BULLETIN

UNIVERSITY OF DEBRECEN

ACADEMIC YEAR 2016/2017

FACULTY OF MEDICINE

Coordinating Center for International Education

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CHAPTER 1
WELCOME FROM THE DEAN

Welcome from the Dean

The history of higher education in Debrecen goes back to the 16th century. The city established the Calvinist College of Debrecen in 1538. The College became soon the most important cultural center of the whole country, where a great number of writers, scientists and politicians received their education. In the 18th century the schools of Law and Theology were founded and although no separate School of Medicine existed, physicians were also trained in the College. The Faculty of Medicine is rooted in this spiritual heritage. The present day Debrecen is also famous for its schools and higher educational establishments. The Faculty of Medicine of the University of Debrecen was Central Europe's first campus medical school. It was in the year of the millennium (1896) of Hungary's foundation when the establishment of a modern University was decided upon in Debrecen. The University was officially inaugurated on October 23, 1918 and at that time consisted of four faculties: Arts, Science, Theology and Medicine. The Faculty of Medicine became an independent University Medical School under the supervision of the Ministry of Health in 1951. In 2000 the formerly independent universities of Debrecen formed the University of Debrecen, therefore today the Faculty of Medicine is part of the University of Debrecen. It has 22 departments of basic sciences and 25 clinical departments specializing in various fields e.g. clinical chemistry, internal medicine, surgery, orthopedics, radiology, neurology, neurosurgery, psychiatry, pediatrics, obstetrics and gynecology, cardiology and pulmonology, otorhino-laryngology, dermatology, ophthalmology, stomatology and urology. Our hospitals serve as city hospitals for Debrecen therefore students may also obtain their clinical training here.

The Faculty of Medicine started MD training in English in 1987 with 49 students. The current number of students in the English Program exceeds 1500. Besides educating medical students, the Faculty also coordinates the BSc in Medical Diagnostics and MSc programs in Clinical Laboratory Research, Molecular Biology and Nutrition.

The curriculum described in this Bulletin provides a firm background for a future physician. Learning all these subjects requires highly motivated, devoted students. Please take your studies seriously, and enjoy the process of becoming a medical doctor.

Best wishes,

László Mátyus

Dean, Faculty of Medicine

CHAPTER 2
INTRODUCTION

The aim of the University of Debrecen is to become a university of medical sciences committed to the prevention and restoration of health of the people, not only in its region but in the entire country. In the past two decades both medical science and health care have entered a new era: the medical science of the 21st century. Molecular medicine is opening up and new possibilities are available for the diagnosis, prevention, prediction and treatment of the diseases. One can witness such a progress in medical sciences that has never been seen before. Modern attitudes in health care should be enforced in practice, including therapeutical approaches that consider the explanation and possible prevention of diseases, and attempt to comprehend and take the human personality into consideration. These approaches demand the application of the most modern techniques in all fields of the medical education.

All curricula wish to meet the challenges of modern times and they embody some very basic values. They are comprehensive; they take into consideration the whole human personality (body and soul) in its natural and social surroundings; and they are based upon the best European humanistic traditions. Moreover, all curricula prepare students for co-operation and teamwork.

With respect to education, both students and teachers are inspired to acquire higher levels of professionalism, precision, and problem solving skills, upon which the foundations of specialist training and independent medical practice can be built. This approach enables the assimilation of new scientific developments, facilitating further education and the continuous expansion of knowledge. The interplay of these factors ensures the ability to understand and handle the changing demands of health care.

With respect to research, the faculty members continuously acquire, internalize and subsume new knowledge, especially concerning the genesis, possible prevention and treatment of diseases. Moreover, new information aimed at improving, preserving and restoring the health of the society is also absorbed. The University of Debrecen is already internationally recognized in the fields of both basic and clinical research, and the clinicians and scientists of the University are determined to preserve this achievement. Special attention is given to facilitate and support the close co-operation of researchers representing basic science and clinical research, and/or interdisciplinary studies.

With respect to therapeutic practice, the main objective is to provide high quality, effective, up to date and much devoted health care to all members of the society, showing an example for other medical institutions in Hungary. One of the primary tasks is to continuously improve the actual standards of the diagnostic and therapeutic procedures and techniques, and to establish regional or even nationwide protocols.

With respect to serving the community, all faculty members wish to play a central role in shaping the policies of the health service; both within the region and in Hungary. They also want to ensure that sufficient number of medical doctors, dentists and other health care experts with university education is provided for the society.

With respect to the development, all employees strive for reinforcing those features and skills of the lecturers, scientists, medical doctors, health care professionals, collaborators and students which are of vital importance in meeting the challenges of medical education, research and therapy of the 21st century. These include humanity, empathy, social sensitivity, team-spirit, creativity, professionalism, independence, critical and innovative thinking, co-operation and management.

The organizational structure, including the multi-faculty construction of the institution, is a constantly improving, colorful educational environment, in which co-operation is manifest between the individual faculties and colleges, the various postgraduate programs as well as the molecular- and medical biology educations.

HIGHER EDUCATION IN DEBRECEN

A Brief History

1235: First reference to the town of Debrecen in ancient charters.
1538: Establishment of the “College of Reformed Church” in Debrecen.
1567: Higher education begins in the College.
1693: Declaration of Debrecen as a “free royal town”.
1849: Debrecen serves as the capital of Hungary for 4 months.
1912: Establishment of the State University of Debrecen comprising the Faculties of Arts, Law, Medicine and Theology.
1918: Inauguration of the Main Building of the Medical Faculty by King Charles IV of Hungary.
1921: The Medical Faculty becomes operational.
1932: Completion of buildings of the campus.
1944: Although during the Second World War, Debrecen became the capital of Hungary again (for 100 days), the University itself is abandoned for a while.
1949: The only year when the University has five faculties.
1950: The Faculty of Law idles; the Faculty of Science is established.
1951: The University is split up into three independent organizations: Academy of Theology, Medical School, Lajos Kossuth University of Arts and Sciences.
1991: The “Debrecen Universitas Association” is established.
1998: The “Federation of Debrecen Universities” is founded.
2000. The federation is transformed into the unified “University of Debrecen” with all the relevant faculties and with some 20,000 students.

Debrecen is the traditional economic and cultural center of Eastern Hungary. In the 16th century Debrecen became the center of the Reformed Church in Hungary and later it was referred to as the "Calvinist Rome". The 17th century was regarded as the golden age of the city because Debrecen became the mediator between the three parts of Hungary: the part under Turkish occupation, the Kingdom of Hungary and the Principality of Transylvania. For short periods of time, Debrecen served twice as the capital of Hungary. Nowadays, with its population of approximately a quarter of a million, it is the second largest city in Hungary.

Debrecen is a unique city: although it has no mountains and rivers, its natural environment is rather interesting. One of the main attractions and places of natural uniqueness in Hungary is Hortobágy National Park, known as “puszta" (“plain”), which begins just in the outskirts of Debrecen. This is the authentic Hungarian Plain without any notable elevations, with unique flora and fauna, natural phenomena (e.g. the Fata Morgana), and ancient animal husbandry traditions. The region is unmatched in Europe, no matter whether one considers its natural endowments or its historic and ethnographic traditions. A very lovely part of Debrecen is the “Nagyerdő” (“The Great Forest”), which is a popular holiday resort. Besides a number of cultural and tourist establishments, luxurious thermal baths and spas, Nagyerdő accommodates the University campus too.

The history of higher education in Debrecen goes back to the 16th century when the College of the Reformed Church was established. The University Medical School of Debrecen has its roots in this spiritual heritage. It was in the year of the millennium of the establishment of Hungary (1896) when the foundation of the present University was decided. The University of Debrecen was established in 1912, initially having four faculties (Faculties of Arts, Law, Medicine and Theology). The University was officially inaugurated by King Charles IV of Hungary on October 23rd, 1918.

The educational activity at the University started in 1924, although the construction of the whole University was completed only in 1932. In 1951 the Faculty of Medicine became a self-contained, independent Medical University for training medical doctors.

The special training of dentists began in 1976. As a further development the University Medical School established the Health College of Nyíregyháza in 1991. In 1993, as part of a nationwide program, the University was given the rights to issue scientific qualifications and new Ph.D. programs were also launched. Several new programs (e.g. the training of molecular biologists, pharmacists, general practitioners) were commenced in the '90s. The Faculty of Public Health was established in 1999, while the Faculty of Dentistry was founded in 2000.
The Faculty of Medicine celebrated the 90th anniversary of its foundation in October 2008 with a highly successful international scientific conference.

Education at the University of Debrecen
Debrecen, the second largest city of Hungary, is situated in Eastern Hungary. Students enrolled in the various programs (e.g. Medicine, Dentistry, Pharmacy, Public Health, Molecular Biology, etc.) study on a beautiful campus situated in the area called "Great Forest".
The Hungarian Government gives major priorities to the higher education of health sciences in its higher education policy. One of these priorities is to increase the ratio of college level training forms within the Hungarian higher education system. The governmental policy wishes to implement conditions in which the whole health science education system is built vertically from the lowest (post-secondary or certificate) to the highest (PhD-training) levels. In fact, this governmental policy was the reason behind the establishment of the new Health Science Education Center within the Federation of Debrecen Universities (DESZ), based partially on the intellectual resources of the University of Debrecen. The new programs – with specialized training for paramedics – will help to correct the balance of the Hungarian labor-market that became rather unsettled in the past few decades.
The Act of Higher Education (1993) has restored the rights of the medical universities to award postgraduate degrees and residency, and permission was also given to license Physicians' procedures. This kind of training required a new structure, a new administrative apparatus, and a suitable training center. The new residency programs were commenced in 1999.
The introduction of the credit system, starting in September 2003, has been mandatory in every Hungarian university, helping the quantitative and qualitative evaluation of the students' achievements. Admission requirements for Hungarian students are defined at national level, and they are applicable for every student wishing to be enrolled into the Medicine or Dentistry programs.
International students must pass an entrance exam in biology and (depending on their preference) in physics or chemistry. In some special cases it may be possible for the candidates to apply for transfer to higher years on the basis of their previous studies and achievements. International students study in English language. Entrance for certain courses of the Health College is also possible on the basis of a special evaluation (scoring) and an entrance interview.
The syllabuses and classes of all courses correspond to European standards. The total number of contact hours in medical education is over 5,500, which can be divided into three main parts: basic theoretical training (1st and 2nd year), pre-clinical subjects (3rd year) and clinical subjects (4th and 5th year) followed by the internship (6th year). The proportion of the theoretical and practical classes is 30% to 70%; whereas the students/instructors ratio is about 8/1. The first two years of dentistry education are similar to the medicine program, but the former contains a basic dental training that is followed by a three-year-long pre-clinical and clinical training. Besides the medicine and dentistry programs, there are several other courses also available, including molecular biology. The various Health College courses include more and more new curricula.
The Medicine program delivered in English and intended for international students was commenced in 1987; whereas the Dentistry and Pharmacy programs for international students started in 2000 and 2004, respectively. The curriculum of the English language Medicine program meets all the

requirements prescribed by the European medical curriculum, which was outlined in 1993 by the Association of Medical Schools in Europe. Compared to the Hungarian program, the most important differences are:
-Hungarian language is taught,
-More emphasis is laid upon the tropical infectious diseases (as parts of the "Internal Medicine" and "Hygiene and Epidemiology" courses).
Otherwise, the English language curriculum is identical with the Hungarian one. The 6th year of the curriculum is the internship that includes Internal Medicine, Pediatrics, Surgery, Obstetrics and Gynecology, Neurology, and Psychiatry. The completion of these subjects takes at least 47 weeks, although students are allowed to finish them within a 24-month-long period. The successfully completed internship is followed by the Hungarian National Board Examination. Just like the rest of the courses, the internship is also identical in the Hungarian and English programs.
A one-year-long premedical (Basic Medicine) course, which serves as a foundation year, is recommended for those applicants who do not possess sufficient knowledge in Biology, Physics and Chemistry after finishing high school.
After graduation, several interesting topics are offered for PhD training, which lasts for three years. If interested, outstanding graduates of the English General Medicine and Dentistry programs may join these PhD courses ("English PhD-program"). Special education for general practitioners has been recently started and a new system is in preparation now for the training of licensed physicians in Debrecen.

The accredited PhD programs include the following topics:
-Molecular and Cell Biology; Mechanisms of Signal Transduction
-Microbiology and Pharmacology
-Biophysics
-Physiology-Neurobiology
-Experimental and Clinical Investigations in Hematology and Hemostasis
-Epidemiological and Clinical Epidemiological Studies
-Cellular- and Molecular Biology: Study of the Activity of Cells and Tissues under Healthy and Pathological Conditions
-Immunology
-Experimental and Clinical Oncology
-Public Health
-Preventive Medicine
-Dental Research

The PhD-programs are led by more than 100 accredited, highly qualified coordinators and tutors.

Medical Activity at the Faculty of Medicine
The Faculty of Medicine is not only the second largest medical school in Hungary, but it is also one of the largest Hungarian hospitals, consisting of 49 departments; including 18 different clinical departments with more than 1,800 beds. It is not only the best-equipped institution in the area but it also represents the most important health care facility for the day-to-day medical care in its region.
The Kenézy Gyula County Hospital (with some 1,400 beds) is strongly affiliated with the University of Debrecen and plays an important role in teaching the practical aspects of medicine. There are also close contacts between the University and other health care institutions, mainly (but not exclusively) in its closer region. The University of Debrecen has a Teaching Hospital Network consisting of 24 hospitals in Israel, Japan and South Korea.
It is also of importance that the University of Debrecen has a particularly fruitful collaboration with

the Nuclear Research Institute of the Hungarian Academy of Sciences in Debrecen, allowing the coordination of all activities that involve the use of their cyclotron in conjunction with various diagnostic and therapeutic procedures (e.g. Positron Emission Tomography 'PET').

Scientific Research at the Faculty of Medicine

Scientific research is performed both at the departments for basic sciences and at the laboratories of clinical departments. The faculty members publish about 600 scientific papers every year in international scientific journals. According to the scientometric data, the Faculty is among the 4 best of the more than 80 Hungarian research institutions and universities. Lots of scientists reach international recognition, exploiting the possibilities provided by local, national and international collaborations. Internationally acknowledged research areas are Biophysics, Biochemistry, Cell Biology, Immunology, Experimental and Clinical Oncology, Hematology, Neurobiology, Molecular Biology, Neurology, and Physiology. The scientific exchange program involves numerous foreign universities and a large proportion of the faculty members are actively involved in programs that absorb foreign connections (the most important international collaborators are from Belgium, France, Germany, Italy, Japan, the UK and the USA).

