositories.  
Investigation of compression strength of suppositories.  
Study of disintegration of suppositories.  
Congealing-and softening point determination of ointment and suppository bases  
Penetrometric test of ointments.  
Study on the rheological behaviour of ointments with rotational viscometer.  
Examination of drug distribution in suspension type suppositories.  
Determination of the adsorptive surface of medicinal charcoal.  
Study of polymorphism.  
Determination of particle size and particle size distribution by sieve analysis.  
Investigation of flow properties and real density of granules.  
Investigation of disintegration of tablets and capsules.



# PHARMACOGNOSY

Director: **Prof. Dr. Éva Szőke**

Tutor: **Dr. Andrea Balázs**

## First Semester

---

### Lectures (2 hours per week)

Terpenoids: biogenetic generalities.  
 Classification. Regular and irregular monoterpenes, sesquiterpenes. Essential oils.  
 Lamiaceae containing essential oils.  
 Anise-flavored essential oils.  
 Asteraceae containing essential oils.  
 Iridoids. Chief iridoid containing drugs.  
 Sesquiterpene lactones. Chief drugs containing sesquiterpene lactones.  
 Diterpenes. Diterpene-containing drugs of potential interest. Triterpenes and steroids.  
 Biosynthesis, classification.  
 Saponins. Biological and pharmacological interest.  
 Chief saponin containing drugs.  
 Adaptogenes. Ginseng, Siberian Ginseng.  
 Cardiac glycosides. Structures, chief vegetable drugs.  
 Starting materials for steroid hormone semisynthesis.  
 Other significant steroids and triterpenes.  
 Carotenoids. Chief carotenoid-containing drugs.  
 Alkaloids in general. Protoalkaloids and their chief drugs.

Alkaloids derived from ornithine and lysine.  
 Tropane-, pyrrolizidine-, quinolizidine-, indolizidine-, piperidine alkaloids and their drugs.  
 Alkaloids derived from nicotinic acid.  
 Alkaloids derived from phenylalanine and tyrosine: phenethylamines-, isoquinolines-, benzyltetraisoquinoline-, phenethylisoquinoline alkaloids and their drugs.  
 Alkaloids derived from phenylalanine and tyrosine: Morphinan alkaloids.  
 Alkaloids derived from tryptophan: ergotine alkaloids, monoterpene indole alkaloids and chief drugs.  
 Alkaloids derived from anthranilic acid: quinoline, quinazoline alkaloids. Alkaloids derived from histidine: imidazole alkaloids. Terpenoid alkaloids.  
 Purine bases.  
 Alkaloids with miscellaneous structure.  
 Vitamins and vitamin containing drugs.  
 Plants in complementary and traditional systems of medicine.  
 Plants in prevention, Functional foods

### Practicals (4 hours per week)

Essential oil containing drugs (Lamiaceae, Asteraceae, Apiaceae)

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

Bitter substances of plants.  
 Classification, reactions, bitter value.

Saponins and chief saponin drugs.

Methods used in the identification and quality control of saponins.

Cardioactive glycosides and chief drugs.  
 Methods used in the analyses of cardioactive glycosides.

Tropane, pyridine and piperidine alkaloid containing drugs.  
 Quantitative assays in alkaloid chemistry (titration)

Quinoline, isoquinoline and morphine group alkaloids, their chief drugs.

Methods in alkaloid chemistry: TLC, TLC-densitometry, spectrophotometry.  
 Indol, purine alkaloids. Alkaloids with miscellaneous structure. Chief drugs.  
 Methods in alkaloid chemistry: Column chromatography.

Practical examination.

Practical examination.

## PHARMACOLOGY AND TOXICOLOGY

Department of Pharmacodynamics

Course Director: **Prof. Dr. György Bagdy**

Tutor: **Dr. 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  
Antidysrhythmic drugs

Antihypertensive drugs  
 Calcium-channel blockers  
 Antianginal drugs  
 Lipid-lowering drugs  
 Haemostasis and thrombosis  
 The haemopoietic system  
 The respiratory system  
 Pharmacology of the gastrointestinal system  
 Pharmacology of the reproductive system  
 Diabetes and antidiabetic drugs  
 Pharmacology of bone metabolism  
 Vitamins  
 Pharmacology of the thyroid, retinoides

## PHARMACY ADMINISTRATION

Faculty of Pharmacy  
 University Pharmacy Department of Pharmacy Administration  
 Director: **Dr. Romána Zelkó**  
 Tutor: **Dr. Ágnes Meszáros**

### 4th year term 2

---

#### **Lecture**

Objectives and research methods of pharmacy administration  
 European Pharmacopoeia, Ph.Hg. VIII, FoNo VII.  
 Managing health care  
 Financial pressures and human resource management  
 Resource allocation in health care  
 Managing quality in health care  
 Quality systems and total quality management  
 Good Clinical Practice (GCP)  
 European marketing authorisation procedures  
 The registration dossier  
 Legal regulations in health care  
 Health promotion  
 Good Pharmacy Practice (GPP)  
 International pharmaceutical organisations  
 Pharmaceutical ethics

## **BASIC MEDICAL PATHOPHYSIOLOGY**

Institute of Pharmacodynamics

Course Director and Tutor: **Prof. Dr. Kornélia Tekes**

### **First Semester**

---

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

### **Second Semester**

---

Gastrointestinal disorders I  
Gastrointestinal disorders II  
Gastrointestinal disorders III  
Respiratory diseases I.  
Respiratory diseases II.  
Genitourinary disorders  
Infectious disorders I.  
Infectious disorders II.  
Ophthalmologic disorders I.  
Ophthalmologic disorders II., Ear disorders  
Endocrine and metabolic disorders I.  
Endocrine and metabolic disorders II.  
Musculoskeletal disorders  
Immunologic disorders, Oncologic disorders  
Dermatologic disorders, Consultation

## PUBLIC HEALTH

Tutor: **Dr. András Terebessy**

### Second Semester

---

#### Lectures (2 hours per week)

The development and role of public health in medicine. Basic principles of epidemiology and demography.  
Global situation of communicable diseases in the world and in Hungary. Life expectancy, morbidity, mortality in Hungary.  
The occurrences of communicable diseases.  
Surveillance. New immunizations, chemoprophylaxis.

Infections of Gastrointestinal and Respiratory Tract.

Haematogen infections and infections of the skin.

STD. AIDS/HIV. Viral hepatitis.

New, emerging diseases. Health care in case of disasters.

Malnutritions. Nutrition related non infectious diseases. Vegetarianism.

Acute food-borne diseases.

Water hygiene.

Air-and soil hygiene.

Occupational risk factors, prevention of occupational diseases. Ionising and non-ionising radiation

The health care system, quality assurance.

Maternal, infant child and youth health care.

Health promotion and health education.

Practices are compulsory for each student.

#### The obligatory material for the final exam:

The material of the lectures and practices compulsory textbooks, see List of Textbooks

#### Practices (2 hours per week)

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

Classification of communicable diseases. Disinfection and sterilisation. Laboratory investigations

Activity of doctors in case of communicable diseases. Immunisations: vaccines and sera. Nosocomial infections.

Epidemiology I. (Most important rates and indices).

Epidemiology II. (Methods of epidemiology, calculations: standardisation, risk).

The role of the pharmacist in primary prevention of smoking, alcohol and drugs.

The role of the pharmacist in healthy nutrition and required physical activity.

Nutrition I. (Healthy nutrition. Assessment of nutritional status. Diet planning.)

Nutrition II. (Prevention of food – borne diseases)

Practical aspects of water hygiene.

Practical aspects of air hygiene.

Occupational diseases, accidents. Vibration, noise.

Toxicology. Radiation hygiene.

Practical aspects of maternal, infant, child and young people hygiene.

Practical aspects of health education.

## INDUSTRIAL 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.
7. Health accessories.
8. Control of medicines and raw materials in the pharmacy.  
Administration in the pharmacy.
9. Organization of drug supply.



*Faculty of Pharmacy*  
*5<sup>th</sup> year*

## STUDY PROGRAMME

### Fifth Year

#### First Semester (12 weeks)

	Lectures	Practicals	Credit	Examination
Pharmacy Administration II. Practice	–	2	2	practical course grade
Pharmacy Administration II.	2	–	2	final #
Clinical Pharmacy	2	3	4	semi-final
Biopharmacy-Pharmacokinetics Practice	–	3	2	practical course grade
Biopharmacy-Pharmacokinetics	2	–	2	semi-final
Basic Drug Therapy Practice	2	–	0	signature
Basic Drug Therapy	–	2	4	semi-final
Written scientific thesis (diploma work) II.	–	6	0	signature
Facultative subject 1.	3	–	2	semi-final
Facultative subject 2.	3	–	2	semi-final
Facultative subject 3.	3	–	2	semi-final
Compulsory Practical Training I. (2 months)	–	40	8	practical course grade
(Pharmaceutical Sociology, Ethics - first time in the 2009/2010 academic year)*	(2,5)	–	(2)	(semi-final)
	17 (19,5)	56	30 (32)	
	73 (75,5)			

\* 5th year Pharmacy students of 2008/2009 have already completed the subject in the 3rd year of their studies. First students of the actual 4<sup>th</sup> 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 4<sup>th</sup> 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 9<sup>th</sup> 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.
3. Examination Period (6 weeks) from December 22, 2008 to January 30, 2009.