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CHAPTER 5
BASIC MEDICINE COURSE

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CHAPTER 6
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CHAPTER 7
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Social Educator	Ms.	Szilvia Baksa M.A.
PhD Student	Ms.	Judit Horváth M.D.
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	Ms.	Edina Cserép M.D.
		Attila Kovács
	Ms.	Erzsébet Magyar M.D.
	Ms.	Katalin Tolvay M.D.
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		Zoltán Dézsi M.D.
		Péter Horkay M.D.
		Árpád Kiss M.D.
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		László Molnár M.D.
		Levente Molnár M.D.
		András Nagy M.D.
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		Dániel Rezes M.D.
		Zsigmond Varga M.D.
Surgeons of the Kenézy Hospital		Árpád Barkaszi M.D.
		Miklós Bíró M.D.
		Aurél Bogdán M.D.
		Subuh Deeb Mahmoud M.D.
		Szabolcs Gorzsás M.D.
		Sándor Imre Kiss M.D.
		László Kiss M.D.
		Ádám Lőrincz M.D.
	Ms.	Katalin Muraközy M.D.
		Zoltán Németi M.D.
		Zoltán Domokos Pap M.D.
		József Papp M.D.
Resident		Péter Berényi M.D.
		Károly Elek M.D.
		Márton Árpád Fésüs M.D.
		László Gubik M.D.
		Ádám Kristóf Gulyás M.D.
		Gergely Huszanyik M.D.

	Dávid Kovács M.D.
	Csaba Körei M.D.
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	Krisztián Szegedi M.D.
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CHAPTER 8
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	Ms.	Edit Hrubi D.M.D.
	Ms.	Rita Mohácsi D.M.D.
	Ms.	Anita Pétercsák D.M.D.
	Ms.	Márta Szegedi D.M.D.
Scientific Officer		Farkas Kerényi M.Sc.
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		István Lampé D.M.D.
		László Póti D.M.D.
Resident	Ms.	Andrea Aranyász D.M.D.
	Ms.	Sára Balogh D.M.D.
	Ms.	Zsófia Koncz D.M.D.
	Ms.	Adrienn Magyar D.M.D.
		Gábor Suta D.M.D.
	Ms.	Katalin Szegény D.M.D.
Chemist	Ms.	Tünde Rente M.Sc.
Molecular Biologist	Ms.	Ágnes Bartháné Szabó M.Sc.
		Ferenc Tóth M.Sc.
Scientific Advisor		István Tombácz M.Sc., Ph.D.
Academic Advisor		István Lampé D.M.D.

INSTITUTE OF BEHAVIOURAL SCIENCES, FACULTY OF PUBLIC HEALTH

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Associate Professor, Head of Division of Humanities For Health Care		Attila Bánfalvi M.A., Ph.D., C.Sc.
Professor Emeritus		Péter Molnár M.D., D.Sc.
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Assistant Professor	Ms.	Mónika Andrejkovics M.A., Ph.D.
		Péter Kakuk M.A., Ph.D.
	Ms.	Judit Molnár M.A., Ph.D.
		Roland Tisljár M.A., Ph.D.
Assistant Lecturer		János Kristóf Bodnár M.A., Ph.D.
		Sándor Kőmüves M.A., Ph.D.
	Ms.	Eszter Tisljár - Szabó M.A., Ph.D.
Psychologist	Ms.	Beáta Kovács-Tóth M.A.
Invited Lecturer		Bence Döbrőssy M.A.
Intern	Ms.	Bernadett Bodor M.Sc.
	Ms.	Katalin Mária Dallos M.Sc.
	Ms.	Márta Erdei M.Sc.
	Ms.	Bernadett Hidegh M.Sc.
	Ms.	Éva Knapek M.Sc.
	Ms.	Katalin Merza M.A.
	Ms.	Erika Nagy M.Sc.
	Ms.	Anna Eszter Rácz M.Sc.
PhD Student		Dániel Balajthy M.Sc.
	Ms.	Amanda Illés M.Sc.
		Szabolcs Kató M.Sc.
	Ms.	Orsolya Micskei M.Sc.
	Ms.	Brigitta Munkácsi M.Sc.
	Ms.	Anikó Nagy M.Sc.
Academic Advisor	Ms.	Mónika Andrejkovics M.A., Ph.D. (4th year, Behavioural Medicine, Behavioural Science Final Exam)

		Attila Bánfalvi M.A., Ph.D., C.Sc. (3rd year, Medical Anthropology, Medical Sociology)
		Péter Kakuk M.A., Ph.D. (4th year, Bioethics)
	Ms.	Judit Molnár M.A., Ph.D. (3rd year Medical Psychology, 5th year Pharmaceutical Psychology)
		Roland Tisljár M.A., Ph.D. (1st year, Basics of Behavioural Sciences, Communication)

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Assistant Lecturer	Ms.	Anna Nánási M.D.
	Ms.	Judit Szidor M.D.
	Ms.	Hajnalka Tamás M.D.
	Ms.	Tímea Ungvári M.Sc.
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Clinical Specialist	Ms.	Emőke Lengyel M.D.
	Ms.	Izabella Szilágyi M.D.
	Ms.	Erzsébet Tóth M.D.
Undergraduate educational officer	Ms.	Tímea Ungvári M.Sc.
Postgraduate educational officer	Ms.	Anna Nánási M.D.
Other Invited Lecturers		István Erdei M.D.
		János Hintalan M.D.
	Ms.	Eszter Kovács M.D.
	Ms.	Hajnalka Márton M.D.
		Csaba Sárkány M.D.
		Attila Simay M.D., Ph.D. (Hon. Associate Professor)
		Péter Szerze M.D.

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Associate Professor, Head of Biostatistics and Epidemiology Division		János Sándor M.D., Ph.D.
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Associate Professor, Head of Dep. of Hygiene and Infection Control	Ms.	Piroska Orosi M.D., Ph.D.
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	Ms.	Helga Bárdos M.D., M.Sc., Ph.D.
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CHAPTER 9
UNIVERSITY CALENDAR

UNIVERSITY CALENDAR FOR MEDICINE PROGRAM 2016/2017 ACADEMIC YEAR
(for the other programs please visit our website's downloads menu)

CRASH COURSE OF HUNGARIAN LANGUAGE: August 29 - September 9, 2016
OPENING CEREMONY: September 11, 2016
GRADUATION CEREMONY: September 17, 2016; December 2016; June 2017

1st SEMESTER

Year	**Course**	**Examination Period**
Basic Medicine Course	September 12 - December 23, 2016 (15 weeks)	December 27, 2016 - February 10, 2017 (7 weeks)
1st year Medicine 2nd year Medicine 3rd year Medicine	September 12 - December 23, 2016 (15 weeks)	December 27, 2016 - February 10, 2017 (7 weeks)
4th year Medicine 5th year Medicine	September 12 - December 16, 2016 (10 weeks + 4 weeks block practice)	December 19, 2016 - February 10, 2017 (7+1 weeks)

2nd SEMESTER

Year	**Course**	**Examination Period**
BMC	February 13 - May 26, 2017 (15 weeks)	May 29 - June 23, 2017 (4 weeks)
BMC II	January 9 - June 23, 2017 (24 weeks)	June 26 - July 14, 2017 (3 weeks)
1st year Medicine 2nd year Medicine 3rd year Medicine	February 13 - May 26, 2017 (15 weeks)	May 29 - July 14, 2017 (7 weeks)
4th year Medicine 5th year Medicine	February 13 - May 19, 2017 (10 weeks+4 weeks block practice)	4th year: May 22 - July 14, 2017 (7+1 weeks) 5th year: May 22 - July 21, 2017 (8+1 weeks)

SUMMER HOSPITAL PRACTICE

YEAR	DATE IN 2017
1st year Medicine and 2nd year Medicine	July 17 - August 11, 2017 or August 14 - September 8, 2017 (4 weeks)
3rd year Medicine	July 17 - August 4, 2017 or August 7 - August 25, 2017 (3 weeks)
4th year Medicine (freely chosen)	July 17 - August 4, 2017 or August 7 - August 25, 2017 (3 weeks)

CHAPTER 10
ACADEMIC PROGRAM FOR THE BASIC MEDICINE COURSE

Basic Medicine Course (BMC, Premedical Studies)
Duration of studies: 1 year (2 semesters)

The one-year premedical Basic Medicine Course is recommended to those students who do not have sufficient knowledge in Biology, Physics and Chemistry from high school. The requirements in these premedical science subjects are rigorous, thus it is recommended that students who need a period of preparation prior to beginning the General Medicine, Dentistry or Pharmacy Program join the Basic Medicine Course. Students successfully completing the course are directly admitted to their chosen program. In addition to the Basic Medicine Course starting each September, our University launches an Intensive BMC in January as well.

Class Behavior

Students must not use cell phones to talk or text during class. Cell phones must be switched off or kept in silence mode during class. In seminars, students will be expected to participate in seminar discussions. Students are encouraged to ask questions related to the topic of the lectures discussed, and participate in solving problems related to the topic of the seminar. Some professors will ask for students to volunteer information, but some professors call on students randomly. It is, thus, a good idea to come to class prepared so as not to be embarrassed in front of the class. Students should not disrupt the class by talking to each other. If one continues to disrupt the class, the student may be asked to leave. The usage of electronic devices, textbooks and any form of interaction between students during the tests is strictly forbidden. Electronic devices (cell phones, tablets, dictionaries, etc.), except for approved simple calculators, must not be within the reach (in pocket, in the desk, etc.) of students during tests. It is the students' responsibility to stow these items before the test begins without specific warning by the supervising teachers. Violation of these above mentioned regulations results in an immediate and unconditional dismissal from the program.

Requirements

The 2-semester course consists of lectures and seminars. Attending lectures is strongly recommended, attendance of seminars is compulsory and recorded. Everyone must attend the seminars with the group designated by the Registrar's Office.

Absence can significantly affect your understanding and can have serious implications of progression in your studies. One might have a maximum of three seminar absences per semester to have the opportunity to get exemption. Students missing 4 seminars per semester cannot be exempted from the End of Semester Examination (ESE) or Final Examination (FE), regardless of their score reached on the Self Control Tests. Students missing 5 or more seminars per semester are dismissed from the course. Missed seminars cannot be made up, unless one obtains prior permission to be absent.

The knowledge of students will be tested 4 times during each semester using a written test system by **Self Control Tests (SCT).** The first semester is ended with an **End of Semester Examination** (ESE) covering the topics of all lectures and seminars of the first semester. Three dates will be set for the ESE during the winter examination period. Unsuccessful students may repeat the ESE twice (B and C chances). Non-repeater students who fail even the 3rd ESE (C

chance) may continue their study in the second semester however they lose their chance to be exempted from the final examination and to receive bonus points. Exam exemption and bonus point policy is used to improve the students' performance on SCTs. Exact details of these policies will be described below. To be eligible for bonus points, students must either get exemption from the ESE or pass it with a score of at least 60%. Students repeating the course must successfully pass the first semester either with exemption or at least with a score of 60% of ESE, otherwise their studies will be terminated. It is not compulsory to take the ESE, if one gets exemption under the following circumstances:
- one's average score of the three best first semester SCTs is at least 75%, AND
- (s)he successfully completed all the SCTs at least with 40% score, AND
- (s)he has a maximum of 3 seminar absences for each subject in the first semester.

The course ends with a **Final Exam (FE)** covering the whole material of the first and second semesters. A minimum of four FE dates will be set during the summer examination period. Unsuccessful students may repeat the FE twice (B and C chances, and the latter ends up with an oral examination part). Exemption from FE is offered for students who achieve excellent academic performance during their studies on the following base:
- the average score of the six best SCTs (out of 8) of the two semesters is at least 75%, AND
- passed all the SCTs with at least 40%, AND
- (s)he has a maximum of 3 seminar absences for each subject per semester.

OR
- the average of the ESE score taken 3 times plus the scores of the 3 best SCTs in the 2nd semester is at least 75%, AND
- passed all the SCTs with at least 40% in the 2nd semester, AND
- (s)he has a maximum of 3 seminar absences for a given subject per semester.

Bonus points will be added to the FE score (in %) of eligible students and calculated as follows:

The average of the ESE score three times and the best 3 2nd semester SCTs **OR** the average of the best 6 SCTs	Bonus points
	%
51-52	1
53-55	2
56-58	3
59-61	4
62-64	5
65-67	6
68-70	7
71-73	8
74	9

Students who could not meet the above described conditions for exemption during the two semesters must sit for the FE from the whole material of the first and second semesters. The participation shall be preceded by ID confirmation (i.e. student's card, passport or driving license) before all forms of tests.
Self Control Tests, End of Semester Exams, and Final Exams will be assessed as follows.

Percentage (%)	Mark
0 - 59.99:	fail (1)
60.00 - 69.99:	pass (2)
70.00 - 79.99:	satisfactory (3)
80.00 - 89.99:	good (4)
90.00 - 100:	excellent (5)

Absence for any reason counts as 0%.

Course coordinator: Dr. Beáta Lontay, Department of Medical Chemistry

Subject: **INTRODUCTION TO BIOLOGY I.**
Year, Semester: Basic Medicine Course, 1st
Number of teaching hours:
Lecture: **60**
Seminar: **30**

1st week:
Lecture: The chemistry of life 1.
The chemistry of life 2.
Proteins, carbohydrates and lipids 1.
Proteins, carbohydrates and lipids 2.

2nd week:
Lecture: Proteins, carbohydrates and lipids 3.
Proteins, carbohydrates and lipids 4.
Nucleic acids and the origin of life 1.
Nucleic acids and the origin of life 2.

3rd week:
Lecture: Nucleic acids and the origin of life 3.
Cells: the working units of life 1.
Cells: the working units of life 2.
Cells: the working units of life 3.

4th week:
Lecture: Cells: the working units of life 4.
Energy, enzymes and metabolism 1.
Energy, enzymes and metabolism 2.
Cell membranes 1.

5th week:
Lecture: Cell membranes 2.
Cell membranes 3.
Cell membranes 4.
Pathways that harvest chemical energy 1.
Self Control Test

6th week:
Lecture: Pathways that harvest chemical energy 2.
Pathways that harvest chemical energy 3.
Pathways that harvest chemical energy 4.
Pathways that harvest chemical energy 5.

7th week:
Lecture: Pathways that harvest chemical energy 6.
Cell cycle and cell division 1.
Cell cycle and cell division 2.
Cell cycle and cell division 3.

8th week:
Lecture: Cell cycle and cell division 4.
Cell cycle and cell division 5.
Inheritance, genes and chromosomes 1.
Inheritance, genes and chromosomes 2.
Self Control Test

9th **week:**
Lecture: Inheritance, genes and chromosomes 3.
Inheritance, genes and chromosomes 4.
Inheritance, genes and chromosomes 5.
Inheritance, genes and chromosomes 6.