**Program in the 10<sup>th</sup> 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**

- 1 Walker and Edwards: Clinical Pharmacy and Therapeutics. Longman Group UK Limit. 1994. ISBN 0 443 04553
- 2 Z. Vincze: Pharmacy Administration. Lecture Administration.
- 3 Wells BG., DiPiro JT., Schwinghammer TL., Hamilton CW.: Pharmacotherapy Handbook. 6<sup>th</sup> ed. McGraw-Hill, New York, 2006

**Recommended textbooks:**

- 1 Herfindal-Gourley-Hart,L: Clinical Pharmacy and Therapeutics. Williams and Wilkins USA. ISBN 0 683 03966 0
- 2 Fincham,J.E:-Wertheimer,A.I: Pharmacy U.S. Health Care System. ISBN L-56024-097-0
- 3 Smith,M.C: Studies in Pharmaceutical Economics. ISBN 0-7890-0062-8
- 4 Sam Salek-Andrew Edgar (eds.) (2002): Pharmaceutical Ethics. John Wiley and Sons Ltd. ISBN 0-471-49057-1
- 5 Ritschel,W.A.: Handbook of Basic Pharmacokinetics. Drug Intelligence Publ. Inc. Hamilton Press, 1999. ISBN 0-914768-40-9

## CLINICAL PHARMACY

Faculty of Pharmacy

University Pharmacy Department of Pharmacy Administration

Director: **Dr. Romána Zelkó**

Tutor: **Dr. Ágnes Mészáros**

### 5<sup>th</sup> year term 1

---

#### Lectures

1. About clinical pharmacy
2. Pharmaceutical care
3. Individual therapy with magistral preparation
4. Clinical guidelines in the treatment of type 2 diabetes mellitus
5. Clinical guidelines in the treatment of hypertension
6. Special conditions influencing drug therapy
7. Clinical bio-analytical analyses
8. Therapeutic drug monitoring, Pharmacogenetics
9. Pediatrics
10. Total Parenteral Nutrition
11. Pharmaceutical care in asthma
12. Patient education in OTC products I.

#### Practical lessons

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

## BIOPHARMACY – PHARMACOKINETICS

Department of Pharmaceutics

Director: **Prof. Dr. Imre Klebovich**

Tutor: **Prof. Dr. Sylvia Marton**

### First Semester

---

#### Lectures

Introduction into biopharmacy and pharmacokinetics. Terms and definitions.

Modeling the fate of drugs in the body (LADME and other models).

Transport processes and absorption mechanisms. Factors influencing the absorption.

Basic concepts and importance of the Biopharmaceutical Classification System.  
 Biopharmaceutical considerations of drug distribution and metabolism.  
 Bioanalytical methods.  
 Excretion and clearance of drug. The biological half-life.  
 Bioavailability and influencing factors.  
 Studies and regulations on bioequivalence.  
 Importance of food-drug interactions.  
 Compartmental and non-compartmental modeling.  
 Physiologically based pharmacokinetic models.  
 Pharmacokinetics of multiple dosing.  
 In vitro – in vivo correlation and relationship.  
 Pharmacokinetic and metabolism investigations during preclinical and clinical development.

### **Practice**

Study on the distribution of salicylic acid in a three-phase system.  
 In vitro test for drug liberation from a patch system.  
 In vitro drug release from ointments with local effect.  
 In vitro dissolution profile of conventional and modified release nitrofurantoin containing preparations.  
 Determination of diclofenac sodium in synovial fluid samples.  
 Urinary excretion kinetics of aspirin.  
 Determination of theophylline plasma levels in beagle dogs after iv. administration.  
 Determination of theophylline plasma levels in beagle dogs after po. administration.  
 Calculation of bioavailability.  
 Computer modeling and analysis in pharmacokinetics.  
 Analyzing data to establish in vitro-in vivo correlation.

## **PHARMACY ADMINISTRATION**

Faculty of Pharmacy

University Pharmacy Department of Pharmacy Administration

Director: **Dr. Romána Zelkó**

Tutor: **Dr. Ágnes Mészáros**

### **5th year term 1**

---

#### **Lectures**

1. Dispensing in Pharmacy
2. Reimbursement systems
3. RCT and clinical trials
4. Evidence Based Pharmacy
5. Pharmacoeconomics 1.
6. Pharmacoeconomics 2.
7. Quality of life analysis
8. Pharmaceutical research and development, Pharmaceutical industry
9. Good Manufacturing Practice (GMP), Good Laboratory Practice (GLP)
10. Good Documentation Systems, QC
11. Trends in the international drug markets
12. Marketing of pharmaceuticals

### **Practical lessons**

1. Hospital Pharmacy Management
2. Micromedix, drug information
3. Publication strategies
4. Medline 1
5. Medline 2, IPA
6. Drug information, Micromedix
7. Presentation concerning health promotion
8. Internet in Pharmacy, computer skills
9. Quality criteria of economic evaluations
10. Critical decision making
11. Supply of OTC medicines
12. Consultation, assessment

## **BASIC DRUG THERAPY**

Course Director: **Dr. Éva Szökő**

Tutor: **Dr. Tamás Tábi**

Department of Pharmacodynamics

Lecture: 2  
Practice: 2  
Credit: 4  
Exam: semi-final (oral)

### **First semester**

---

#### **Program:**

##### *Lectures:*

Strategies of drug therapy. Evidence based medicine  
Pharmacotherapy of heart failure  
Pharmacotherapy of hypertension  
Pain management  
Cancer chemotherapy: colorectal and breast cancer  
Allergic disorders, therapy of dermatitis  
Drug therapy of rheumatoid arthritis, back pain and sport injuries  
Treatment of inflammatory bowel diseases  
Drug abuse  
Contraception, drug therapy during pregnancy  
Pharmacotherapy of osteoporosis  
Treatment of urology disorders (incontinence, erectile dysfunction, benign prostate hyperplasia)

##### *Seminars:*

Chemotherapy of common respiratory and urinary tract infections  
Therapy of ischemic heart disease and myocardial infarction  
Drug therapy of venous disorders  
Treatment of peptic ulcer disease and gastroesophageal reflux disease

Therapy of diarrhea, constipation and irritable bowel syndrome  
 Therapy of common skin disorders (acne, fungal skin infections)  
 Therapy of allergic rhinitis  
 Treatment of bronchial asthma and chronic obstructive pulmonary disease  
 Drug therapy of anxiety and sleeping disorders  
 Therapy of alcohol abuse  
 Treatment of nausea and vomiting  
 Therapy of neurological disorders (Parkinson's disease and schizophrenia)

## FACULTATIVE SUBJECTS

### PHYTOCHEMISTRY

Institute of Pharmacognosy

The aim of this subject is to introduce the pharmacy students interested in crude drug researches and knowledges deeper into phytochemistry. It is a laboratory practice completed with some theoretical lectures. Learning this theses, the students obtain an expertness in the qualification and standardisation of crude drugs and herbal remedies, as well as in discovery of biologically active substances from them, using different isolation methods and chromatographic (TLC, GC, HPLC) techniques, photometry or other equipment. They acquire the identification and characterisation of the most important substances and attain the mode of the scientific research work in this field.

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

## INSTRUMENTAL PHARMACEUTICAL ANALYSIS

Institute of Pharmaceutical Chemistry

### Chromatography

Thin-layer chromatography (theory and practice)

4 hours

Gas chromatography (theory and practice) 3 hours

High pressure liquid chromatography 5 hours  
(theory and practice)

### Spectroscopy

UV and visible spectrophotometry 9 hours

Fluorimetry 3 hours

NMR spectroscopy 6 hours

Mass spectrometry 3 hours

Infrared spectroscopy 3 hours

The course is given by teachers of the Institute of Pharmaceutical Chemistry and wellknown researchers of academical institutes and the pharmaceutical industry.

The subject is offered to students who are interested in the pharmaceutical analysis. It is essential in the fields of the drug control, laboratory diagnostics, phytochemistry and pharmacokinetics.

The chromatographical as well as the spectroscopical lectures built on attained basis are also dealing with the up-to-date problems and statements of the research work.

The course is started only if candidates number at least four or five.

## PHYTOTHERAPY

Institute of Pharmacognosy

- 1 Cardiac and cardiogenic natural products  
Vasodilators.
- 2 Plant preparations for troubles of memory, equilibrium  
and auditory disturbance.  
The horse-chest, its preparations and effectivities.
- 3 Oxy- and methoxycumarines in medical plants.  
The occurrence of rutin and diosmine.
- 4 The bitter principals.  
The appetiser preparations.
- 5 The essential oils.  
Procyanidine crude drugs and preparations.
- 6 The liver therapy (natural products and medical plants).  
Choloretics and cholagoges with plant origin.
- 7 Cholesterin level decreasing diets and others for diabetics.  
Slimming cures and their aims. Fat-reducing mechanism.
- 8 Plant sedatives, their effects and combinations.  
Natural products with stimulating and animating activity (stress).
- 9 Urological phytopreparations and some for prostata diseases.

- 10 The Kneipp cures and their possibilities.  
Gerontology.
- 11 Antitussives, expectorants and their application. Antiasthmatics.  
Treatment of rheumatism.
- 12 Phytopharmacy in the therapy of psoriasis. Unclean skin and eczema.  
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 Jávör**

Tutor: **Dr. Mariann Szabó Dinya**

**2 hours/week**

<b>THEMES</b>	
<b>Statistics in drug development</b>	
1.	Elements of SPSS program: interactive means, data matrix, windows
2.	Command of Edit menu in the SPSS program: file menu, edit menu, view menu, data menu, transform menu, graphs menu, utilities menu, help menu
3.	Mathematical Statistical Principles: descriptive statistics, hypothesis theorem
4.	Deviation analysis: ANOVA methods (Student's test, Fisher's dissociation, one way and multiple-way ANOVA designs)
5.	Regression analysis: correlation coefficient, one and multiple variable regression models, GLM models, logistic model
6.	Taxonomy: clusters, factorial analysis
7.	Final test: solution of data processing problem

## BIOORGANIC CHEMISTRY

Institute of Organic Chemistry

Organic compounds are produced by nature in inexhaustible richness. One of the basic sources of therapeutically useful compounds is the molecular storage of the pharmacy of nature. Natural products are generally environment friendly. Their chemistry is in rapid development in our days, too.

What are the most important steps of molecular evolution in the cosmos and on our Earth? What is the origin of the chirality of life? How can natural products be isolated from the sources? How can their structure be elucidated? How can the ingenious synthetic methods of nature be imitated in laboratory? How can the chirality of natural products be transferred to synthetic drug molecules? How can the complete base sequence of the human genome be determined? These are some questions of the many others, which are tried to be answered in the special collegium.

### **Programme**

1. Isolation of natural products (e.g. iridoids, peptides).
2. Structure elucidation of natural products.
3. Application of NMR spectroscopy for the stereostructure of organic micromolecules (e.g. alkaloids, iridoids).
4. Sequence determination of natural polymers (polypeptides, polynucleotides, e.g. the human genome).
5. The role of the isoprene unit in the construction of terpenes carotenoids and steroids.
6. Biomimetic transformation in the chemistry of iridoid compounds.
7. Chemistry of alkaloids derived from the coupling of biogenic amines (phenylethylamine and tryptamine) with secologanin.
8. Total synthesis of natural products (e.g. vitamin B12, ginkgolide).
9. Solid phase synthesis of polypeptides and polynucleotides.
10. Total synthesis of saccharides, sasharides in total synthesis.
11. Cosmogogenesis and molecular evolution of organic molecules.

## **BIOINORGANIC CHEMISTRY**

Institute of Inorganic Chemistry (ELTE)

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

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

In order to understand all aspects of the material discussed in the course a brief summary is given on metal coordination compounds: on their stereochemistry, equilibria and kinetics. A rather fascinating problem is how certain metal ions have been selected during a long evolutionary process for biological purposes, and how the various metal containing systems developed due to the change of the geoenvironment.

The biosystems take up metals and non-metals from the geosphere. The entry of an element into the living system and its incorporation into a specific site of a biomolecule is a multistep process controlled both by thermodynamic and kinetic factors. This will be demonstrated on many examples including metal ions, anions, and neutral molecules.

In the following topics the roles of bioessential metals are dealt with. Many physiological phenomena are connected to the biochemistry of sodium, potassium, magnesium, and calcium, e.g. the conduction of nerve impulses, muscle contraction, and blood clotting.



Zinc metalloenzymes are most abundant in the living organism and catalyze a large number of hydrolytic and group transfer reactions. Iron, copper and molybdenum take part in many bioredox processes, and the former two metals also in the transport of molecular oxygen. Also, cobalt, manganese, chromium, nickel and vanadium have their roles in important biochemical processes.

Transition metals are needed to activate small molecules as CO<sub>2</sub>, N<sub>2</sub> and O<sub>2</sub>. The biochemistry of the latter is an intriguing topic of bioinorganic chemistry. The deposition of certain solid inorganic compounds (CaCO<sub>3</sub>, Ca-phosphates, etc.) in the organism is under biological control and worth dealing with briefly.

Among the biomedical problems some metal-dependent diseases (e.g. Wilson's disease, Menkes' disease) are touched upon. Much time will be devoted to metal complexes of antitumor activity and to those that are used in the treatment of rheumatoid arthritis.

Metal ion toxicity, an increasing hazard due to the contaminated environment, and chelate therapy are the topics that also deserve attention.

A look into the future closes the course.

## BIOTECHNOLOGY

Department of Plant Anatomy (ELTE)

### Topics

1. Introduction to biotechnology  
Historical evolution of biotechnology. Biotechnology as an interdisciplinary pursuit. Application of biotechnology. Substrates of biotechnology.
2. Applied genetics  
Selection and screening. Culture maintenance. Mutagenesis. Protoplast and cell fusion technologies.
3. Introduction to genetic engineering  
The emergence of recombinant DNA technology. Regulation and control of recombinant DNA experimentation. Basic recombinant DNA techniques. Restriction endonucleases and other DNA and RNA modification enzymes.
4. Gene cloning  
Transformation. Cloning vectors. Construction of libraries. Identification of transformants and recombinants. Gene isolation and analysis. Nucleic acid labelling and detection. Hybridization analysis. DNA sequencing. DNA amplification by the polymerase chain reaction.
5. Expression of foreign DNA in bacteria  
Control of gene expression in bacteria and in eukaryotes. Expression of eukaryotic genes in bacteria. Alternative host organisms.
6. Cloning in higher organisms  
Gene cloning in mammalian cells. Vector systems. Gene transfer methods. Plant tissue culture techniques. Protoplast fusion. Plant genetic engineering. Transformation using *Agrobacterium* as a gene vector. Direct gene transfer. Crop improvement using molecular techniques: resistance to herbicides and diseases. RFLP-analysis.
7. Application of molecular biology in medicine  
Diagnosis of genetic disorders. DNA fingerprinting. Case applications.
8. Genetic engineering and the pharmaceutical industry  
Fermentation products. Antibiotics production. Protein production. Recombinant virus vaccines. Monoclonal antibodies.
9. Fermentation technology

- Microbial cultivation. Bioreactor design. Media design. Instrumentation and process control. Scale-up. Animal and plant cell cultivation. Solid substrate fermentation.
10. Enzyme technology  
Enzyme engineering. Site-directed mutagenesis. Enzyme stabilization. Product of enzymes. Immobilized enzymes. Immobilization of cells.
  11. Biosensors  
Principle and structure of biosensors. Application in clinical chemistry and medicine. Application in fermentation industries.

## PHYSICAL ORGANIC CHEMISTRY

Institute of Organic Chemistry

The number of registered organic compounds is well over 15 million. Innumerable basic reactions contact them. How can we find an order in this jungle of compounds and cavalcade of reactions? How can the reactions be oriented? How can they be used for synthesis of drugs and many other practically important compounds (polymers, dyestuffs, etc.)? How do energy changes direct organic reactions? How can we control the factors influencing them?

Organic reactions take place in the interaction of atomic and molecular orbitals. These changes are the molecular base of life, too. Is it possible to get an insight into them by simple mathematical methods?

All these questions concern physical organic chemistry, i.e. the study 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 of organic reactions.
4. Experimental methods for investigation of reaction mechanism.
5. Factors which influence the reaction (reagents, concentration, solvent, catalyst, temperature, etc.).
6. Analysis of the basic organic reaction types on selected examples.
7. Symmetry principles in organic reactions.
8. Orbital interactions as the molecular base of life processes.

## COMPUTATIONAL CHEMISTRY AND QSAR METHODS

Institute of Organic Chemistry

1. Computational chemistry and molecular modeling: topics, scope and limits.
2. Quantum chemistry: basic principles and methods.
3. Molecular mechanics and dynamics.

4. Chemical stability and reactivity: thermodynamics and kinetics: qualitative and quantitative predicting methods; case studies.
5. Secondary interactions: molecular basis of receptor-ligand interactions.
6. QSAR methods: prediction of biological activity.
7. Applications and practice.

## ENVIRONMENT PROTECTION – ECOLOGY

Institute of Public Health

“... One of the fundamental human rights is to live in a healthy environment appropriate to the dignity of man ... But the man is responsible for this environment not only to the contemporary society but to the rising generations too...”

*(Proclamation of the UNO conference on Environmental Protection, Stockholm, 16. June, 1972.)*

### **Aim of the training:**

Teaching of general and profession-orientated subjects of environment protection based on the studies of human ecology and environmental hygiene/epidemiology, which are obligatory for all students in the course of Hygiene and Epidemiology in the first semester of the fourth study-year.