10th **week:**
Lecture: DNA and it's role in heredity 1.
DNA and it's role in heredity 2.
DNA and it's role in heredity 3.
From DNA to protein: gene expression 1.

11th **week:**
Lecture: From DNA to protein: Gene expression 2.
From DNA to protein: gene expression 3.
From DNA to protein: gene expression 4.
Gene mutation and molecular medicine 1.

12th **week:**
Lecture: Gene mutation and molecular medicine2.
Gene mutation and molecular medicine 3.
Gene mutation and molecular medicine 4.
Gene mutation and molecular medicine 5.
Self Control Test

13th **week:**
Lecture: Regulation of gene expression 1.
Regulation of gene expression 2.
Regulation of gene expression 3.
The human genome, proteome

14th **week:**
Lecture: The mechanism of evolution 1.
The mechanism of evolution 2.
Cellular signaling and communication 1.
Cellular signaling and communication 2.

15th **week:**
Lecture: Fungi: recyclers, pathogens, parasites 1.
Fungi: recyclers, pathogens, parasites 2
Differential gene expression in development 1.
Differential gene expression in development 2.
Self Control Test

Contact person: Dr. András Penyige; Department of Human genetics

Subject: **INTRODUCTION TO BIOLOGY II.**
Year, Semester: Basic Medicine Course, 2nd
Number of teaching hours:
Lecture: **45**
Seminar: **30**

1st **week:**
Lecture: Tissues, Organs and Organ Systems 1.
Tissues, Organs and Organ Systems 2.
Tissues, Organs and Organ Systems 3.

2nd **week:**
Lecture: Physiology, Homeostasis and Temperature Regulation.
Blood, a fluid tissue 1.
Blood, a fluid tissue 2.

3rd **week:**
Lecture: Circulatory systems 1.
Circulatory systems 2.
The human circulatory system 1.

4th **week:**
Lecture: The human circulatory system 2.
The lymphatic system.
Self Control Test

5th **week:**
Lecture: Natural Defenses against Disease 1.
Natural Defenses against Disease 2.
Natural Defenses against Disease 3.

6th week:
Lecture: Nutrition, Digestion and Absorption 1.
Nutrition, Digestion and Absorption 2.
Nutrition, Digestion and Absorption 3.

7th week:
Lecture: Nutrition, Digestion and Absorption 4.
Gas exchange in Animals.
-Human respiration.

8th week:
Lecture: Salt and Water Balance and Nitrogen Excretion 1.
Salt and Water Balance and Nitrogen Excretion 2.
Self Control Test

9th week:
Lecture: Hormones 1.
Hormones 2.
Hormones 3.

10th week:
Lecture: Hormones 4.
Hormones 5.
Neurons and Nervous system 1.

11th week:
Lecture: Neurons and Nervous system 2.
Neurons and Nervous system 3.
Neurons and Nervous system 4.

12th week:
Lecture: Neurons and Nervous system 5.
Sensory systems 1.
Sensory systems 2.

13th week:
Lecture: Self Control Test
Effectors: making Animals move 1.
Effectors: making Animals move 2.

14th week:
Lecture: Effectors: making Animals move 3.
Animal reproduction and Animal Development 1.
Animal reproduction and Animal Development 2.

15th week:
Lecture: Animal reproduction and Animal Development 3.
The human Reproduction System and Sexual Behavior.
Self Control Test

Contact person: Dr. Norbert Szentandrássy, Department of Physiology
Recommended book: Sadava, Hills, Heller, Berenbaum: Life (10th edition)

Subject: **INTRODUCTION TO BIOPHYSICS I.**
Year, Semester: Basic Medicine Course 1st
Number of teaching hours:
Lecture: **60**
Seminar: **30**

1st week:
Lecture: 1. Introduction to modern physics. Standards of length, mass, time.2. Conversion of units. Useful mathematics. Trigonometry.

2nd week:
Lecture: 3. Motion in one dimension, displacement, velocity, acceleration, motion diagrams.4. Freely falling objects.

3rd week:
Lecture: 5. Vectors and their properties. Components of vectors. Displacement, velocity and acceleration in two dimensions.6. Motion in two dimensions. Relative velocity.

4th week:
Lecture: 7. The laws of motion. Newton's First, Second and Third Law.8. Applications of Newton's Laws. Forces of friction.

Self Control Test (First SCT (Chapters 1-3))

5th **week:**
Lecture: 9. Energy. Work. Kinetic energy and the work-energy theorem. Gravitational potential energy.10. Spring potential energy. System and energy conservation. Power. Work done by varying forces.

6th **week:**
Lecture: 11. Momentum and impulse. Conservation of momentum.12. Collisions. Elastic and inelastic collisions.

7th **week:**
Lecture: 13. Angular speed and angular acceleration. Rotational motion under constant angular acceleration.14. Centripetal acceleration. Newtonian gravitation. Kepler's laws.

8th **week:**
Lecture: 15. Torque and the two conditions for equilibrium. The center of gravity.16. Rotational kinetic energy. Angular momentum.
Self Control Test (2nd SCT, Chapters 5-7)

9th **week:**
Lecture: 17. States of matter. Deformation of solids. The Youngs's, shear and bulk modulus.18. Density and pressure. Variation of pressure with depth. Pressure measurements. Buoyant forces and Archimedes's principle. Fluids in motion.

10th **week:**
Lecture: 19. Temperature and the zeroth law of thermodynamics. Thermometers and temperature scales. Thermal expansion of solids and fluids.20. Macroscopic description of an ideal gas. The kinetic theory of gases.

11th **week:**
Lecture: 21. Energy in thermal processes. Heat and internal energy.22. Specific heat. Calorimetry. Latent heat and phase change.
Self Control Test (3rd SCT, Chapters 7-9)

12th **week:**
Lecture: 23. The first law of thermodynamics.24. The second law of thermodynamics. Entropy. Refrigerators and heat pumps.

13th **week:**
Lecture: 25. Elastic potential energy. Hook's law. Simple harmonic motion. Motion of a pendulum.26. Waves. Frequency, amplitude and wavelength. Interference of waves. Reflection of waves.

14th **week:**
Lecture: 27. Sound. Energy and intensity of sound waves. Shock waves, standing waves.28. Doppler effect. The ear and the principles of hearing.
Self Control Test (4th SCT, Chapters 10-13)
15th **week:**
Lecture: 29. Interactive seminar and preparation for ESE.30. Interactive seminar and preparation for ESE.

Subject: **INTRODUCTION TO BIOPHYSICS II.**
Year, Semester: Basic Medicine Course 2nd
Number of teaching hours:
Lecture: **60**
Seminar: **30**

1st **week:**
Lecture: 1. Properties of electric charges. Insulators and conductors. Coulomb's law.2. Electric field. Electric field lines. Electric flux and Gauss's law.

2nd **week:**
Lecture: 3. Electrical energy and

capacitance.4. The parallel plate capacitor. Combinations of capacitors. Energy stored in capacitors. Capacitors with dielectric.

3rd **week:**
Lecture: 5. Electric current. Current and voltage measurements in circuits. Resistance and Ohm's law.6. Resistivity, temperature variation of resistance. Semiconductors and superconductors. Electrical activity of the heart. Defibrillators.

4th **week:**
Lecture: 7. Direct current circuits. Resistors in parallel and series.8. Kirchhoff's rules and complex DC circuits. RC circuits. Conduction of electrical signals by neurons.
Self Control Test (1st SCT, Chapters 15-17)

5th **week:**
Lecture: 9. Magnetism. Magnetic field. Earth's magnetic field. Magnetic force on current carrying conductors. Toque on current loop and electric motors.10. Magnetic field of a long straight wire and Ampere's law. Magnetic field between two parallel conductors. Magnetic field of loops and solenoids.

6th **week:**
Lecture: 11. Induced emf and magnetic flux. Faraday's law of induction. Motional emf. Lenz's law.12. Generators. Self-inductance RL circuits.

7th **week:**
Lecture: 13. Alternating current. Resistors, capacitors and inductors in AC circuits.14. The transformer. Properties of electromagnetic waves. The spectrum of electromagnetic waves.

8th **week:**
Lecture: 15. The nature of light. Reflection, refraction and dispersion.16. Prisms. The rainbow. Huygen's principle. Total internal reflection and its medical applications.
Self Control Test (2nd SCT, Chapters 18-21)

9th **week:**
Lecture: 17. Lenses and mirrors. Flat mirrors. Images formed by spherical mirrors. 18. Thin lenses. Images formed by lenses. Lens aberrations.

10th **week:**
Lecture: 19. Wave optics. Conditions for interference, polarization of light. Diffraction.20. The camera, the simple magnifier, the compound microscope, the telescope and the eye.

11th **week:**
Lecture: 21. Quantum physics. Blackbody radiation. Photoelectric effect. Particle theory of light.22. The production and attenuation of X-ray. Characteristic X-ray.
Self Control Test (3rd SCT, Chapters 22-25)

12th **week:**
Lecture: 23. Atomic physics. Early model of the atom. Quantum mechanics and the hydrogen atom. The spin magnetic quantum numbers.24. Lasers and holography.

13th **week:**
Lecture: 25. Some properties of the nuclei. Binding energy. Radioactivity, the decay processes. Medical application of radioactivity.26. Nuclear reactions. Nuclear fission and fusion. Positron and other antiparticles. Mesons and quarks.
Self Control Test (4th SCT, Chaptes 26-29)

14th **week:**
Lecture: Preparation for the final exam.

15th **week:**
Lecture: Final exam.

Contact person: Dr. Zoltán Varga, Department of Biophysics and Cell Biology
Recommended book: Serway, Vuille: College Physics (9th edition)

Subject: **INTRODUCTION TO MEDICAL CHEMISTRY I.**
Year, Semester: Basic Medicine Course 1st
Number of teaching hours:
Lecture: **60**
Seminar: **30**

1st **week:**
Lecture: Introduction to general chemistry. Elements. Symbols for the elements. The SI system of measurement. Atoms. The structure of atoms. Nuclear arithmetic. Molecules and ions, compounds and mixtures.

2nd **week:**
Lecture: Chemical formulas. Naming chemical compounds. Chemical equations. Avogadro's number and the mole. Atomic, molecular and molar mass relationships. Stoichiometry: chemical arithmetic. Yields of chemical reactions. Empirical and molecular formulas.

3rd **week:**
Lecture: Light and the electromagnetic spectrum. Atomic spectra. The Bohr model of the hydrogen atom. The quantum mechanical model of the atom. Orbitals and quantum numbers. Quantum mechanics and atomic spectra.

4th **week:**
Lecture: Electron configurations and the periodic table. Classification of the elements. Representative and transition elements. The sizes of atoms and ions. Ionization energy, electron affinity, electronegativity.

5th **week:**
Lecture: FIRST SELF CONTROL TEST. Chemical bonds: metallic, ionic and covalent bonds. Electron-dot structures for molecular compounds and polyatomic ions.

6th **week:**
Lecture: Single and multiple covalent bonds. Valence bond theory. Molecular shapes: the VSEPR model. Hybridization. Intermolecular forces.

7th **week:**
Lecture: The gaseous state. Gases and gas pressure. The gas laws. The ideal gas law. Stoichiometric relationships with gases. Kinetic-molecular theory of gases. Liquid and solid states. Phase changes. Evaporation, vapor pressure, boiling point. The chemistry of water.

8th **week:**
Lecture: Electrolytes and nonelectrolytes. Solutions and their properties. Concentration of solutions. Units of concentration: molarity, mass percent, molality. Dilution of solutions. Some factors affecting solubility. Discussion of general chemistry 1.

9th **week:**
Lecture: SECOND SELF CONTROL TEST. Chemical equilibrium. The equilibrium constant. Factors that alter the composition of an equilibrium mixture.

10th **week:**
Lecture: Acids and bases. The pH in solutions of strong acids and strong bases. Equilibria in solutions of weak acids. Equilibria in solutions of weak bases. Relation between Ka and Kb.

11th **week:**
Lecture: Thermochemistry. Energy changes and energy conservation. Internal energy and state functions. Expansion work. Energy and enthalpy. The thermodynamic standard state. Hess's law. Chemical calculus.

12^{th} **week:**
Lecture: THIRD SELF CONTROL TEST. Chemical reactions in perspective. Oxidation and reduction. Oxidation state. The activity series of the elements.

13^{th} **week:**
Lecture: Balancing redox reactions. Galvanic cells. Discussion of general chemistry 2.

14^{th} **week:**
Lecture: Introduction to the main group elements. Noble gases. Hydrogen. The s-block and p-block metals. The d-block metals.

15^{th} **week:**
Lecture: FOURTH SELF CONTROL TEST. Summary and discussion.

Subject: **INTRODUCTION TO MEDICAL CHEMISTRY II.**
Year, Semester: Basic Medicine Course 2^{nd}
Number of teaching hours:
Lecture: **60**
Seminar: **30**

1^{st} **week:**
Lecture: The halogens. Compounds of the halogens. Oxygen. Substances with oxygen-oxygen bonds.

2^{nd} **week:**
Lecture: Sulfur, compounds of sulfur. Industrial acids. Oxoacids. Nitrogen, nitrogen compounds, phosphorus, phosphorus compounds.
3^{rd} **week:**
Lecture: Carbon and its inorganic compounds. Discussion of inorganic chemistry

4^{th} **week:**
Lecture: FIFTH SELF CONTROL TEST. Covalent bonding in organic compounds. Alkanes.

5^{th} **week:**
Lecture: Isomerism and reactions of alkanes. Cycloalkanes. Unsaturated hydrocarbons: alkenes and alkynes.

6^{th} **week:**
Lecture: Aromatic compounds: the structure and properties of benzene and its derivates. Heteroatomic compounds. The reactions of benzene.
7^{th} **week:**
Lecture: Organic halogen compounds. Alcohols and phenols.

8^{th} **week:**
Lecture: SIXTH SELF CONTROL TEST. Ethers and organic sulfur compounds.

9^{th} **week:**
Lecture: Aldehydes, ketones and quinones.

10^{th} **week:**
Lecture: Nitrogen containing organic compounds: the structure and properties of amines. Basicity and reactions of amines. Heterocyclic amines. Amines of biological importance.

11^{th} **week:**
Lecture: SEVENTH CONTROL TEST. Carboxylic acids. Saturated monocarboxylic acids. Unsaturated carboxylic acids. Dicarboxylic acids. Properties of carboxylic acids. Reactions of carboxylic acids.

12^{th} **week:**
Lecture: Properties and reactions of carboxylic acids. Carboxylic acid derivatives: salts and detergents. Acyl halides, anhydrides.

13^{th} **week:**

Lecture: Carboxylic acid derivatives: esters and amides. Substituted carboxylic acids. Stereochemistry. Optical activity: properties of enantiomers and diastereomers.