### **PROGRAMME**

- A) **General relations**
- I Environmental conditions of living. Biosphere. Adaptation to the environment.  
Self regulating systems in (global and local) ecosystems. “Nourishment chains” (systems) – ability for maintaining.  
The “environment” as a unified system.
  - II Regenerating and non-regenerating resources for the humans (thesis of the “Roman Club”).  
Influences of human activities on biogeochemical circulation.  
Anthropogenic pollution of the environment – indirect and direct dangers.  
Possibilities of protection: environment – spare technological procedures; biodegradability; technical development; waste materials: reduction of its quantity, reutilization, neutralization of toxic and radioactive materials.
  - III Primary prevention of actual environmental damages, hygienic standardization.
- B) **Professional knowledge**
- I Environmental pollution due to sanitary activities – prophylaxis, protection.
  - II Environmental pollution due to pharmaceutical activities-prophylaxis, protection:
    - a) production and preparation of drugs
    - biotechnology,

- medical plants\drugs,
- basic and subsidiary materials of drugs,
- packaging materials,
- chemical medicaments,
- biological, immunological and microbiological products,
- plant protecting materials, insecticides, pesticides;
- b) distribution and utilization of drugs;
- c) scientific and laboratory activities.

## Pharmaceutical Compounding

Department of Pharmaceutics

Head: **Prof. Dr. Imre Klebovich**

Tutor: **Dr. István Antal**

### Second semester

---

1 hour/week

The subject is recommended for the students interested in fields of traditional pharmaceutical compounding such as preparation of several dosage forms (solutions, eyedrops, ointments, suppositories, powders).

Topics:

Past and future of pharmaceutical compounding

Combined preparations for individual therapy

Pharmacopoeial aspects of compounded dosage forms.

Practical guidelines for traditional compounding (Formulae Normales)

Pharmaceutical substances, synonyms.

Dose calculations.

Functional excipients in the formulation.

Practical problems of incompatibilities in combined preparations.

# PHARMACOINFORMATICS

Director: Dr. **András Jávör**

3 hours/ week

## 1. Aims :

to present state of art computing and telecommunication techniques including the INTERNET and to illustrate how these techniques are applied in drug industry, pharmacies and clinical patent management.

to discuss various data base and knowledge base management systems, health care information systems, decision support tools for pharmacotherapeutic problem solving, educational programs and telemedicine techniques as they are applied in drug research and development, and in evidence based pharmacotherapy

to teach pharmacy students how to rely on informatics tools when making cost effective decisions and trying to improve patient compliance.

## 2. Organization of the course :

The course consists of lectures and practices. Lectures provide theoretical foundations as well as examples of the use of various technologies and methods in research and pharmacy practice.

Practices allow students to work with different medical databases, information systems, and decision support tools that address various drug related problems

Lectures	References	Hour
1. MEDICAL INFORMATICS AS A DISCIPLINE Dr. András Jávör	HEALTH INFORMATICS IN THE 21st CENTURY by John Mantas, Document 506 GLOBAL INFORMATION SOCIETY AND HEALTHCARE by Jean ROBERTS Document 508	2
2. DATA TYPES, CLINICAL DATA-BASES, DATA BASE MODELS, AND MEDICAL IMAGES Dr. György Surján	TERMING, CODING AND GROUPING SYSTEMS IN HEALTH by Rudiger KLAR, Document 416 DATABASES, SPREADSHEETS AND WORD PROCESSING IN HEALTH by Francesco PINCIROLI, Luisa PORTONI Document 401	2
3. THE THERAPEUTIC PROCESS AND THE MEDICAL RECORD Dr. András Jávör	HEALTHCARE RECORD by Jos AARTS Document 407	2
4. HEALTH CARE INFORMATION SYSTEMS Dr. András Jávör	OPERATIONAL USES OF HOSPITAL INFORMATION SYSTEMS by Marie-Christine JAULENT, Document 405 ARCHITECTURES IN HEALTH by Sergio TORRES, Jose TORRES Document 422	2
5. COMPUTER-BASED SUPPORT FOR PHARMACISTS (AN OVERVIEW) Dr. Tibor Deutsch	EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990	2
6. REPRESENTING DRUG-RELATED KNOWLEDGE (classification of drugs, describing drug properties, drug information systems, examples Dr. Tibor Deutsch	EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990	2

Lectures	References	Hour
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	2
8. INFORMATION RESOURCES AND THE INTERNET, KNOWLEDGE COUPLERS 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	2
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	2
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 Bommel and M.Musen: Handbook of Medical Informatics, Springer, 197 (www.mihandbook.stanford.edu)	2
	Total:	20

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

# EVALUATION OF PROGRESS

## **Grading system**

### a) Five-scale

5 (jeles)	Excellent
4 (jó)	Good
3 (közepes)	Fair
2 (elégséges)	Passing
1 (elégtelen)	Failure

### b) Three-scale

igen szorgalmas	Excellent
szorgalmas	Satisfactory
nem felelt meg	Unsatisfactory

## **Types of evaluation**

1. Practical course grade (gyakorlati jegy)  
(according to either the 5-scale or the 3-scale grading system)
2. Semi-final examination (kollokvium)  
Evaluation of a one-semester subject matter  
(1–5 grading system)
3. Final examination (szigorlat)  
Evaluation of the whole subject matter  
(1–5 grading system)
4. Obligatory practice at hospital  
(3-scale grading system)

## **Average Results**

When the student has taken all the compulsory examinations and fulfilled every other obligation during the examination period, the semester will be validated in the student's lecture book by the Dean's signature.

The student's average results are:

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





# 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 members are the head of the unit (or the deputy), the consultant and an instructor of the unit. The unit may invite an external instructor of the university as a third member. In case of a fail, the head of the unit notifies the student and informs him or her about the possibilities of correction. A failed 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 be an external professor. The head of the Committee and the members are appointed by the dean for one to three years with the approval of the Faculty Council.
4. The student must report for the final exam in the Dean's Office no later than 60 days before the first day of the final exam period.
5. The Faculty Dean is responsible for organizing the final exam. The number of committees will be decided based on the number of students registering for the exam in a way that a committee should have a maximum of 6 students a day.
6. The students must be divided among committees randomly. The division may only be announced at the Faculty on the day of the exam in the common announcement method used at the Faculty.
7. The Final Examination Committee grades the exam subjects in a private discussion. The head of the committee announces the results after the completion of the final exam.
8. The final grade of the final exam will be based on the arithmetic average of the partial grades.
9. The result of the final exam is established by the committee and records the result in the 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 as a Hungarian basic level state language exam type C (or an equivalent exam).
3. The rector of the university may transfer the right of signing the degree on the relevant Dean of the Faculty.
5. The diploma must indicate the grade of the diploma.
7. The Appendix of the diploma is the obligation of the relevant Dean's Office.
8. The basis of the grade is the general cumulated and weighted average of grades rounded to the hundredth.

In case of a five-scale evaluation:

- 4.51-5.00: excellent
- 3.51-4.50: good
- 2.51-3.50: fair
- 2.00-2.50: pass

In case of a three-scale evaluation:

- 4.51-5.00: summa cum laude
- 3.51-4.50: cum laude
- 2.00-3.50: rite

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

9. The method of calculation:

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

Where:

- XD** = the number to be taken into consideration for the diploma grade
- Xn** = the sum of required comprehensive exam grades
- n** = the number of required comprehensive exams
- D** = the five-scale grade of the thesis  
(part of the complex final exam)
- I** = the result of the written part  
(part of the complex final exam)
- Sz** = the result of the oral part  
(part of the complex final exam)
- Gy** = the result of the practical part  
(part of the complex final exam)

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

## **COST OF THE PROGRAM FOR TWO SEMESTERS**

Tuition fee for the 2008/2009 academic year

Medicine	USD 6,100 / semester
Dentistry	USD 6,600 / semester
Pharmacy	USD 5,400 / semester

The first year tuition fee (+ the registration fee – USD 150 payable in the 1<sup>st</sup> 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 1<sup>st</sup> semester)
- Before February 1 (for the 2<sup>nd</sup> semester)

(6<sup>th</sup> 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 15<sup>th</sup> – first semester  
                                      March 1<sup>st</sup> – 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 6<sup>th</sup> year:

1. In case the student completes more than the compulsory 6 weeks of cilinical 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."

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

## **THE WORDS OF OATH AT GRADUATION**

### **Faculty of Pharmacy**

---

I, ....., swear that in virtue of my acquired knowledge of pharmaceutical sciences, I shall do my professional duty with the utmost diligence, and I shall always behave worthy of my profession. I shall place before all things the care for and the healing of my patients. I shall not reveal any data concerning the health status or the medication of my patients. I shall maintain my theoretical and practical knowledge at a high level. I shall never use my knowledge for activities that are contrary to the ethical code of pharmacists. As a participant in the activity of healing, I shall use my knowledge only for the defense and restitution of health to my fellow humans. I shall do my best to promote the science of pharmacy and keep the good name of the Semmelweis University.