14th week:

Lecture: Absolute and relative configurations. Synthesis of enantiomers. Discussion of organic chemistry.

15th week:
Lecture: EIGHTH SELF CONTROL TEST. Summary and discussion.

Contact person: Dr. Endre Kókai, Department of Medical Chemistry
Recommended books: McMurry, Fay: Chemsitry (6th edition)
Erdődi, Csortos: Organic chemistry for premedical students (2010)

Subject: **HUNGARIAN LANGUAGE FOR BMC STUDENTS**
Year, Semester: Basic Medicine Course 2nd
Number of teaching hours:
Practical: **36**

1st week:
Practical: Introduction, The Hungarian alphabet, Vowel harmony; Ki vagy?

2nd week:
Practical: Köszönések. Personal pronouns, Conjugation of the verb "lenni".

3rd week:
Practical: Számok. Magyar pénz. How many? Ordinal numbers.

4th week:
Practical: Hogy vagy? Word formation with "-ul, -ül".

5th week:
Practical: Mit csinálsz? Present tense verbal endings. Adverbs of time.

6th week:
Practical: Hová mész ma este? "Lenni" in past and future. Adverbs of place. (Optional: Past tense) Revision Mid-term test.
Self Control Test

7th week:
Practical: Mit kérsz? Informal you "ön/maga". Object of thesentence. (Optional: 13. leckéből a Zöldségboltban c. dialógus, zöldségek, gyümölcsök neve)

8th week:
Practical: Kérsz egy kávét? Word formation. Plural marker.

9th week:
Practical: Tud/akar/szeret/szeretne gitározni. Infinitive. (Optional: Milyen idő van ma?)

10th week:
Practical: Postán, vasútállomáson; Tetszik a ruhád;

11th week:
Practical: Az emberi test Milyen szeme van? Revision

12th week:
Practical: Oral minimum requirement exam. End-term test.

CHAPTER 11
ACADEMIC PROGRAM FOR THE SHORT BASIC MEDICINE COURSE

Intensive Basic Medicine Course (Intensive BMC, Premedical Studies)
Duration of studies: 1 semester

The six-month intensive premedical Basic Medicine Course is recommended to those students who do not have thorough knowledge in Biology, Physics and Chemistry from high school. The requirements of these condensed premedical science subjects are very rigorous, thus preparation prior to the beginning the General Medicine, Dentistry or Pharmacy Program is recommended. Students successfully completing the course are directly admitted to their chosen program. The Intensive Basic Medicine Course starts in January.

Class Behavior

Students should not use cell phones to talk or text during class. Cell phones must be switched off or kept in silence mode during class. In seminars, students will be expected to participate in seminar discussions. Students are encouraged to ask questions related to the topic of the lectures discussed, and participate in solving problems related to the topic of the seminar. Some professors will ask for students to volunteer information, but some professors call on students randomly. It is, thus, a good idea to come to class prepared so as not to be embarrassed in front of the class. Students should not disrupt the class by talking to each other. If one continues to disrupt the class, the student may be asked to leave. The usage of electronic devices, textbooks and any form of interaction between students during the tests is strictly forbidden. Electronic devices (cell phones, tablets, dictionaries, etc.), except for approved simple calculators, must not be within the reach (in pocket, in the desk, etc.) of students during tests. It is the students' responsibility to stow these items before the test begins without specific warning by the supervising teachers. Violation of these above mentioned regulations results in an immediate and unconditional dismissal from the program.

Requirements

The course consists of lectures and seminars. Attending lectures is strongly recommended, attendance of seminars is compulsory and recorded. Everyone must attend the seminars with the group designated by the Registrar's Office.

Absence can significantly affect your understanding and can have serious implications for progression in your studies. One might have a maximum of six seminar absences to have the opportunity to get exemption. Students missing 7-8 seminars cannot be exempted from the Final Examination (FE), regardless of their score reached on the Self Control Tests. Students omitting 9 or more seminars are dismissed from the course. Missed seminars cannot be made up unless one obtains prior permission to be absent.

The knowledge of the students will be tested 6 times during the entire course using a written test system by **Self Control Tests (SCT).** The course ends with a **Final Exam (FE)** from the whole material of the course and a minimum of four FE dates will be set during the summer examination period. Unsuccessful students may repeat the FE twice (B and C chances, and the latter ends up with an oral examination part). Exam exemption and bonus point policy are used to improve the students' performance on SCTs. Exact details of these policies will be described below.

Exemption from FE is offered for students who achieve excellent academic performance during their studies under the following circumstances:

- the average score of the five best SCTs (out of 6) is at least 75%, AND
- passed all the SCTs with at least 40%, AND

- (s)he has a maximum of 6 seminar absences for a given subject.

Bonus points will be added to the FE score of eligible students and calculated as follows:

The average of the best 5 SCTs	Bonus points
51-52	1
53-55	2
56-58	3
59-61	4
62-64	5
65-67	6
68-70	7
71-73	8
74	9

Students who could not meet the above described conditions for exemption must sit for the FE from the whole material of the course.
The participation shall be preceded by ID confirmation (i.e. student's card, passport or driving license) before all forms of tests. Self Control Tests, End of Semester Exams, and Final Exams will be assessed as follows.

Percentage (%)	Mark
0 - 59.99:	fail (1)
60.00 - 69.99:	pass (2)
70.00 - 79.99:	satisfactory (3)
80.00 - 89.99:	good (4)
90.00 - 100:	excellent (5)

Absence for any reason counts as 0%.

Course coordinator: Dr. Beáta Lontay, Department of Medical Chemistry

Subject: **INTRODUCTION TO BIOLOGY**
Year, Semester: Intensive Basic Medicine Course
Number of teaching hours:
Lecture: **96**
Seminar: **96**

1st **week:**
Lecture: The chemistry of life 1.
The chemistry of life 2.
Proteins, carbohydrates and lipids 1.
Proteins, carbohydrates and lipids 2.

2nd **week:**
Lecture: Proteins, carbohydrates and lipids 3.
Proteins, carbohydrates and lipids 4.

3rd **week:**
Lecture: Nucleic acids and the origin of life 1.
Nucleic acids and the origin of life 2.
Cells: the working units of life 1.
Cells: the working units of life 2.

4th **week:**
Lecture: Cells: the working units of life 3.
Cells: the working units of life 4.
Cell membranes 1.
Cell membranes 2.

5th **week:**
Lecture: Cell membranes 3.
Cell membranes 4.
Energy, enzymes and metabolism 1.
Energy, enzymes and metabolism 2.
Self Control Test

6th **week:**
Lecture: Pathways that harvest chemical energy 1.
Pathways that harvest chemical energy 2.
Pathways that harvest chemical energy 3.
The cell cycle and cell division 1.

7th **week:**
Lecture: The cell cycle and cell division 2.
The cell cycle and cell division 3.
Inheritance, genes and chromosomes 1.
Inheritance, genes and chromosomes 2.

8th **week:**
Lecture: Inheritance, genes and chromosomes 3.
Inheritance, genes and chromosomes 4.
DNA and its role in heredity 1.
DNA and its role in heredity 2.
Self Control Test

9th **week:**
Lecture: DNA and its role in heredity 3.
DNA and its role in heredity 4.
From DNA to protein: gene expression 1.
From DNA to protein: gene expression 2.

10th **week:**
Lecture: From DNA to protein: gene expression 3.
From DNA to protein: gene expression 4.
Regulation of gene expression 1.
Regulation of gene expression 2.

11th **week:**
Lecture: Gene mutation and molecular medicine 1.
Gene mutation and molecular medicine 2.
Gene mutation and molecular medicine 3.
Gene mutation and molecular medicine 4.

12th **week:**
Lecture: The cellular signaling and communication 1.
The cellular signaling and communication 2.
The mechanism of evolution 1.
The mechanism of evolution 2.

13th **week:**
Lecture: Fungi: recyclers, pathogens, parasites 1.
Fungi: recyclers, pathogens, parasites 2.
Differential gene expression in development 1.
Differential gene expression in development 2.
Self Control Test

14th **week:**
Lecture: Tissues, organs and organ systems

15th **week:**
Lecture: Physiology, Homeostasis and Temperature Regulation
Blood, a fluid tissue.

16th **week:**
Lecture: Circulatory systems
The human circulatory system.

17th **week:**
Lecture: The human circulatory system.
Immunology: gene expression and natural defenses.
Self Control Test

18th **week:**
Lecture: Immunology: gene expression and natural defenses.
Nutrition, Digestion and Absorption.

19th **week:**
Lecture: Energy balance, vitamins and minerals

Gas exchange in Animals.

20th **week:**
Lecture: Salt and Water Balance Nitrogen Excretion.
Hormones

21st **week:**
Lecture: Neurons and Nervous system.
Self Control Test

22nd **week:**
Lecture: Neurons and Nervous system.
Sensory systems

23rd **week:**
Lecture: Effectors: How animals get things done.

24th **week:**
Lecture: Animal reproduction and Animal Development
The human reproduction system.
Self Control Test

Academic advisors: Dr. András Penyige, Department of Human Genetics
Dr. Norbert Szentandrássy, Department of Physiology
Recommended book: Sadava, Hills, Heller, Berenbaum: Life (10th edition)

Subject: **INTRODUCTION TO BIOPHYSICS**
Year, Semester: Intensive Basic Medicine Course
Number of teaching hours:
Lecture: **96**
Seminar: **144**

1st **week:**
Lecture: 1-2. Introduction to modern physics. Standard of lengths, mass, time. Conversion of units. Useful mathematics. Trigonometry. Motion in one dimension, displacement, velocity, acceleration, motion diagrams.

2nd **week:**
Lecture: 3-4. Freely falling objects. Vectors and their properties. Components of vectors. Displacement, velocity and acceleration in two dimensions. Motion in two dimensions. Relative velocity.

3rd **week:**
Lecture: 5-6. The laws of motion. Newton's First, Second and Third Law. Application of Newton's Laws. Forces of friction.
Self Control Test

4th **week:**
Lecture: 7-8. Energy. Work. Kinetic energy and the work-energy theorem. Gravitational potential energy.
Spring potential energy. System and energy conservation. Power. Work done by varying forces.

5th **week:**
Lecture: 9-10. Momentum and impulse. Conservation of momentum.
Collisions. Elastic and inelastic collisions.

6th **week:**
Lecture: 11-12. Angular speed and angular acceleration. Rotational motion under constant angular acceleration.
Centripetal acceleration. Newtonian gravitation. Kepler's laws.

7th **week:**
Lecture: 13-14. Torque and the two conditions for equilibrium. The center of gravity.
Rotational kinetic energy. Angular momentum.
Self Control Test

8th **week:**
Lecture: 15-16. States of matter. Deformation of solids. The Youngs's, shear and bulk

modulus.
Density and pressure. Variation of pressure with depth. Pressure measurements. Buoyant forces and Archimedes's principle. Fluids in motion.

9th **week:**
Lecture: 17-18. Temperature and the zeroth law of thermodynamics. Thermometers and temperature scales. Thermal expansion of solids and fluids.
Macroscopic description of an ideal gas. The kinetic theory of gases.

10th **week:**
Lecture: 19-20. Energy in thermal processes. Heat and internal energy. Specific heat. Calorimetry. Latent heat and phase change.
The first law of thermodynamics.

11th **week:**
Lecture: 21-22. The second law of thermodynamics. Entropy. Refrigerators and heat pumps.. Elastic potential energy. Hook's law. Simple harmonic motion. Motion of a pendulum.
Self Control Test

12th **week:**
Lecture: 23-24.Waves. Frequency, amplitude and wavelength. Interference of waves. Reflection of waves. Sound. Energy and intensity of sound waves. Shock waves, standing waves.

13th **week:**
Lecture: 25. Doppler effect. The ear and the principles of hearing.

14th **week:**
Lecture: 26-27. Properties of electric charges. Insulators and conductors. Coulomb's law.
Electric field. Electric field lines. Electric flux and Gauss's law.

15th **week:**
Lecture: 28-29. Electrical energy and capacitance.
The parallel plate capacitor. Combinations of capacitors. Energy stored in capacitors. Capacitors with dielectric.
Self Control Test

16th **week:**
Lecture: 30-31. Electric current. Current and voltage measurements in circuits. Resistance and Ohm's law.
Resistivity, temperature variation of resistance. Semiconductors and superconductors. Electrical activity of the heart. Defibrillators.

17th **week:**
Lecture: 32-33.Direct current circuits. Resistors in parallel and series.
Kirchhoff's rules and complex DC circuits. RC circuits. Conduction of electrical signals by neurons.

18th **week:**
Lecture: 34-35. Magnetism. Magnetic field. Earth's magnetic field. Magnetic force on current carrying conductors. Torque on a current loop and electric motors.
Magnetic field of a long straight wire and Ampere's law. Magnetic field between two parallel conductors. Magnetic field of loops and solenoids.
Self Control Test

19th **week:**
Lecture: 36-37. Induced emf and magnetic flux. Faraday's law of induction. Motional emf. Lenz's law.
Generators. Self-inductance RL circuits.

20th **week:**
Lecture: 38-39. Alternating current. Resistors, capacitors and inductors in AC circuits.
The transformer. Properties of electromagnetic waves. The spectrum of electromagnetic waves.

21st **week:**
Lecture: 40.The nature of light. Reflection,

refraction and dispersion.
Prisms. The rainbow. Huygen's principle.
Total internal reflection and its medical applications.
Self Control Test

22nd **week:**
Lecture: 42-43. Lenses and mirrors. Flat mirrors. Images formed by spherical mirrors. Thin lenses. Images formed by lenses. Lens aberrations.

23rd **week:**
Lecture: 44-45. Wave optics. Conditions for interference, polarization of light. Diffraction. The camera, the simple magnifier, the compound microscope, the telescope and the eye.

24th **week:**
Lecture: 46-47. Some properties of the nuclei. Binding energy. Radioactivity, the decay processes. Medical application of radioactivity.
Nuclear reactions. Nuclear fission and fusion. Positron and other antiparticles. Mesons and quarks.

Academic Advisor: Dr. Attila Jenei, Department of Biophysics and Cell Biology
Recommended book: Serway, Vuille: College Physics (9th edition)

Subject: **INTRODUCTION TO MEDICAL CHEMISTRY**
Year, Semester: Intensive Basic Medicine Course
Number of teaching hours:
Lecture: **96**
Seminar: **96**

1st **week:**
Lecture: 1-2. Introduction to general chemistry. Elements. Symbols for the elements. The SI system of measurement. Atoms. The structure of atoms. Nuclear arithmetic. Molecules and ions, compounds and mixtures.

2nd **week:**
Lecture: 3-4. Chemical formulas. Naming chemical compounds. Chemical equations. Avogadro's number and the mole. Atomic, molecular and molar mass relationships. Stoichiometry: chemical arithmetic. Yields of chemical reactions. Empirical and molecular formulas.

3rd **week:**
Lecture: 5-6. Light and the electromagnetic spectrum. Atomic spectra. The Bohr model of the hydrogen atom. The quantum mechanical model of the atom. Orbitals and quantum numbers. Electron configurations and the periodic table. Classification of the elements. Representative and transition elements.

4th **week:**
Lecture: 7-8. The sizes of atoms and ions. Ionization energy, electron affinity.
Self Control Test (1st SCT)

5th **week:**
Lecture: 9-10. Chemical bonds: metallic, ionic and covalent bonds. Electron-dot structures for molecular compounds and polyatomic ions. Single and multiple covalent bonds. Molecular shapes: the VSEPR model. Valence bond theory. Hybridization.

6th **week:**
Lecture: 11-12. Intermolecular forces. The gaseous state. Gases and gas pressure. The gas laws. The ideal gas law. Stoichiometric relationships with gases. Kinetic - molecular theory of gases.

7th week:
Lecture: 13-14. Liquid and solid states. Phase changes. Evaporation, vapor pressure, boiling point. Solutions and their properties. Concentration of solutions. Units of concentration: molarity, mass percent, molality. Dilution of solutions. Some factors affecting solubility.

8th week:
Lecture: 15-16. The chemistry of water. Ions in aqueous solution: electrolytes and nonelectrolytes. Reactions in aqueous solution. Discussion of general chemistry 1.

9th week:
Lecture: 17-18. Chemical equilibrium. The equilibrium constant. Factors that alter the composition of an equilibrium mixture. Self Control Test (2nd SCT)

10th week:
Lecture: 19-20. Acids and bases. The pH in solutions of strong acids and strong bases. Equilibria in solutions of weak acids. Equilibria in solutions of weak bases.

11th week:
Lecture: 21-22. Thermochemistry. Energy changes and energy conservation. Internal energy and state functions. Expansion work. Energy and enthalpy. The thermodynamic standard state. Enthalpies of physical and chemical changes. Hess's law. Oxidation and reduction. Oxidation state. The activity series of the elements. Balancing redox reactions. Galvanic cells.

12th week:
Lecture: 23-24. Discussion of general chemistry 2. Self Control Test (3rd SCT)

13th week:
Lecture: 25-26. Introduction to organic chemistry. Saturated hydrocarbons: alkanes.

14th week:
Lecture: 27-28. Cycloalkanes. Unsaturated hydrocarbons: alkenes and alkynes.

15th week:
Lecture: 29-30. Aromatic compounds: the structure and properties of benzene. The reactions of benzene. Heteroaromatic compounds.

16th week:
Lecture: 31-32. Organic halogen compounds. Alcohols and phenols.

17th week:
Lecture: 33-34. Ethers and organic sulfur compounds. Self Control Test (4th SCT)

18th week:
Lecture: 35-36. Aldehydes, ketones and quinones. Nitrogen containing organic compounds: the structure and properties of amines. Basicity and reactions of amines.

19th week:
Lecture: 37-38. Heterocyclic amines. Amines of biological importance. Discussion of Organic chemistry 1.

20th week:
Lecture: 39-40. Carboxylic acids: classification and nomenclature. Self Control Test (5th SCT)

21st week:
Lecture: 41-42. Properties of carboxylic acids. Reactions of carboxylic acids. Dicarboxylic acids. Unsaturated acids. Carboxylic acid derivatives: esters, fats, lactones, amides, lactams, thiol esters anhydrides, acyl chlorides.

22nd week:
Lecture: 43-44. Salts and detergents. Substituted carboxylic acids: halo acids, hydroxy acids, keto acids, amino acids. Stereochemistry. Types of isomerism.

23rd week:
Lecture: 45-46. Optical activity: properties of enantiomers and diastereomers. Discussion of Organic chemistry 2.

24th **week:**	**Lecture:** Self Control Test (6th SCT). Summary and discussion

Academic Advisor: Dr. Krisztina Tar, Department of Medical Chemistry
Recommended books: McMurry, Fay: Chemistry (6th edition)
Erdődi, Csortos: Organic chemistry for premedical students (2010)

CHAPTER 12
ACADEMIC PROGRAM FOR CREDIT SYSTEM

ACADEMIC PROGRAM FOR CREDIT SYSTEM

The introduction of the credit system became compulsory in every Hungarian university, including the University of Debrecen by September, 2003. The aim of the credit system is to ensure that the students' achievements can be properly and objectively evaluated both quantitatively and qualitatively.

A credit is a relative index of cumulative work invested in a compulsory, a required elective or a freely chosen subject listed in the curriculum. The credit value of a course is based upon the number of lectures, seminars and practical classes of the given subject that should be attended or participated in (so called "contact hours"), and upon the amount of work required for studying and preparing for the examination(s). Together with the credit(s) assigned to a particular subject (quantitative index), students are given grades (qualitative index) on passing an exam/course/class. The credit system that has been introduced in Hungary meets the standards of the European Credit Transfer System (ECTS). The introduction of the ECTS promotes student mobility, facilitates more effective organization of students' exchange programs aimed at further education in foreign institutions, and allows recognition of the students' work, studies and achievements completed in various foreign departments by the mother institution. Credit-based training is flexible. It provides a wider range of choice, enables the students to make progress at an individual pace, and it also offers students a chance to study the compulsory or required subjects at a different university, even abroad. Owing to the flexible credit accumulation system, the term "repetition of a year" does not make sense any longer. It should be noted, however, that students do not enjoy perfect freedom in the credit system either, as the system does not allow students to randomly include subjects in their curriculum or mix modules. Since knowledge is based on previous studies, it is imperative that the departments clearly and thoroughly lay down the requirements to be met before students start studying a subject.

The general principles of the credit system are the following:

1. Students can be given their degree if, having met other criteria as well, they have collected 360 credits during their studies. Considering the recommended curriculum, this can be achieved in six years.

2. According to the credit regulations, students should obtain an average of 30 credits in each semester.

3. The criterion of obtaining 1 credit is to spend 30 hours (including both contact and non-contact hours) studying the given subject.

4. Credit(s) can only be obtained if students pass the exam of the given subject.

5. Students accumulate the required amount of credits by passing exams on compulsory, required elective and freely chosen subjects. Completion of every single compulsory credit course is one of the essential prerequisites of getting a degree. Courses belonging to the required elective courses are closely related to the basic subjects, but the information provided here is more detailed, and includes material not dealt with in the frame of the compulsory courses. Students do not need to

take all required elective courses, but they should select some of them wisely to accumulate the predetermined amount of credits from this pool. Finally, a certain amount of credits should be obtained by selecting from the freely chosen courses, which are usually not related to the basic (and thus mandatory) subjects, but they offer a different type of knowledge.

6. 80, 15 and 5 percent of the total of 360 credits should be accumulated by completing the compulsory, required elective and freely chosen courses, respectively.
7. According to the qualification requirements, professional (compulsory and required elective) courses fall into three modules. The basic module provides the theoretical basis of medicine, and ensures that the necessary practical skills are developed. The preclinical module lays down the foundations of clinical knowledge, while in the clinical module the students are taught clinical medicine, and they attend practical classes to ensure proper command of the medical procedures. The credits accumulated in the different modules for compulsory and required courses should show the following distribution: basic module:92-124, preclinical module:44-64, and clinical module:138-186 credits.

8. The pilot curricula show the recommended pacing of compulsory courses. If these courses are carefully supplemented with credits obtained from the necessary number of required elective and freely chosen courses, students can successfully accumulate the credits required for their degree within 12 semesters.

9. In the case of two-semester subjects, when students have to pass a final exam, they get higher credits in the semester of the final examination since preparation for a final examination takes up more non-contact hours from the students' time.

10. There are 15 compulsory final examinations in the curriculum; therefore one final exam is worth at least 10 credits.

11. The diploma work is worth 20 credits.

12. Internship in the final year is compulsory; students get 1 credit per week.

13. Regulations concerning the training of students in the credit system prescribe a minimum amount of credits for certain periods as outlined in the Rules and Regulations for English Program Students.

14. Although Physical Education and Summer Internship are not recognized by credits, they have to be completed to get the final degree (see the rules outlined in the Information section about the conditions).

15. Evaluation of the students' achievements needed for grants or applications is described in Rules and Regulations for English Program Students.

16. Further information is available in the Rules and Regulations for English Program Students.

We very much hope that the system of training will contribute to the successful completion of your studies.
We wish you good luck with your university studies.

The model curriculum on the following pages applies to those students who started their studies on General Medicine Program in the academic year 2016/2017.

For the previous years' curricula please visit the university website: www.edu.dote.hu

Compulsory courses for the 1. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
1	Basics of Behavioural Sciences	AOPSZ02T1	20			ESE	2	None
1	Biophysics	AOBIF02T1	30	30	22	ESE*	6	None
1	Biostatistics	AOBST02T1		28		ESE	2	None
1	Communication Skills	AOKOM42T1			20	AW5	1	None
1	First aid and reanimation	AOELS03T1	6		15	AW5	2	None
1	Hungarian Crash Course	AOG261008			36	AW5	0	None
1	Hungarian Language I/1.	AOHUN01T1			24	AW5	2	Hungarian Crash Course
1	Medical Chemistry	AOKEM02T1	48	60	45	ESE*	11	None
2	Anatomy, Histology and Embryology I.	AOANA02T2	29		86	ESE	8	None
2	Cell Biology	AOSEJ02T2	30	25	20	ESE*	6	None
2	First aid and reanimation	AOELS03T1	6		15	AW5	2	None
2	Hungarian Language I/2.	AOHUN02T2			30	AW5	2	Hungarian language I/1.
2	Medical Genetics	AOGEN02T2	30		30	ESE*	4	None
2	Molecular Biology	AOMB101T2	42	14	15	ESE	5	None

Compulsory courses for the 2. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
1	Anatomy, Histology and Embryology II.	AOANA06T3	51		130	FE	11	Cell biology, Anatomy, Histology and Embryology I.
1	Biochemistry I.	AOBIK03T3	42	14	30	ESE	7	Medical Chemistry, Molecular Biology
1	Hungarian Language II/1.	AOHUN03T3			30	AW5	2	Hungarian language I/2.
1	Medical Physiology I.	AOELE03T3	60	30	45	ESE	7	Anatomy, Histology and Embryology I., Biophysics
2	Biochemistry II.	AOBIK04T4	45	15	30	FE	7	Biochemistry I.
2	Hungarian Language II/2.	AOHUN04T4			30	AW5	2	Hungarian language II/1.
2	Medical Physiology II.	AOELE04T4	36	18	27	FE	9	Anatomy, Histology and Embryology II., Medical Physiology I., Biostatistics
2	Neurobiology (Neuroanatomy, Neurobiochemistry, Neurophysiology)	AONEB02T4	62	15	52	ESE*	8	Medical Physiology I.
2	Nursing practice	AO_NYGY_NURSING			120	SIGN	0	has to be completed before the 3rd year

Compulsory courses for the 3. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
1	Basic Oncology	AOONK02T5	13			AW5	1	Medical Genetics, Biochemistry II.
1	Basic Surgical Techniques	AOMUT02T5	15	18	12	ESE	3	Anatomy, Histology and Embryology II., Medical Physiology I.
1	Clinical Biochemistry I.	AOKBK03T5	30		14	AW5	3	Biochemistry II., Medical Physiology II.
1	Hungarian Language III/1.	AOHUN05T5			30	AW5	2	Hungarian language II/2.
1	Immunology	AOIMM02T5	45	22	8	ESE	4	Biochemistry II., Cell Biology
1	Medical Anthropology	AOANT02T5		15		ESE	1	Basics of Behavioural Siences
1	Medical Microbiology I.	AOMIK03T5	30		30	ESE	5	Cell Biology, Anatomy Histology and Embryology II.
1	Pathology I.	AOPAT03T5	30		45	ESE	5	Anatomy, Histology and Embryology II., Neurobiology
1	Propedeutics of Internal Medicine (Internal Medicine I.)	AOBEL02T5	30		30	ESE	4	Anatomy, Histology and Embryology II., Medical Physiology II.

Compulsory courses for the 3. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
2	Basic Surgical Techniques	AOMUT02T5	15	18	12	ESE	3	Anatomy, Histology and Embryology II., Medical Physiology I.
2	Clinical Biochemistry II.	AOKBK04T6	45		30	FE	7	Clinical biochemistry I.
2	Clinical Physiology	AOKFI04T6	15	30		ESE	3	Pathology I., Medical Physiology II.
2	Hungarian Language III/2.	AOHUN06T6			30	FE	2	Hungarian Language III/1.
2	Internal Medicine II. (Immunology and Rheumatology)	AOBEL04T6	27		18	ESE	3	Immunology, Prop. of Internal Medicine (Internal Medicine I.)
2	Medical Microbiology II.	AOMIK04T6	20		30	FE	5	Medical Microbiology I.
2	Medical Psychology	AOPSZ08T6	20		10	ESE	2	Basics of Behavioural Sciences
2	Medical Sociology	AOSZO02T6	8	7		AW5	1	Basics of Behavioural Siences
2	Pathology II.	AOPAT04T6	45		45	FE	5	Pathology I., Immunology
2	Internal Medicine summer practice	AO_NYGY_INTMED			90	SIGN	0	has to be completed before the 4th year

Compulsory courses for the 4. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
1	Internal Medicine Block Practice I. - 4th year	AOBLOCKINTMED_1_IV			60	SIGN	0	Propedeutics of Internal Medicine (Int. Med. I.), Clinical Physiology, Pathology II.
1	Internal Medicine III. (Cardiology, Angiology)	AOBEL06T7	20		10	ESE	3	Propedeutics of Internal Medicine (Internal Medicine I.), Clinical Physiology, Pathology II.
1	Obstetrics and Gynecology Block Practice - 4th year	AOBLOCKOBGYN_IV			30	SIGN	0	Pathology II., Clinical Biochemistry II.
1	Obstetrics and Gynecology I.	AOSZU03T7	10		20	ESE	2	Pathology II., Clinical Biochemistry II.
1	Orthopaedic Surgery	AOORT03T7	10		16	ESE*	3	Pathology II.,
1	Pharmacology I.	AOGYO03T7	30	20		ESE	4	Pathology I., Medical Physiology II.,Clinical Physiology
1	Preventive Medicine and Public Health I.	AOMEG03T7	30	40		AW5	5	Medical Microbiology II., Clinical Biochemistry II.
1	Pulmonology	AOPUL03T7	15		10	ESE*	3	Clinical Physiology, Prop. of Internal Medicine (Internal Medicine I.)
1	Radiology and Nuclear Medicine I.	AORAD03T7	20		30	ESE	3	Pathology II.
1	Stomatology	AOFOG03T7	10		16	ESE*	2	Pathology II.
1	Surgery I.	AOSEB05T7	12		10	AW5	2	Pathology II., Basic Surgical Techniques
1	Traumatology I.	AOTRA01A7	15		10	ESE*	2	Pathology II.
1	Urology	AOURO04T8	10		16	ESE*	3	Pathology II.