## 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 <i>registration requirements</i> 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<br>duplicates (copies)  | 4.000 HUF/each |
| 2. | Diploma supplement<br>first copy                                      | free           |
|    | second or more for students graduating from Medicine                  | 3,500 HUF      |
|    | second or more for students graduating from Dentistry<br>and Pharmacy | 3,000 HUF      |
| 3. | List of final examination grades<br>first copy                        | 1.500 HUF      |
|    | second or more  | 1.000 HUF/each |
| 4. | Other certificate(s), letter of recommendation<br>first copy          | 2.500 HUF      |
|    | second or more  | 1.000 HUF/each |
| 5. | Postal charges<br>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



*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

Address: H-1088 Budapest, 17 Vas Street  
 Phone: +36-1 486-5910  
 Fax: +36-1 486-5913  
 E-mail: student@se-etk.hu  
 Home Page: <http://www.se-etk.hu>

Dean **Prof. Judit Mészáros**, Ph.D.  
 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  
**Assoc. Prof. Margit Orbán**  
**Assoc. Prof. István Vingender Ph.D.**

### Dean's Office

Head of the Office: **Ms Anikó Plichta**  
 phone: +36-1 486-5910 e-mail: [fih@se-etk.hu](mailto:fih@se-etk.hu)

**Mr. Péter Diószegi, principal contributor** – Educational Affairs

phone: +36-1 486-5919 e-mail: [dioszegip@se-etk.hu](mailto:dioszegip@se-etk.hu)

**Dr. Mária Miklós, principal contributor** – Publications

phone: +36-1 486-5920 e-mail: [miklosm@se-etk.hu](mailto:miklosm@se-etk.hu)

**Dr. Eszter, Takács, secretary**

phone: +36-1 486-5910 e-mail: [takacse@se-etk.hu](mailto:takacse@se-etk.hu)

**Ms. Éva Heberling, marketing assistant**

phone: +36-1 486-5822 e-mail: [heberlinge@se-etk.hu](mailto:heberlinge@se-etk.hu)

### International Student Affairs

**Ms. Kornélia Vicziáné Bódai**, coordinator of the English Program – International Student Affairs

phone: +36-1 486-5916 e-mail: [viczianne@se-etk.hu](mailto:viczianne@se-etk.hu)

**Ms. Éva Heberling, substitute coordinator of the English Program**

phone: +36-1 486-5822 e-mail: [heberlinge@se-etk.hu](mailto:heberlinge@se-etk.hu)

## DEPARTMENTS

### Department of Nursing and Health Education Pedagogy

Head of Department: Prof. Judit Mészáros, Ph.D.

Phone: +36-1 486-5930, Fax: +36-1 486-5931

Csaba Avramucz

Phone: +36-1 486-5934 [avramuczcs@se-etk.hu](mailto:avramuczcs@se-etk.hu)

### Department of Dietetics and Nutrition Sciences

Head of Department: Prof. István Szabolcs, M.D., Ph.D., D.Sc.

Phone: +36-1 486-4820, Fax: +36-1 486-4830

Dr. Gáborné Szépvölgyi Phone: +36-1 486-4823 [szepvolgyigne@se-etk.hu](mailto:szepvolgyigne@se-etk.hu)

### Department of Physiotherapy

Head of Department: Assoc. Prof. Mónika Horváth, Ph.D.

Phone: +36-1 486-5980, Fax: +36-1 486-5981

Zsuzsa Gerencsér

Phone: +36-1 486-5984 [gerencserzs@se-etk.hu](mailto:gerencserzs@se-etk.hu)

### **Department of Public Health**

Head of Department: Prof. Gyula Domján, M.D., Ph.D.  
Phone: +36-1 486-4850, Fax: +36-1 486-4860  
Dr. Melinda Péntzes Phone: +36-1 486-4832 penzesm@se-etk.hu

### **Department of Family Care Methodology**

Head of Department: Prof. Antal Czinner M.D., Ph.D.  
Phone: +36-1 486-4840, Fax: +36-1 486-4845  
Prof. Antal Czinner Phone: +36-1 486-4840 czinner@se-etk.hu

### **Department of Oxiology**

Head of Department: Assoc. Prof. Gábor Góbl, M.D.  
Phone: +36-1 486-5840, Fax: +36-1 486-5841  
István Hornyák Phone: +36-1 486-5843 hornyaki@se-etk.hu

### **Department of Clinical Sciences**

Head of Department: Prof. Sándor Hollós, M.D., Ph.D.  
Phone: +36-1 486-5970, Fax: +36-1 486-5971  
Kata Réz Phone: +36-1 486-5973 rez\_kata@se-etk.hu

### **Department of Social Sciences**

Head of Department: Assoc. Prof. István Vingender, Ph.D.  
Phone: +36-1 486-5810, Fax: +36-1 486-5812  
Attila Dobos Phone: +36-1 486-5813

### **Department of Addictology**

Head of Department Prof. József Rácz M.D., Ph.D., D.Sc.  
Fax: +36 1 486-5812  
Éva Nagy Phone: +36-1 486-5820

### **Department of Information and Medical Technology**

Head of Department: Prof. Tibor Deutsch Ph.D.  
Phone: +36-1 486-5840, Fax: +36-1 486-5841  
Dr. Zsolt Öreg Phone: +36-1 486-5963 oregzs@se-etk.hu

### **Department of Morphology and Physiology**

Head of Department: Assoc. Prof. Veronika Polgár, M.D.  
Phone: +36-1 486-4870, Fax: +36-1 486-4885  
Dr. Gábor Mikala Phone: +36-1 486-4874 mikala@se-etk.hu

### **Department of Physical Education**

Head of Department: Assoc. Prof. Gábor Soós  
Phone: +36-1 486-5850 Fax: +36 1 486-5851  
Virág Labanné Csík Phone: +36-1 486-5850 csikv@se-etk.hu

### **Department of Foreign Languages**

Head of Department: Assoc. Prof. Margit Opricsné Orbán  
Phone +36-1: 486-4890, Fax: +36-1 486-4895  
Katalin Zöldi Kovács Phone+36-1: 486-4892 zoldikovacs@se-etk.hu

## SCHEDULE FOR THE ACADEMIC YEAR 2008/2009

### Autumn semester

<b>Registration for the 1<sup>st</sup> year</b> students	August 28, 2008
for 2 <sup>nd</sup> 3 <sup>rd</sup> and 4 <sup>th</sup> year students	September 1-12, 2008
<b>Opening Ceremony</b>	September 7, 2008
<b>First day of the term</b>	September 1, 2008
<b>Last day of the term</b>	December 12, 2008
<b>Examination period</b>	December 15, 2008 – January 23, 2009
<b>Extension period</b> (only for re-examination)	January 26 – January 30, 2009
<b>Final examination period</b>	
Practical and Written parts	October 13 – 18, 2008
Oral part	October 20 – 31, 2008
<b>National/Public holidays</b>	October 23, 2008
	November 1, 2008

### Spring semester

<b>Registration</b>	February 2-13, 2009
<b>First day of the term</b>	February 2, 2009
<b>Last day of the term</b>	May 22, 2009
<b>Spring holiday</b>	April 14 – 17, 2009
<b>Examination period</b>	
for graduating students	March 30 – May 8, 2009
for all other students	May 25 – July 3, 2009
<b>Extension period (only for re-examination)</b>	July 6-17, 2009
<b>Final examination period (March)</b>	
Practical and Written parts	February 23 – March 6, 2009
Oral part	March 9 – 20, 2009
<b>Final examination period (June)</b>	
Practical and Written parts	May 18 – 29, 2009
Oral part	June 1 - 12, 2009
<b>National/Public holidays</b>	March 15, 2009
	April 13, 2009 (Easter Monday)
	May 1, 2009
	June 1, 2009 (Whit Monday)

## Most important deadlines for students

<b>Registration</b>	according to the academic calendar
<b>Withdrawal of registration</b>	within a month after the beginning of the term October 1, 2008 March 2, 2009
<b>Signing up for courses/subjects</b>	till the beginning of the 2 <sup>nd</sup> week of the term
<b>Autumn semester</b>	September 8, 2008
<b>Spring semester</b>	February 9, 2009
<b>Changing of courses/subjects</b>	till the end of the 2 <sup>nd</sup> week of the term September 12, 2008 February 13, 2009
<b>Taking an exam in a subject studied longer than one semester according to permission</b>	during the last 3 weeks of the term November 24 – December 12, 2008 May 4 – 22, 2009
<b>Getting a signature after term time</b>	till the end of the 2 <sup>nd</sup> week of the exam period December 23, 2008 June 5, 2009
<b>Retake of an end-term exam</b>	earliest on the third calendar day after the failed exam
<b>Retake of a comprehensive exam</b>	earliest on the fifth calendar day after the failed exam
<b>Changing the exam date in the Neptun</b>	2 days (48 hours) before the actual date of the exam
<b>Handing in the thesis and signing up for a final exam</b>	
for final examination in October	August 21, 2008
for final examination in March	January 8, 2009
for final examination in June	April 2, 2009
<b>Handing in requests to the Credit Committee</b>	
for the spring semester of 2008/09	January 15, 2009
for the autumn semester of 2009/10	July 17, 2009
<b>Handing in requests to the Study Committee:</b>	
the week following the examination period	