Compulsory courses for the 4. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
2	Behavioural Medicine	AOMAGO02T8			20	AW5	1	Basics of Behavioural Sciences
2	Bioethics	AOETI02T99	10	10		ESE	2	Medical Psychology
2	Clinical Genetics	AOKGE02T8	20			ESE	2	Medical Genetics, Pathology II.
2	Internal Medicine Block Practice II. - 4th year	AOBLOCKINTMED_2_IV			60	SIGN	0	Propedeutics of Internal Medicine (Int. Med. I.), Clinical Biochemistry II., Pathology II.
2	Internal Medicine IV. (Endocrinology, Nephrology)	AOBEL08T8-K3	20		10	ESE	3	Prop. of Internal Medicine (Internal Medicine I.), Pathology II., Clinical Biochemistry II.
2	Obstetrics and Gynecology II.	AOSZU04T8	5		20	ESE	3	Obstetrics and Gynecology I.
2	Orthopaedic Surgery	AOORT03T7	10		16	ESE*	3	Pathology II.,
2	Pharmacology II.	AOGYO04T8	50	20		FE	6	Pharmacology I.
2	Preventive Medicine and Public Health II.	AOMEG04T8	30	20	15	FE	5	Preventive Medicine and Public Health I.
2	Pulmonology	AOPUL03T7	15		10	ESE*	3	Clinical Physiology, Prop. of Internal Medicine (Internal Medicine I.)
2	Radiology and Nuclear Medicine II.	AORAD04T8	10		10	ESE*	1	Radiology and Nuclear Medicine I.
2	Stomatology	AOFOG03T7	10		16	ESE*	2	Pathology II.
2	Surgery II.	AOSEB06T8	10			ESE	3	Surgery I.
2	Surgery / Small Surgery Block Practice - 4th year	AOBLOCKSURG_SMALLSURG_IV			60	SIGN	0	Pathology II, Basic Surgical Techniques
2	Urology	AOURO04T8	10		16	ESE*	3	Pathology II.
2	4th year summer practice	AO_NYGY_4TH YEAR			90	SIGN	0	has to be completed before the 5th year

Compulsory courses for the 5. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
1	Behavioural Sciences Final Exam	AOMAG02T8				FE	0	Medical Anthropology, Behavioural Medicine, Bioethics
1	Dermatology	AOBOR03T9-KI	15	10	20	ESE*	4	Pathology II., Pharmacology II.
1	Emergency Medicine	AOOXY03T9	20		20	ESE	3	Pathology II., First Aid and Reanimation, Pharmacology II.
1	Family Medicine	AOCSA02T9		10		AW5	1	Pharmacology II., Prop. of Internal Medicine (Internal Medicine I.)
1	Forensic Medicine I.	AOIGA03T9	10		10	AW5	2	Pathology II., Bioethics
1	Internal Medicine Block Practice I. - 5th year	AOBLOCKINTMED_1_V			60	SIGN	0	Internal Medicine III. (Cardiology, Angiology), Clinical Biochemistry II.
1	Internal Medicine V. (Gastroenterology)	AOBEL13T9	20		10	ESE	4	Internal Medicine III. (Cardiology, Angiology), Clinical Biochemistry II.
1	Neurology I.	AONEU03T9	15		10	AW5	4	Internal Medicine III. (Cardiology, Angiology), Neurobiology
1	Ophthalmology	AOSZE04T10	10		20	ESE*	3	Pathology II., First Aid and Reanimation
1	Otolaryngology	AOFUL04T10	10		20	ESE*	3	Pathology II., Clinical Biochemistry II.
1	Pediatrics Block Practice - 5th year	AOBLOCKPEDIAT_V			60	SIGN	0	Pathology II., Pharmacology II.
1	Pediatrics I.	AOGYE03T9	20		10	AW5	4	Pathology II., Pharmacology II.
1	Psychiatry I.	AOELM03T9	20		20	AW5	4	Medical Psychology, Neurobiology

Compulsory courses for the 5. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
2	Anesthesiology and Intensive care	AOINT02T10	10		20	ESE	2	Pharmacology II.
2	Clinical Oncology	AOKON02T10	20	7		ESE	2	Basic Oncology, Radiology and Nuclear Medicine II.
2	Dermatology	AOBOR03T9-KI	15	10	20	ESE*	4	Pathology II., Pharmacology II.
2	Emergency Medicine	AOOXY03T9	20		20	ESE	3	Pathology II., First Aid and Reanimation, Pharmacology II.
2	Forensic Medicine II.	AOIGA04T10	10		10	ESE*	2	Forensic Medicine I.
2	Infectology	AOFER02T10	15		20	ESE	2	Pathology II., Medical Microbiology II., Pharmacology II.
2	Internal Medicine Block Practice II. - 5th year	AOBLOCKINTMED_2_V			60	SIGN	0	Internal Medicine III. (Cardiology, Angiology), Clinical Biochemistry II.
2	Internal Medicine VI. (Haematology, Haemostaseology)	AOBEL16T10	15		10	ESE	3	Clinical Biochemistry II., Internal Medicine III. (Cardiology, Angiology)
2	Neurology Block Practice - 5th year	AOBLOCKNEURO_V			60	SIGN	0	Internal Medicine III. (Cardiology, Angiology), Neurobiology
2	Neurology II.	AONEU04T10	10		10	ESE	2	Neurology I.
2	Ophthalmology	AOSZE04T10	10		20	ESE*	3	Pathology II., First Aid and Reanimation
2	Otolaryngology	AOFUL04T10	10		20	ESE*	3	Pathology II., Clinical Biochemistry II.
2	Pediatrics II.	AOGYE04T10	15		10	ESE	3	Pediatrics I.
2	Psychiatry II.	AOELM04T10	10		20	ESE	2	Psychiatry I.

Compulsory courses for the 6. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
1	Internal Medicine VII.	AOBEL26T11			300	FE	10	Successful completion of all compulsory subjects (I-V.)
1	Neurology III.	AONEU08T11			120	FE	4	Successful completion of all compulsory subjects (I-V.)
1	Obstetrics and Gynecology III.	AOSZU08T11			150	FE	5	Successful completion of all compulsory subjects (I-V.)
1	Pediatrics III.	AOGYE08T11			210	FE	7	Successful completion of all compulsory subjects (I-V.)
1	Psychiatry III.	AOELM06T11			120	FE	4	Successful completion of all compulsory subjects (I-V.)
1	Surgery III.	AOSEB09T11-K1			150	FE	5	Successful completion of all compulsory subjects (I-V.)

Required elective courses for the 1. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
1	Computer Science	AOINF43T1			30	AW5	3	None
1	Latin Language	AOLAT42T1			30	AW5	2	None
1	Library System	AOKON43T1			10	AW5	1	None
2	Computer Science	AOINF43T1			30	AW5	3	None
2	Introduction to students' scientific activities	AOTDK02	10			AW5	1	None
2	Medical Genomics	AOGEN43T2	16		4	AW5	2	None
2	Understanding medical problems through experiments	AOOBP43T2			30	AW5	3	Medical Chemistry

Required elective courses for the 2. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
2	Advanced students' scientific activity	AOTDK06				AW5	2	Introduction to students' scientific activities
2	Modern biophysical methods in biology and medicine	AOMOD42T4	24			AW5	2	Biophysics, Cell Biology
2	Modern Techniques Allowing the Investigation of Physiological Phenomena	AOKOR42T4	24			AW5	2	Medical Physiology I.
2	Problem Based Learning in Physiology	AOPEL42T4			30	AW5	3	Medical Physiology I.
2	Selected Topics in Cell Biology	AOG157403-K1	24			AW5	2	Cell Biology
2	Students’ scientific activity for beginners	AOTDK04				AW5	1	Introduction to students’ scientific activities
2	The Regulatory Role of the Cell Membrane in Physiological and Pathological Conditions	AOSEM42T4	20			AW5	2	Medical Physiology I.

Required elective courses for the 3. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
1	Dealing with irradiation induced side effects	AOG528305	5		10	AW5	1	Propedeutics of Internal Medicine (Internal Medicine I.); Medical Physiology II.
1	Molecular Mechanism of Diseases Concerning Great Populations	AOG167605	25			AW5	2	Biochemistry II.
1	Molecular Oncology and Cancer Prevention	AOMOO41T5	13	2		AW5	1	Biochemistry II
1	Refraction, refractive errors, corrections, refractive surgery	AOREF42T9	5			AW5	1	Anatomy II., Medical Physiology II.
1	Social acceptance of people with disabilities	AOFOGY42T5	20		2	AW5	2	None
2	Clinical Gerontology	AOKLG42T6	30			AW5	3	Immunology, Medical Physiology II.
2	Fundamental Clinical Neuroscience	AOG458606	10	10	10	AW5	2	Pathology I.
2	Medical Imaging	AOOKE42T6	16			AW5	1	Neurobiology
2	PBL in haemostasis	AOPBL42T6		20		AW5	2	Clinical Biochemistry I.
2	Surgical operative techniques	AOG517407	4		8	AW5	1	Basic Surgical Techniques

Required elective courses for the 4. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
1	Antimicrobial chemotherapy	AOAKE42T7	20	10		AW5	2	Medical Microbiology II.
1	Basic microsurgical training. Introduction to microsurgery	AOG517507	2		10	AW5	1	Basic Surgical Techniques, Surgical Operative Techniques
1	Basic Principles and Introduction to Chest Radiology	AOG487707		18		AW5	1	Pathology II.
1	Clinical biochemistry and laboratory evaluation of thrombophilia	AOTHR42T7	12			AW5	1	Clinical biochemistry II.
1	Dietetics in the Everyday Practice and Beyond. Nutritional Therapy I.	AODIE42T7	24			AW5	2	Propedeutics of Internal Medicine (Internal Medicine I.)
1	Epidemiology, pathophysiology, diagnosis and treatment of osteoporosis.	AOEPI01T7	11	2	2	AW5	1	Internal Medicine II. (Immunology and Rheumatology)
1	Surgical operative techniques	AOG517407	4		8	AW5	1	Basic Surgical Techniques
1	The basics of organ-, and tissue transplantation	AOSZAT42T9	30			AW5	2	Pathology II.
1	Traumatology II.	AOTRA41A7	10			AW5	2	Pathology II.

Required elective courses for the 4. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
2	Recent Advances of Infertility Management and Gynaecological Oncology	AOINF42T8	20			AW5	2	Obstetrics and Gynecology I.
2	Basic microsurgical training. Introduction to microsurgery	AOG517507	2		10	AW5	1	Basic Surgical Techniques, Surgical Operative Techniques
2	Dietetics in the Everyday Practice and Beyond. Nutritional Therapy II.	AODIE44T8	20		4	AW5	2	Dietetics in the Everyday Practice and Beyond. Nutritional Therapy I.
2	Magnetic resonance imaging: from basics to practice	AOMRE41T8		24		AW5	1	Biophysics
2	Ophthalmological aspects of wound healing processes	AOSSZ42T8	7	4	4	AW5	1	Pathology II., Basic Operative Techniques, Operative Techniques Practices and Basic Microsurgical Training
2	Problem based learning - Skills' training	AOPSZ42T10		20		AW5	2	Internal Medicine II., Surgery I.
2	Problem based learning in Complex Pathology	AOEKP42T6	30			AW5	3	Clinical Biochemistry II.
2	Radiotherapy in the clinical practice	AOSUG42T7		15		AW5	2	Biophysics, Radiology and Nuclear Medicine I.
2	Rare diseases	AOG138107	10			AW5	1	Pathology II., Clinical Biochemistry II., Propedeutics of Internal Medicine I.
2	Reproductive Endocrinology and Infertility	AOG558510	15			AW5	2	Obstetrics and Gynecology I.
2	Surgical operative techniques	AOG517407	4		8	AW5	1	Basic Surgical Techniques
2	The basics of organ-, and tissue transplantation	AOSZAT42T9	30			AW5	2	Pathology II.
2	Thesis Writing Course	AOG197308		14		AW5	1	Propedeutics of Internal Medicine (Internal Medicine I.)
2	Travel Medicine for medical scholars	AOUTA42T8	30			AW5	2	Pathology II, Medical Microbiology II., Pharmacology I.

Required elective courses for the 5. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
1	Advanced Surgical Operative Techniques	AOHMGY42T10	30		12	AW5	2	Basic microsurgical training. Introduction to microsurgery; Basic laparoscopic training. Parallel registration with Intr. to laparoscopic surgery; Surgery II.
1	Basic laparoscopic surgical training	AOG517607-K10	5		15	AW5	2	Basic Surgical Techniques; Surgical Operative Techniques; Surgery II.
1	Clinical Pharmacology	AOKFA42T9	20	8	2	AW5	2	Pharmacology II.
1	Facts and Recent Achievements of Andrology	AOAND41A8		30		AW5	2	Urology
1	Otolaryngology essentials	AOSZF42T9	5			AW5	1	Internal Medicine IV.
1	Pharmacotherapy	AOG248110	30			AW5	3	Pharmacology II.
1	Surgical biomaterials	AOG518110	12			AW5	1	Surgical operative techniques; Basic microsurgical training. Introduction to microsurgery, Surgery II.
1	Thesis I.	AODIP47T9				AW3	5	None

Required elective courses for the 5. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
2	Advanced Surgical Operative Techniques	AOHMGY42T10	30		12	AW5	2	Basic microsurgical training.Introduction to microsurgery; Basic laparoscopic training. Parallel registration with Intr. to laparoscopic surgery; Surgery II.
2	Basic laparoscopic surgical training	AOG517607-K10	5		15	AW5	2	Basic Surgical Techniques; Surgical Operative Techniques; Surgery II.
2	Facts and Recent Achievements of Andrology	AOAND41A8		30		AW5	2	Urology
2	Neurosurgery	AOISE02T10	6		8	AW5	2	Neurology I.
2	Ophthalmological aspects of wound healing processes	AOSSZ42T8	7	4	4	AW5	1	Pathology II., Basic Operative Techniques, Operative Techniques Practices and Basic Microsurgical Training
2	Principles of Physical Medicine and Rehabilitation	AOREH42T6	16			AW5	2	Internal Medicine III., Surgery II.
2	Reproductive Endocrinology and Infertility	AOG558510	15			AW5	2	Obstetrics and Gynecology I.
2	Surgical biomaterials	AOG518110	12			AW5	1	Surgical operative techniques; Basic microsurgical training. Introduction to microsurgery, Surgery II.
2	Thesis II.	AODIP48T10				AW3	5	None

Required elective courses for the 6. year

Sem	Subjects	Neptun code	L	S	P	Exam	Crd	Prerequisites of taking the subject
1	Preparatory Course for State Exam	AOIZV42T12				AW5	2	Completed compulsory subjects of 1-5 years
1	Thesis III.	AODIP49T11				AW3	5	None
2	Ophthalmological aspects of wound healing processes	AOSSZ42T8	7	4	4	AW5	1	Pathology II., Basic Operative Techniques, Operative Techniques Practices and Basic Microsurgical Training
2	Preparatory Course for State Exam	AOIZV42T12				AW5	2	Completed compulsory subjects of 1-5 years
2	Thesis IV.	AODIP50T12				AW5	5	None

Freely Chosen Courses

Department	Subject	Neptun code	Crd	Sem	Hours	Exam	Prerequisites of taking the subject	Coordinator
Department of Anatomy, Histology and Embryology	Functional Anatomy of Brainstem	AOG107704-K1	1	2	16	AW5	Anatomy, Histology, Embryology II.	Klára Matesz M.D.,Ph.D.,D.Sc.
Department of Anatomy, Histology and Embryology	Selected Problems of the Neural Control: Modelling of Single Neurons and Neural Networks	AOG108504-K1	1	2	12	AW5	Anatomy, Histology, Embryology II.	Ervin Wolf M.Sc., Ph.D.
Department of Anatomy, Histology and Embryology	Nociceptive Sensory Information Processing at the Level of the Spinal Cord in Health and Disease	AOG1091A4	1	2	18	AW5	Anatomy, Histology, Embryology II.	Miklós Antal M.D., Ph.D., D.Sc.
Department of Anatomy, Histology and Embryology	Functional Anatomy of the Visual System	AOG108204-K1	1	2	16	AW5	Anatomy, Histology, Embryology II.	Zoltán Kisvárday M.Sc., Ph.D., D.Sc.
Department of Anatomy, Histology and Embryology	Advanced Histology	AOG107803-K8	1	1	16	AW5	Anatomy, Histology and Embryology I.	Ervin Wolf M.Sc., Ph.D.
Department of Anatomy, Histology and Embryology	Computer human anatomy: musculoskeletal system, extremities	AOG1092A2	1	2	20	AW5	None	Miklós Antal M.D., Ph.D., D.Sc.
Department of Anatomy, Histology and Embryology	Clinical anatomy and plastination I.	AOG109404	2	1	30	AW5	grade 4 or 5 in Anatomy, Histology, Embryology I.	Miklós Antal M.D., Ph.D., D.Sc.
Department of Anatomy, Histology and Embryology	Clinical anatomy and plastination II.	AOG109604	2	2	30	AW5	Anatomy, Histology, Embryology I.	Miklós Antal M.D., Ph.D., D.Sc.
Department of Anatomy, Histology and Embryology	Investigation of the embryonic cell-and tissue differentiation	AOG1011003	2	1	26	AW5	Anatomy, Histology, Embryology I., Cell Biology, Molecular Biology, Biophysics	Róza Zákány M.D., Ph.D.
Department of Anatomy, Histology and Embryology	Dark side of the human mind with anatomical implications	AOG1010005	2	1	30	AW5	Anatomy, Histology, Embryology II. and Neurobiology	Tamás Juhász M.Sc., Ph.D.

Department	Subject	Neptun code	Crd	Sem	Hours	Exam	Prerequisites of taking the subject	Coordinator
Department of Biochemistry and Molecular Biology	Biochemistry of Apoptosis	AOG167406	1	-	20	AW5	Biochemistry II.	Zsuzsa Szondy M.D., Ph.D., D.Sc.
Department of Biochemistry and Molecular Biology	Retroviral Biochemistry	AOG167506	1	2	20	AW5	Molecular Biology	József Tőzsér M.Sc., Ph.D., D.Sc.
Department of Biomedical Laboratory Imaging Science	Selected Chapters from the Cross-Sectional Anatomy of the Human Body	AOCSA01L 3	2	1	28	ESE	Anatomy, Histology, Embryology II.	Ervin Berényi M.D., Ph.D.
Department of Biomedical Laboratory Imaging Science	Multimodal imaging and virtual reality in neurosciences	AOG487503	1	1	18	AW5	Biophysics	András Jakab M.D., Ph.D.
Department of Biomedical Laboratory Imaging Science	History of Radiology	AOG487407	1	1	18	AW5	None	Ervin Berényi M.D., Ph.D.
Department of Biomedical Laboratory Imaging Science	Clinico-radiological case reports	AOKLR41T 8	1	2	24	AW5	None	Ervin Berényi M.D., Ph.D.
Department of Biophysics and Cell Biology	Physical foundations of biophysics	AOG157303	1	1	24	AW5	None	György Vámosi M.Sc., Ph.D.
Department of Dermatology	Wound healing	AOG177205	1	1	12	AW5	None	István Juhász M.D., Ph.D., C.Sc.
Department of Dermatology	Dermatological allergology – immunology	AOG177610	1	-	12	AW5	Internal Medicine IV. (Endocrinology, Nephrology)	Andrea Szegedi M.D., Ph.D., D.Sc.
Department of Dermatology	Aesthetic Dermatology	AOG177909	1	2	16	AW5	Internal Medicine V. (Gastroenterology), Pharmacology II., Pathology II.	Éva Remenyik M.D., Ph.D., D.Sc.
Department of Dermatology	Plastic and reconstructive surgery	AOPLSURG 02	1	2	15	AW5	None	István Juhász M.D., Ph.D., C.Sc.
Department of Foreign Languages	Hungarian Language Elective General II.	AOG269102	2	2	30	AW5	Hungarian Crash Course	László Répás M.A.

Department	Subject	Neptun code	Crd	Sem	Hours	Exam	Prerequisites of taking the subject	Coordinator
Department of Foreign Languages	Hungarian Language Elective General I.	AOG268901	2	1	30	AW5	Hungarian Crash Course	László Répás M.A.
Department of Foreign Languages	Hungarian Language Elective - Medical I.	AOG26108A 1-K1	2	1	30	AW5	None	László Répás M.A.
Department of Foreign Languages	Hungarian Language Elective - Medical II.	AOG26108A 2-K1	2	2	30	AW5	Completion of Hungarian Language Elective Medical I.	László Répás M.A.
Department of Foreign Languages	Latin Medical Terminology	AOG261100 2	1	2	30	AW5	Latin language	László Répás M.A.
Department of Foreign Languages	Hungarian Language Elective Medical III.	AOG102607	2	1	30	AW5	Hungarian Language Elective Medical II.	Judit Lampéné Zsíros M.A., Ph.D.
Department of Foreign Languages	Hungarian Language Elective Medical IV.	AOG102708	2	2	30	AW5	Hungarian Language Elective Medical III.	Judit Lampéné Zsíros M.A., Ph.D.
Department of Foreign Languages	Prescription Reading and Writing	AOG102805	2	1	30	AW5	Medical Latin, Medical Physiology II.	
Department of Foreign Languages	Tandem class for Hungarian and foreign students	AOG103002	2	1	30	AW5	Crash Course	Judit Lampéné Zsíros M.A., Ph.D.
Department of Immunology	Selected topics of Immunology	AOG297206	1	2	20	AW3	Immunology	Kitti Pázmándi M.Sc., Ph.D.
Department of Internal Medicine	Diagnosis and therapy of acute leukaemias	AOG138005	1	2	20	AW5	Pathology II., Clinical Biochemistry II., Propedeutics in Internal Medicine	
Department of Internal Medicine	Immune intervention therapy in patients with autoimmune diseases	AOG149307	1	1	8	AW5	Pathology II., Immunology	Katalin Dankó M.D.,Ph.D.,D .Sc.
Department of Internal Medicine	Inflammatory bowel diseases: clinical, therapeutical and immunological aspects	AOG148709	1	1	8	AW5	Internal Medicine II. (Immunology and rheumatology)	Zoltán Csiki M.D., Ph.D.

Department	Subject	Neptun code	Crd	Sem	Hours	Exam	Prerequisites of taking the subject	Coordinator
Department of Internal Medicine	Modern functional diagnosis of microcirculation.	AOG149110	1	2	8	AW5	Pathology II., Internal Medicine V. (Gastroenterology)	Zoltán Csiki M.D., Ph.D.
Department of Internal Medicine	Acute and chronic liver diseases	AOG138207	1	2	14	AW5	Pathology II., Clinical Biochemistry II., Propedeutics of Internal Medicine	István Tornai M.D.,Ph.D.
Department of Internal Medicine	Current endoscopic practice in gastroenterology	AOG137707	1	1	14	AW5	Pathology II., Clinical Biochemistry II., Propedeutics of Internal Medicine	István Altorjay M.D.,Ph.D.
Department of Internal Medicine	Interesting cases in haemostaseology	AOHAE02T 8	1	2	10	AW5	Pathology II., Clinical Biochemistry II., Propedeutics of Internal Medicine	Zoltán Boda M.D.,Ph.D.,D .Sc.
Department of Internal Medicine	Selected chapters and case presentations in lympho-, and myeloproliferative diseases	AOG137405	1	1	16	AW5	Pathology II., Clinical Biochemistry II., Propedeutics in Internal Medicine	
Department of Internal Medicine	Clinical cases and differential diagnosis in general medicine	AOG158507	1	1	12	AW5	Pathology II.,Clinical Biochemistry II., Propedeutics of Internal Medicine	
Department of Internal Medicine	Diagnosis and treatment of diseases most frequently found in the practice of our medical intensive care unit	AOG149009	1	-	15	AW5	None	Pál Soltész M.D., Ph.D., D.Sc.
Department of Internal Medicine	Idiopathic inflammatory myopathies, from bench to bedside	AOG149807	1	2	16	AW5	Internal Medicine II. (Immunology and Rheumatology)	Zoltán Griger M.D., Ph.D.
Department of Internal Medicine	Comprehensive Review of Obesity and Associated Disorders	AOG128307	2	1	30	AW5	Propedeutics of Internal Medicine	
Department of Laboratory Medicine	Biochemistry and clinical pathology in thrombin action	AOG328106	1	2	15	AW5	Clinical Biochemistry I.	János Kappelmayer M.D., Ph.D., D.Sc.

Department	Subject	Neptun code	Crd	Sem	Hours	Exam	Prerequisites of taking the subject	Coordinator
Department of Medical Microbiology	Tumor viruses and oncogenes	AOG427804	1	2	12	AW5	Medical Microbiology II.	György Veress M.Sc., Ph.D.
Department of Medical Microbiology	Interpretive Clinical Bacteriology and Virology	AOG428108	1	2	14	AW5	Medical Microbiology II.	József Kónya M.D., Ph.D.
Department of Medical Microbiology	Interesting Issues of Medical Parasitology	AOG429907	1	1	12	AW5	Medical Microbiology I.	Judit Szabó M.D., Ph.D.
Department of Medical Microbiology	The problem of resistance to antibiotics. Antibiotic policy	AOG428405	1	2	15	AW5	Medical Microbiology II.	Gábor Kardos M.D., Ph.D.
Department of Medical Microbiology	Infections of the immunocompromise d	AOG429407	1	2	21	AW5	Medical Microbiology II.	Gábor Kardos M.D., Ph.D.
Department of Medical Microbiology	Case studies in clinical microbiology	AOG429505	1	2	9	AW5	Medical Microbiology II.	Gábor Kardos M.D., Ph.D.
Department of Medical Microbiology	Fingerprinting of pathogens, methods in epidemiological tracing.	AOG429605	2	2	21	AW5	Medical Microbiology II.	Gábor Kardos M.D., Ph.D.
Department of Medical Microbiology	Travel and infectious diseases, imported infections	AOG429707	2	2	21	AW5	Medical Microbiology I.	Gábor Kardos M.D., Ph.D.
Department of Medical Microbiology	Infections spreading from animals to humans.	AOG429807	2	2	21	AW5	Medical Microbiology I.	Krisztina Szarka M.Sc., Ph.D.
Department of Medical Microbiology	Molecular diagnosis of multiresistant bacteria	AOG421000 8	1	2	12	AW5	Medical Microbiology II.	Judit Szabó M.D., Ph.D.
Department of Medical Microbiology	Microbiology of sepsis	AOG421000 7	1	1	12	AW5	Medical Microbiology I.	Judit Szabó M.D., Ph.D.
Department of Medical Microbiology	Laboratory diagnosis of anaerobic bacteria	AOG421000 6	1	2	12	AW5	Medical Microbiology I.	Judit Szabó M.D., Ph.D.
Department of Medical Microbiology	Introduction to Medical Mycology	AOG421020 7	1	1-2	14	AW5	Medical Microbiology II.	László Majoros M.D., Ph.D.
Department of Medical Microbiology	Clinical Mycology	AOG421010 7	1	1-2	12	AW5	Medical Microbiology II.	László Majoros M.D., Ph.D.
Department of Medical Microbiology	Malaria	AOG421040 7	1	1-2	15	AW5	Medical Microbiology II.	Gábor Kardos M.D., Ph.D.

Department	Subject	Neptun code	Crd	Sem	Hours	Exam	Prerequisites of taking the subject	Coordinator
Department of Medical Microbiology	Chapters in the history of medical virology	AOG4210807	1	2	15	AW5	Medical Microbiology II.	György Veress M.Sc., Ph.D.
Department of Medical Microbiology	Antimicrobial agents in clinical practice	AOG429007	2	1	30	AW5	Medical Microbiology II.	László Majoros M.D., Ph.D.
Department of Neurosurgery	Neurosurgical emergency	AOG277210	1	1	12	AW5	Pathology II.	Sándor Szabó M.D., Ph.D.
Department of Neurosurgery	Pediatric Neurosurgery	AOG277807	1	1	12	AW5	Pathology II.	Álmos Klekner M.D., Ph.D.
Department of Obstetrics and Gynecology	Ultrasound diagnosis in obstetrics and gynecology	AOG557908	1	2	15	AW5	Obstetrics and gynecology I.	Zoltán Tóth M.D., Ph.D., D.Sc.
Department of Obstetrics and Gynecology	Prenatal diagnosis of genetic diseases	AOG558110	1	2	15	AW5	Obstetrics and gynecology I.	Olga Török M.D., Ph.D.
Department of Obstetrics and Gynecology	Practical healthcare in the English-speaking countries in the junior doctors' perspective	AOG558409	1	2	15	AW5	Obstetrics and gynecology II.	Tamás Szilveszter Kovács M.D., Ph.D.
Department of Obstetrics and Gynecology	Gynecological Cancer Detection and Prevention	AOG558009	1	2	16	AW5	Obstetrics and Gynecology I.	Zoltán Hernádi M.D., Ph.D., D.Sc.
Department of Obstetrics and Gynecology	Relaxation methods in obstetrics and gynecology	AOG559209	0	-	16	AW5	Obstetrics and Gynecology II.	Zsuzsa Török M.A., Ph.D.
Department of Otolaryngology and Head and Neck Surgery	Reconstructive and voice rehabilitation methods in head and neck surgery	AOG217410	1	1-2	10	AW5	Propedeutics of Internal Medicine, Physiology II.	Attila Szűcs M.D., Ph.D.
Department of Pathology	Neurodegenerativ diseases	AOG457207	1	-	20	AW5	Pathology II.	Péter Molnár M.D., D.Sc.
Department of Pharmacology	Dietary supplements, herbal medicines	AOG24_001	2	1	30	AW5	None	
Department of Pharmacology	Drug and drug-food interactions	AOG24_003	1	1	15	AW5	None	
Department of Pharmacology and Pharmacotherapy	Introduction to Ayurveda	AOG249209	2	1	26	AW5	Propedeutics of Internal Medicine and Pharmacology II.	