January 30, 2009

July 17, 2009

Paying the tuition fee

till the end of the registration period

September 12, 2008

February 13, 2009

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

Third or further retake of an examination	1.500 HUF
Signing up for a course for the third time	5.000 HUF
Default charge for late payment of the tuition fee	100 USD
Failing to keep any deadlines set by the Calendar	5.000 HUF
Retake of the final examination	
5.000 HUF	
Replica of the lecture book	5.000 HUF
Lost student card	
first time	500 HUF
every other occasion	1.500 HUF
Official transcript of the grades	500 HUF/page

### 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.
6. Extension of life-long learning.
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, othopedics, 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

(basic knowledge, specialized core material)

Semmelweis University  
Faculty of Health Sciences

Specialty: nursing and patient care  
Full-time course

Subjects	Contact hours per semester (theory + practice)			Total contact hours		Individual hours	Total hours	Requirements			ECTS
	I.	II.	III.	theory	pract			Comp rehensive exam	End of term exam	Practical grade	
<b>Basic modules</b>											
<b>Basics of Social Sciences</b>											
Philosophy	0+15			0	15	15	30		I.		1
General and Health Ethics		15+15		15	15	30	60		II.		2
Basics of Sociology	15+15			15	15	30	60		I.		2
Medical and Health Sociology		15+15		15	15	30	60		II.		2
Basics of Law	15+0			15	0	15	30			I.	1
Health Care Law		10+5		10	5	15	30		II.		1
Social Policy		10+5		10	5	15	30		II.		1
Basics of Economics	15+0			15	0	15	30			I.	1
Health Economics		10+5		10	5	15	30		II.		1
Introduction to Management	15+0			15	0	15	30			I.	1
Health Care Management		10+5		10	5	15	30		II.		1
General Public Health		15+0		15	0	15	30		II.		1
<b>Basic Skills</b>											
Introduction to Higher Education Studies	20+0			20	0	10	30			I.	1
Informatics	10+20	0+30	0+15	10	65	75	150		III.	I. II.	5
Basics of Scientific Research			15+15	15	15	30	60			III.	2
Foreign Language for Health Care Purposes	In semester V-VI. In hours 0 + 60, 0 + 60 with a value of 8 ECTS										
Medical Latin	0+30	0+30		0	60	60	120			I. II.	4
First Aid		15+15	15+15	30	30	60	120		III.	II.	4
Technical Basics in Health Care	15+15			15	15	30	60		I.		2
<b>Specialized core modules</b>											
<b>Professional Basics of Health Sciences</b>											
Applied Biology	15+15			15	15	30	60		I.		2
Anatomy	45+15	30+15		75	30	105	210		I. II.		7
Applied Physiology-Pathophysiology		45+15	30+15	75	30	105	210		II. III.		7
Pharmacology			60+0	60	0	60	120		III.		4
Microbiology		30+15		30	15	45	90		II.		3



Subjects	Contact hours per semester (theory + practice)			Total contact hours		Individual hours	Total hours	Requirements			ECTS
	I.	II.	III.	theory	pract			Comp rehensive exam	End of term exam	Practical grade	
Public Health and Epidemiology	30+0		30+0	60	0	60	120		II.	I.	4
Basics of Nursing		15+15		15	15	30	60		II.		2
Addictology			15+0	15	0	15	30			III.	1
Fundamental Questions of Nutrition			15+0	15	0	15	30			III.	1
Clinical Knowledge			20+0	20	0	40	60		III.		2
<b>Personality development, collective effectiveness</b>											
General and Personalistic Psychology	30+0			30	0	30	60		I.		2
Psychology of Ages of Life	15+0			15	0	15	30		I.		1
Social Psychology		30+0		30	0	30	60		II.		2
Psychology of the Sick	In semester IV. in hours 15+0 with a value of 1 ECTS										
Personality and Communication Development	0+30	0+30		0	60	60	120			I. II.	4
Health Pedagogy	In semester VI. in hours 15+15 with a value of 2 ECTS										
<b>Electives</b>											
Elective Courses	0+15		15+30	15	45	60	120	As prescribed			4
<b>Total</b>	Contact hours	240+170	250+230	215+75	705	475		2370			
	Individual preparation	400	480	310			1190				
	ECTS	27	32	20							

<b>Criteria subjects</b>											
Safety at Work and Fire Prevention	0+15			0	15	15	30			I.	
Foreign Language	0+60	0+60	0+60	0	180	180	360			I. II. III.	
Physical Education	0+30	0+30	0+30	0	90	0	90				

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**

Subjects	Contact hours per semester (theory + practice)				Total contact hours	Individual hours	Total hours	Requirements			ECTS		
	III.	IV.	V.	VI.				VII.	VIII.	Comp rehensive exam		End of term exam	Practical grade
<b>Basics of Physiotherapy Module</b>													
Psychology of the Sick		15+0			15	0	15	30		IV.			1
Health Pedagogy				15+15	15	15	30	60			VI.		2
Basics of Physiotherapy	15+0				15	0	15	30			III.		1
Body Awareness	0+ 15				0	15	15	30			III.		1
Functional Analysis of the Musculoskeletal System	60+ 30	90+90	0+90		150	210	360	720	V.	III. IV.			24
Biomechanics		15+0			15	0	15	30		IV.			1
Foreign Language for Health Care Purposes		0+60	0+60		0	120	120	240			V. VI.		8
<b>Basic Methods of Physiotherapy Module</b>													
Manual Techniques		15+90	15+60		30	150	180	360		V.	IV.		12
EBHKT		15+30			15	30	45	90		IV.			3
Applied Training Methodology		15+15			15	15	30	60		IV.			2
<b>Clinical Physiotherapy Module</b>													
Internal Medicine		30+0			30	0	30	60		V.			2
Cardiorespiratory Physiotherapy		30+30			30	30	60	120		V.			4
Orthopedics		30+0	30+0		60	0	60	120		V. VI.			4
Physiotherapy in Orthopedics		15+30			15	30	45	90			VI.		3
Traumatology		30+0			30	0	30	60		VI.			2

**Specialist program: physiotherapist**

Subjects	Contact hours per semester (theory + practice)					Total contact hours		Individual hours	Total hours	Requirements			ECTS	
	III.	IV.	V.	VI.	VII.	VIII.	theory			pract	Comp rehenstive exam	End of term exam		Practical Grade
Physiotherapy in Traumatology				15+30			15	30	45	90		VI.	3	
Rheumatology				30+0			30	0	30	60		VI.	2	
Physiotherapy in Rheumatology				15+30			15	30	45	90		VI.	3	
Neurology					30+0		30	0	30	60		VII.	2	
Physiotherapy in Neurology					15+45		15	45	60	120		VII.	4	
Psychiatry					15+15		15	15	30	60		VII.	2	
Development Neurology					15+0		15	0	15	30		VII.	1	
Infant Medicine and Pediatrics					30+0		30	0	30	60		VII.	2	
Physiotherapy in Pediatrics					15+15		15	15	30	60		VII.	2	
Obstetrics-Gynecology					15+15		15	15	30	60		VII.	2	
Intensive Therapy					15+15		15	15	30	60		VII.	2	
<b>Clinical Demonstration and Practice</b>														
Cardiorespiratory Physiotherapy			0+60				0	60	60	120		V.	4	
Traumatological Physiotherapy				0+30			0	30	30	60		VI.	2	

**Specialist program: physiotherapist**

Subjects	Contact hours per semester (theory + practice)					Total contact hours	Individual hours	Total hours	Requirements			ECTS	
	III.	IV.	V.	VI.	VII.				VIII.	theory	pract		Comp rehensive exam
Rheumatological Physiotherapy				0+30			0	30	60			VI.	2
Orthopedic Physiotherapy				0+30			0	30	60			VI.	2
Pediatric Physiotherapy				0+30			0	30	60			VII.	2
Neurological Physiotherapy				0+60			0	60	120			VII.	4
<b>Rehabilitation Physiotherapy Module</b>													
Musculoskeletal Rehabilitation							10	110	240			VIII.	8
Cardiorespiratory Rehabilitation							10	80	180			VIII.	6
Rehabilitation in Neurology							10	110	240			VIII.	8
<b>Electives</b>													
Elective Courses					15+15	30+60	45	75	240			As prescribed	8
Thesis			30+45	30+45	30+45		120	180	600				20
Contact hours	75+45	195+270	135+345	180+300	195+255	60+360	840	1575					
Individual preparation	120	465	480	480	450	420		2415	4830				
<b>Total</b>	8	30	32	30	30	28							161

<b>Criteria subjects</b>			
Foreign Language	0+60		0
Physical Education	0+30		0
			60
			30
			0
			30
			120
			IV.

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)**

Code	Subject	Prerequisite		
<b>Basic Modules</b>				
<b>Basics of Social Sciences</b>				
EBN__TET01A	Philosophy	-		
EBN__TET02A	General and Health Ethics	EBN__TET01A		
EBN__TET03A	Basics of Sociology	-		
EBN__TET04A	Medical and Health Sociology	EBN__TET03A		
EBN__NET05A	Basics of Law	-		
EBN__NET06A	Health Care Law	EBN__NET05A		
EBN__TET07A	Social Policy	EBN__TET03A		
EBN__TET08A	Basics of Economics	-		
EBN__TET09A	Health Economics	EBN__TET08A		
EBN__NET10A	Introduction to Management	-		
EBN__NET11A	Health Care Management	EBN__NET10A		
EBN__NET12A	General Public Health	-		
<b>Basic Skills</b>				
EBN__OTT13A	Informatics	-		
EBN__OTT13B	Informatics	EBN__OTT13A		
EBN__OTT13C	Informatics	EBN__OTT13B		
EBN__FTT14A	Basics of Scientific Research	EBN__OTT13B-		
EBN__LET16A	Medical Latin	-		
EBN__LET16B	Medical Latin	EBN__LET16A		
EBN__OXT17A	First Aid	EBN__MOT20A	EBN__OTT18A	
EBN__OXT17B	First Aid	EBN__OXT17A		
EBN__OTT18A	Health Care Technology	-		
<b>Specialized Core Modules</b>				
<b>Professional Basics in Health Sciences</b>				
EBN__MOT19A	Applied Biology	-		
EBN__MOT20A	Anatomy	-		
EBN__MOT20B	Anatomy	EBN__MOT20A		
EBN__MOT21A	Applied Physiology-Pathophysiology	EBN__MOT19A	EBN__MOT20A	

<b>Code</b>	<b>Subject</b>	<b>Prerequisite</b>		
EBN__MOT21B	Applied Physiology-Pathophysiology	EBN__MOT21A		
EBN__KTT23A	Pharmacology	EBN__MOT21A		
EBN__NET24A	Microbiology	-		
EBN__NET25A	Public Health and Epidemiology	EBN__NET24A-		
EBN__NET25B	Public Health and Epidemiology	EBN__NET25A		
EBN__APT26A	Basics of Nursing	EBN__MOT20A	EBN__APT30A	
EBN__ADT27A	Addictology	EBN__MOT21A		
EBN__DIT28A	Fundamental Questions of Nutrition	-		
EBN__KTT29A	Clinical Knowledge	EBN__MOT20B	EBN__MOT21A	
<b>Personality Development, Collective Effectiveness</b>				
EBN__APT30A	General and Personalistic Psychology	-		
EBN__APT31A	Psychology of Ages of Life	-		
EBN__APT32A	Social Psychology	EBN__APT30A		
EBN__APT33A	Psychology of the Sick	EBN__APT30A		
EBN__APT34A	Personality and Communication Development	-		
EBN__APT34B	Personality and Communication Development	EBN__APT34A		
EBN__APT35A	Health Pedagogy	EBN__APT30A -	EBN__APT32A	

**System of Preliminary Studies (B.Sc.)****Specialty: nursing and patient care  
(differentiated specialized material)****Specialist program: Physiotherapist**

Code	Subject	Prerequisite		
<b>Basics of Physiotherapy Module</b>				
EBN__APT33	Psychology of the Sick Person	EBN__APT30A		
EBN__APT35A	Health Pedagogy	EBN__APT30A -	EBN__APT32A	
EBNPHFTT01A	Basics of Physiotherapy	EBN__MOT20B	EBN__MOT21A	
EBNPHFTT02A	Body Awareness	EBN__MOT20B		
EBNPHFTT03A	Functional Analysis of the Musculoskeletal System	EBN__MOT20B	EBN__MOT21A	
EBNPHFTT03B	Functional Analysis of the Musculoskeletal System	EBNPHFTT03A	EBNPHFTT01A	EBNPHFTT02A
EBNPHFTT03C	Functional Analysis of the Musculoskeletal System	EBNPHFTT03B	EBN__MOT21B	
EBNPHFTT04A	Biomechanics	EBN__FTT14A	EBNPHFTT03A	
EBNPHLET05A	Hungarian Language for Health Care Purposes			
EBNPHLET05B	Hungarian Language for Health Care Purposes	EBNPHLET05A		
<b>Basic Methods of Physiotherapy Module</b>				
EBNPHFTT06A	Manual Techniques	EBN__MOT21B	EBNPHFTT03A	
EBNPHFTT06B	Manual Techniques	EBNPHFTT06A		
EBNPHFTT07A	Electro-, balneo-, hydro-, climatotherapy	EBN__MOT21B	EBNPHFTT03A	
EBNPHFTT08A	Applied Training Method	EBN__MOT21B	EBNPHFTT03A	
<b>Clinical Physiotherapy Module</b>				
EBNPHKT09A	Internal Medicine	EBN__KTT29A	EBN__MOT21B	EBNPHFTT03B
EBNPHFTT10A	Cardiorespiratory Physiotherapy	EBNPHFTT03B		
EBNPHFTT11A	Orthopedics	EBNPHFTT03B		
EBNPHFTT11B	Orthopedics	EBNPHFTT11A		
EBNPHFTT12A	Physiotherapy in Orthopedics	EBNPHFTT03C	EBNPHFTT11A	p-EBNPHFTT11B
EBNPHFTT13A	Traumatology	EBNPHFTT03C		
EBNPHFTT14A	Physiotherapy in Traumatology	EBNPHFTT03C	p*-EBNPHFTT13A	
EBNPHFTT15A	Rheumatology	EBNPHFTT03C		
EBNPHFTT16A	Physiotherapy in Rheumatology	p-EBNPHFTT15A	EBNPHFTT03C	
EBNPHFTT17A	Neurology	EBNPHFTT03C	EBNPHFTT11B	
EBNPHFTT18A	Physiotherapy in Neurology	EBNPHFTT03C	p-EBNPHFTT17A	
EBNPHFTT19A	Psychiatry	EBNPHFTT03C	EBN__APT33A	EBNPHFTT11B

<b>Code</b>	<b>Subject</b>	<b>Prerequisite</b>		
EBNPHFTT20A	Development Neurology	EBNPHFTT03C	EBNPHFTT11B	
EBNPHKTT21A	Infant Medicine and Pediatrics	EBNPHFTT03C	EBNPHFTT11B	EBNPHKTT09A
EBNPHFTT22A	Physiotherapy in Pediatrics	EBNPHFTT03C	EBNPHFTT11B	p-EBNPHKTT21A
EBNPHKTT23A	Obstetrics-Gynecology	EBNPHFTT03C	p-EBNPHKTT21A	
EBNPHKTT24A	Intensive Therapy	EBNPHFTT03C	EBNPHFTT10A	EBNPHKTT09A
<b>Clinical Demonstration and Practice</b>				
EBNPHFTT25A	Cardiorespiratory Physiotherapy	p-EBNPHFTT10A		
EBNPHFTT33A	Traumatological Physiotherapy	p-EBNPHFTT14A		
EBNPHFTT34A	Rheumatological Physiotherapy	p-EBNPHFTT16A		
EBNPHFTT35A	Orthopedic Physiotherapy	p-EBNPHFTT12A		
EBNPHFTT37A	Pediatric Physiotherapy	p-EBNPHFTT22A		
EBNPHFTT38A	Neurological Physiotherapy	p-EBNPHFTT18A		
<b>Rehabilitation Physiotherapy Module</b>				
EBNPHFTT26A	Musculoskeletal Rehabilitation	EBNPHFTT33A	EBNPHFTT34A	EBNPHFTT35A
EBNPHFTT27A	Cardiorespiratory Rehabilitation	EBNPHKTT24A	EBNPHFTT25A	
EBNPHFTT28A	Rehabilitation in Neurology	EBNPHFTT38A		

\* „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



# SCHOOL OF PH.D. STUDIES



*School of  
Ph.D. Studies*

## History and basic information

A decade ago *The Act of Higher Education, 1993*, charged universities with preparing students for their academic degree as well as awarding them doctoral (Ph.D.) degrees. This decision galvanized the scientific communities and schools of doctoral studies were founded one after the other in all Hungarian universities.

At that time professor Péter Sótornyai 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 university, in importance comparable to that of a Faculty. The motivation of the students is multiplied by the presence and interaction of experienced tutors.

The basic unit of this complex teaching-learning team is one student - one tutor. Together they enjoy a high level of freedom and autonomy in running their research, that is within the limits set by the Rules and Regulations.

The first doctoral programs in 1993 were formed sporadically around the greatest personalities of the university. Each program was comprised of five to ten subprograms, the majority of which consisted of various topics or themes. It was the leader of the program who was responsible for the advance of each tutor and student. The number of the study programs was already around 25 when the Ministry of Education decided to restructure the doctoral training. A small number of branches of science were nominated and now all programs must be grouped under the umbrella of larger organizations called Doctoral Schools (the Hungarian abbreviation is TDI). The programs have retained their independence, however, the councils of the doctoral schools became the real administrative centres of the doctoral training.

Currently the School of Ph.D. Studies at Semmelweis University has eight Doctoral Schools. Basic Medicine, Clinical Medicine, Pharmaceutical Sciences, Mental Health Sciences, Sport Sciences, Neurosciences, Molecular Medicine and Pathological Sciences. Each School comprises of 2 to 12 study programs, the total number of which is above 40 (see *detailed information on programs and Doctoral Schools*).

By involving the greatest authorities from within, as well as from outside the university, the School of Ph.D. Studies has from the beginning been able to preserve the quality and prestige of the degree. By the end of December 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.

### **Dr. Ágoston Szél**

President of the Doctoral Council

## **President of the Doctoral Council**

---

**Dr. Ágoston Szél**

**Dept. of Human Morphology and Developmental Biology**

H-1094 Budapest, Tűzoltó u. 58.

Tel: +(36-1) 215-6920

E-mail: szel@ana2.sote.hu

## **Vice President of the Doctoral Council**

---

**Dr. Gábor Makara**

**Institute of Experimental Medicine of the Hungarian Academy of Sciences**

H-1083 Budapest, Szigony u. 43.

Tel: +(36-1) 210-9950

E-mail: makara@koki.hu

## **President of the Doctoral Student's Union**

---

**Zoltán Cserhádi**

**Department of Behavioural Sciences**

H-1089 Budapest, Nagyvárad tér 4.

Tel: +(36-1) 210-2930

E-mail: csirzol@yahoo.com

## **Doctoral Secretariat**

---

Office: Budapest, VIII., Üllői út 26. ground floor 14.

Phone: (36-1) 266-2343, (36-1) 266-7483

Fax: (36-1) 317-4888

Emőke Márton	Head	marton@phd.sote.hu	(36-1) 459-1500/5286
Anna Marádi (Pintérmé)	Financial adviser	zola@phd.sote.hu	(36-1) 459-1500/5162
Anita Lengyel	Adviser	ancsa@phd.sote.hu	(36-1) 459-1500/5387
Tímea 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:	Monday:	Closed
	Tuesday,	8.30 a.m. - 12.00 a.m.
	Thursday,	
	Friday:	
	Wednesday:	13.00 p.m. - 16.00 p.m.

## Members of the Doctoral Council

---

**Dr. Ágoston Szél**

**President** (E-mail: szel@ana2.sote.hu)

**Dr. Gábor Makara**

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 Rác**

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 Cserhádi**

President of the Doctoral Students' Union

**Dr. Éva Csákvári**

Ministry of Education

## Permanent Committees of the Doctoral Council

---

### Educational Board

**President: Dr. Gábor Makara**

Institute of Experimental Medicine of the Hungarian Academy of Sciences

H-1083 Budapest, Szigony u. 43.

Tel: +(36-1) 210-9950

E-mail: makara@koki.hu

### Quality Control and Evaluation Board

---

**President : Dr. János Rigó**

1st Dept. of Obstetrics and Gynaecology

H-1088 Budapest, Baross u. 27.

Tel: +(36-1) 266-0473/4216

E-mail: rigo@noi1.sote.hu

Committee of Foreign Affairs

**President: Dr. László Rosivall**

Dept. of Pathophysiology  
H-1089 Budapest, Nagyváradi tér 4.  
Tel: +(361) 210-2956/6121  
E-mail: roslasz@net.sote.hu  
Sótonyi Péter Tamás

---

**Committee of Disciplinary Procedures**

**President: Dr. Árpád Fazekas**

Dept. of Conservative Dentistry  
H-1088 Budapest, Mikszáth Kálmán tér 5.  
Tel: +(361) 318-0959  
E-mail: fazekas@konfogsote.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: rosvall@net.sote.hu

<b>Programs</b>	<b>Co-ordinators</b>
Biological Effects of Ionizing and Non-Ionizing Radiations	Prof. Györgyi Rontó MD, PhD, D.Sc
Cardiovascular Disorders: Physiology and Clinic of Ischaemic Circulatory Diseases	Dr. Béla Merkely MSc, PhD
Clinical and Experimental Cardiology/Atherosclerosis	Prof. Lajos Szollár MD, PhD, D.Sc
The Mechanisms of Normal and Pathologic	Prof. Emil Monos MD, PhD, DSc
Functions of the Circulatory System Physiology and Pathophysiology of the Regulation of Fluids and Electrolyte Homeostasis	Prof. László Rosivall MD, PhD, DSc

**II. CLINICAL MEDICINE**

Chairman: **Prof. Zsolt Tulassay** MD, PhD, DSc

E-mail: tulassay@bel2.sote.hu

<b>Programs</b>	<b>Co-ordinators</b>
Clinical Haematology	Prof. Lídia Sréter MD, PhD, DSc
Dental Research	Prof. Árpád Fazekas MD, PhD, DSc
Fetal and Neonatal Medicine	Prof. Zoltán Papp MD, PhD, DSc
Gastroenterology	Prof. Zsolt Tulassay MD, PhD, DSc
Ophthalmology	Prof. Ildikó Süveges MD, PhD, DSc
Oxidative Stress and Immunological Reaction in Liver Diseases	Prof. János Fehér MD, PhD, DSc
Physiology and Pathology of the Musculoskeletal System	Prof. Miklós Szendrői MD, PhD, DSc
Prevention of Chronic Diseases in Childhood	Prof. Tivadar Tulassay MD, PhD, DSc
Pulmonology	Prof. Pál Magyar MD, PhD, DSc
Radiotherapy	Prof. Olga Ésik MD, PhD, DSc
Hormonal regulations	Prof. Károly Rác MD, PhD, DSc
Urology	Prof. Imre Romics MD, PhD, DSc
Clinical and Experimental Research in Angiology	Prof. György Acsády MD, PhD, DSc
Dermatology and Venereology	Prof. Sarolta Kárpáti MD, PhD, DSc
Molecular Genetics, Pathomechanism and Clinical Aspects of Metabolic Disorders	Prof. Péter Lakatos MD, PhD, DSc

**III. PHARMACEUTICAL SCIENCES**

Chairwoman: Prof. Éva Szóke MSc, PhD

E-mail: szokee@drog.sote.hu

<b>Programs</b>	<b>Co-ordinators</b>
Experimental and Clinical Pharmacology	Prof. Kálmán Magyar MD, PhD, DSc
Modern Trends in Pharmaceutical Scientific Research	Dr. István Antal MSc, PhD

**IV. MENTAL HEALTH SCIENCES**

Chairman: **Prof. István Bitter** MD, PhD, DSc

E-mail: bitter@psych.sote.hu

Programs	Co-ordinators
Clinical Psychology and Psychiatry	Prof. László Tringer MD, PhD, DSc
Behavioral Sciences	Prof. Mária Kopp MD, PhD, DSc

**V. SPORT SCIENCES**

Chairman: **Prof. József Tihanyi** MD, DSc, PhD

E-mail: tihanyi@mail.hupe.hu

Programs	Co-ordinators
Training and Adaption	Prof. Gábor Pavlik MD, PhD, DSc
Physical Training, Regulation, Metabolism	Prof. Róbert Frenkl MD, PhD, DSc
Sport and Social Sciences	Prof. Gyöngyi Szabó MD, PhD, DSc

**VI. NEUROSCIENCES**

Chairman: **Prof. Miklós Réthelyi** MD, PhD, DSc

E-mail: rethelyi@ana.sote.hu

Programs	Co-ordinators
Neuromorphology and Cell Biology	Prof. Miklós Palkovits MD, PhD, DSc
Neuroendocrinology	Prof. Zsolt Liposits MD, PhD, DSc
Functional Neurosciences	Prof. E. Szilveszter Vizi MD, PhD, DSc
Clinical Neurosciences	Prof. Zoltán Nagy MD, PhD, DSc
Clinical Neurological Research	Prof. Imre Szirmai MD, PhD, DSc
Biological Psychiatry	Prof. Gábor Faludi MD, PhD, DSc



**VII. MOLECULAR MEDICINE**

Chairman: **Prof. József Mandl** MD, PhD, DSc

E-mail: mandl@puskin.sote.hu

<b>Programs</b>	<b>Co-ordinators</b>
Basis of Human Molecular Genetics and Gene Diagnostics	Prof. András Falus MD, PhD, DSc
Cellular and Molecular Physiology	Prof. András Spät MD, PhD, DSc
Embryology, Theoretical, Experimental and Clinical Developmental Biology	Prof. Imre Oláh MD, PhD, DSc
Immunology	Prof. Péter Gergely MD, PhD, DSc
Pathobiochemistry	Prof. József Mandl MD, PhD, DSc

**VIII. PATHOLOGICAL SCIENCES**

Chairman: **Prof. László Kopper** MD, PhD, DSc

E-mail: kopper@korb1.sote.hu

<b>Programs</b>	<b>Co-ordinators</b>
Alterations of Cells, Fibres and Extracellular and Diagnostic Pathomorphological Studies Matrix in the Course of Heart and Vascular Diseases and in Certain Tumours Experimental and Diagnostic Pathomorphological Studies	Prof. Zsuzsanna Schaff MD, PhD, DSc
Experimental Oncology	Prof. László Kopper MD, PhD, DSc
Public Health Science	Prof. Péter Sótónyi MD, PhD, DSc
Study of the Immunobiological Effects of Micro-organisms and of their Components at Molecular and Cellular Level and in the Microorganisms	Prof. Károly Nagy MSc, PhD
Clinical and experimental transplantation Health Sciences	Prof. Jenő Járay MD, PhD, DSc Prof. István Szabolcs MD, PhD, DSc

**NOTE**

## NOTE

## NOTE