Department	Subject	Neptun code	Crd	Sem	Hours	Exam	Prerequisites of taking the subject	Coordinator
Department of Physiology	Cellular mechanisms of regulation of cardiac function	AOG207605	1	1	14	AW5	Medical Physiology II.	Péter Nánási M.D., Ph.D., D.Sc.
Department of Psychiatry	Self-centered psychotherapy	AOG478009	1	1	13	AW5	None	Anikó Égerházi M.D., Ph.D.
Department of Pulmonology	Asthma bronchiale	AOG587707	1	1	8	AW5	Pathology II.	László Brugós M.D., Ph.D.
Department of Pulmonology	Lung cancer	AOG587607	1	1	10	AW5	Pathology II.	
Department of Surgery	Surgical Oncology	AOG497408	1	1	10	AW5	Pathology II.	Tamás Dinya M.D.
Department of Traumatology and Hand Surgery	State of the art treatment of big joint's injuries. Diagnostic and treatment of pediatric bone and artritic injuries	AOG578608	1	2	12	AW5	Traumatology I., Traumatology II.	Ferenc Urbán M.D.
Department of Urology	Urological Laparoscopic Surgery	AOG599707	1	1-2	15	AW5	Basic Surgical Techiques	Mátyás Benyó M.D., Ph.D.
Department of Urology	Urolithiasis	AOG599807	1	1-2	15	AW5	Pathology II., Propedeutics of Internal Medicine	Csaba Berczi M.D., Ph.D.
Department of Urology	Urological Oncology	AOG599507	1	1-2	15	AW5	Pathology II., Propedeutics of Internal Medicine	Csaba Berczi M.D., Ph.D.
Department of Urology	Benign Prostatic Hyperplasia (BPH)	AOG5910107	1	1-2	15	AW5	Pathology II. and Propedeutics of Internal Medicine	Mátyás Benyó M.D., Ph.D.
Department of Urology	Uro-radiology	AOG5910207	1	1-2	15	AW5	Pathology II. and Propedeutics of Internal Medicine	Csaba Berczi M.D., Ph.D.
Division of Angiology	New methods in the detection of early atherosclerosis	AOG128208	1	2	16	AW5	Internal Medicine III. (Cardiology, Angiology)	Pál Soltész M.D., Ph.D., D.Sc.
Division of Cardiac Surgery	Cardiac Surgery	AOG607508	1	2	22	AW5	Surgery I.	Tamás Szerafin M.D., Ph.D.
Division of Cardiac Surgery	Heart failure: an emerging epidemic in the 21st century	AOG607608	1	2	16	AW5	Clinical Physiology, Internal Medicine III. (Cardiology, Angiology)	Attila Borbély Ph.D.

Department	Subject	Neptun code	Crd	Sem	Hours	Exam	Prerequisites of taking the subject	Coordinator
Division of Cardiology	Echocardiography	AOG317307	1	1	18	AW5	Propedeutics of Internal Medicine, Clinical Physiology	Ida Hegedűs M.D., Ph.D.
Division of Cardiology	Cardiac interventions	AOG317408 -K1	1	1	14	AW5	Internal Medicine I., Clinical Physiology	Tibor Szűk M.D., Ph.D.
Division of Clinical Laboratory Science	Platelet Function and Platelet Function Disorders	AOG632006	1	2	12	AW5	Clinical Biochemistry II.	Krisztina Pénzes-Daku M.Sc., Ph.D.
Division of Clinical Laboratory Science	Quality management in medical diagnostic laboratory	AOG631806	2	2	26	AW5	Pathology I.	Éva Katona M.Sc.
Division of Clinical Laboratory Science	Coagulation factor XIII in health and disease	AOG632607	1	1	15	AW5	grade 4 or 5 in Clinical Biochemistry II., or Complex Pathology II., or membership in the Medical School of University of Debrecen, Student's Scientific Society	László Muszbek M.D., Ph.D., D.Sc., M.H.A.Sc.
Division of Clinical Physiology	Cellular and molecular pathophysiology of the cardiovascular system	AOG337406	1	2	20	AW5	Clinical Physiology	Zoltán Papp M.D., Ph.D., D.Sc.
Division of Clinical Physiology	Professional and Personal Development in Medical Service	AOG337706	2	2	30	AW5	None	
Division of Nuclear Medicine and Translational Imaging	Nuclear medical differential diagnostics	AOG397310	2	-	22	AW5	Radiology and Nuclear Medicine II.	József Varga M.Sc., Ph.D.
Division of Nuclear Medicine and Translational Imaging	Medical imaging: current methods and new trends	AOG468905	1	1	12	AW5	Physiology	László Balkay M.Sc., Ph.D.
Division of Operative Techniques and Surgical Research	Basics of Hemorheology	AOG517908 -K1	1	1-2	10	AW5	Basic Surgical Techniques	Norbert Németh M.D., MBA, Ph.D.

Department	Subject	Neptun code	Crd	Sem	Hours	Exam	Prerequisites of taking the subject	Coordinator
Division of Radiotherapy	Operative techniques in radiotherapy (brachytherapy)	AOG527810	1	1-2	12	AW5	Radiology II.	Andrea Furka M.D., Ph.D.
Division of Radiotherapy	Modern radiotherapy techniques	AOG52_001	1	1	15	AW5	Pathology II	Levente Jánváry M.D.
Division of Rheumatology	Rheumatology: Research and Clinical	AOG149108	1	2	10	AW5	Internal Medicine II. (Immunology and Rheumatology)	Zoltán Szekanecz M.D., Ph.D., D.Sc.
Division of Rheumatology	Vascular and microcirculation abnormalities in systemic sclerosis	AOG1450007	1	2	10	AW5	Immunology-Rheumatology	Gabriella Szűcs M.D., Ph.D.
Institute of Behavioural Sciences, Faculty of Public Health	Inborn Sociality - Socialized Individuality: A New Concept	AOG358902-K8	2	-	30	AW5	None	Péter Molnár M.D., D.Sc.
Institute of Behavioural Sciences, Faculty of Public Health	Becoming a Doctor: Thematic Self-Awareness Group	AOG359005-K10	2	2	30	AW5	None	Péter Molnár M.D., D.Sc.
Institute of Behavioural Sciences, Faculty of Public Health	Evolution and Medicine	AOG359101-K8	1	1	26	AW5	None	Péter Molnár M.D., D.Sc.
Institute of Behavioural Sciences, Faculty of Public Health	The Basic Problems of Medicine	AOG358601	1	1	20	AW5	None	Attila Bánfalvi M.A., Ph.D., C.Sc.
Institute of Behavioural Sciences, Faculty of Public Health	Madness and Psychiatry (Philosophical Approach)	AOG359602	1	2	20	AW5	None	Attila Bánfalvi M.A., Ph.D., C.Sc.
Institute of Behavioural Sciences, Faculty of Public Health	Theory of Psychoanalysis and Its Influence on the Concept of Human Being in Medicine	AOG359501-K8	1	1	20	AW5	None	Attila Bánfalvi M.A., Ph.D., C.Sc.
Institute of Behavioural Sciences, Faculty of Public Health	Psychic Trauma	AOG3511102-K1	1	2	20	AW5	None	Attila Bánfalvi M.A., Ph.D., C.Sc.

Department	Subject	Neptun code	Crd	Sem	Hours	Exam	Prerequisites of taking the subject	Coordinator
Institute of Behavioural Sciences, Faculty of Public Health	Theoretical and Methodological Questions of Patient Satisfaction Studies	AOG359308	1	2	15	AW5	None	Csilla Kemény M.A., Ph.D.
Institute of Behavioural Sciences, Faculty of Public Health	Yoga and Meditation I.	AOG3512001-K1	1	1	30	AW5	None	Péter Molnár M.D., D.Sc.
Institute of Behavioural Sciences, Faculty of Public Health	Bioethical Cases	AOG358706	2	2	30	AW5	None	Péter Molnár M.D., D.Sc.
Institute of Behavioural Sciences, Faculty of Public Health	Intercultural Health Care	AOG3511605-K1	2	2	30	AW5	None	Péter Molnár M.D., D.Sc.
Institute of Behavioural Sciences, Faculty of Public Health	Bioethics on Films	AOG3514405	1	1	26	AW5	None	Péter Kakuk M.A., Ph.D.
Institute of Behavioural Sciences, Faculty of Public Health	Yoga and Meditation II.	AOG3510401-K1	2	2	30	AW5	None	Péter Molnár M.D., D.Sc.
Institute of Behavioural Sciences, Faculty of Public Health	Medicine in Art	AOG3515003	1	1-2	20	AW5	None	Sándor Kőmüves M.A., Ph.D.
Institute of Behavioural Sciences, Faculty of Public Health	Issues about the Start and End of Life	AOG3515103	1	1-2	22	AW5	None	Sándor Kőmüves M.A., Ph.D.
Institute of Behavioural Sciences, Faculty of Public Health	Psychosocial aspects in reproductive medicine	AOG351401	1	1	20	AW5	None	Antal Bugán M.A., Ph.D.
Institute of Behavioural Sciences, Faculty of Public Health	Evolutionary medicine and psychopathology	AOG351801	1	1	20	AW5	Basics of Behavioural Sciences, Communication Skills	Roland Tisljár M.A., Ph.D.

Department	Subject	Neptun code	Crd	Sem	Hours	Exam	Prerequisites of taking the subject	Coordinator
Institute of Behavioural Sciences, Faculty of Public Health	Health and Healing in World Religions	AOG352101	1	1	20	AW5	None	Bence Döbrőssy M.A.
Institute of Behavioural Sciences, Faculty of Public Health	Introduction into Research Ethics	AOG3522607	1	1	20	AW5	None	János Kristóf Bodnár M.A., Ph.D.
Institute of Behavioural Sciences, Faculty of Public Health	Medical sociology on film	AOG3522103	1	1-2	22	AW5	None	Sándor Kőmüves M.A., Ph.D.
Institute of Behavioural Sciences, Faculty of Public Health	End-Of-Life Decisions on Film	AOG35_001	1	1	20	AW5	None	Sándor Kőmüves M.A., Ph.D.
Institute of Behavioural Sciences, Faculty of Public Health	End-of-Life Decisions	AOG35_002	0	1	22	AW5	None	Sándor Kőmüves M.A., Ph.D.
Institute of Sport Science of University of Debrecen	Fitness and health	AOFAH0105	2	1-2	30	AW5	None	Katalin Varga M.Sc.
Institute of Sport Science of University of Debrecen	Pulse Control	AOPULS0205	2	-	30	AW5	Medical Physiology II.	Katalin Varga M.Sc.

CHAPTER 13
INTERIM PRACTICAL BLOCKS

INTERIM PRACTICAL BLOCKS - 4th and 5th year
The aim of the practical blocks is to improve the practical skills of medical students.
Students spend a 1 or 2-week (30 hours a week) practical session in the departments where they fulfill the specified requirements under the supervision of a tutor.
There is a lecture book of practical blocks providing a guideline to the student on the requirements he/she should comply with in course of the practical blocks of the specific semesters and on the basic knowledge and skills he/she has to acquire on the given speciality during the gradual training.
The level of knowledge and skills to be learned is graded as follows:
O: student has observed the given intervention
P: student has performed the given intervention
Participation: Student attends the intervention and (if possible) actively contributes.
The lecture book may specify the expected number of interventions to be performed. The practices can be completed
- at the clinics, departments of the University (in Debrecen);
- at teaching hospitals of the University in Hungary (Debrecen-Kenézy Hospital; in Nyíregyháza, Miskolc, Berettyóújfalu, etc.);
- outside of Hungary

Fulfillment of the practice outside of Hungary is subject to the prior approval of the Sub-Committee for Educational Matters and Credit Transfer.
You are allowed to start the practice in Hungary after the medical check-up with your Health Booklet.
Registration for practice: via Neptun System
Prerequisites: prerequisites of the same 4th and 5th year subject
Students have to register for practice and for the corresponding subject together (in the same semester).

4th YEAR BLOCK PRACTICE

Compulsory: 2*2 weeks Internal Medicine, 1 week Obstetrics and Gynecology, 2 weeks Surgery or Small Surgery
Freely chosen block practice: 1 week (Orthopedics, Radiology, Oral surgery, Urology)
1st semester
2 weeks Internal Medicine (Cardiology and Angiology)
1 week Obstetrics and Gynecology and 1 week freely chosen (optional) or 2 weeks Surgery/Small Surgery
2nd semester
2 weeks Internal Medicine (Endocrinology, Nephrology)
1 week Obstetrics and Gynecology and 1 week freely chosen (optional) or 2 weeks Surgery/Small Surgery
In case you choose Obstetrics and Gynecology in the 1st semester then you have to choose Surgery/Small Surgery in the 2nd semester and vice versa.

4th year block practice	possible clinic/hospital department
Internal Medicine (Cardiology and Angiology)	Internal Medicine, Cardiology, Pulmonology
Internal Medicine (Endocrinology, Nephrology)	Internal Medicine
Obstetrics and Gynecology	Obstetrics and Gynecology

Surgery	Surgery, Traumatology
Small Surgery	Orthopedics, Oral Surgery, Urology
Freely Chosen Block Practice (optional)	Orthopedics, Oral Surgery, Radiology, Urology

5th YEAR BLOCK PRACTICE

Compulsory: 2*2 weeks Internal Medicine, 2 weeks Pediatrics or 1 week Neurology and 1 week freely chosen

Freely chosen block practice: 1 week (Otolaryngology, Orthopedics, Radiology, Oral surgery, Ophthalmology, Urology)

1st semester

2 weeks Internal Medicine (Gastroenterology)

2 weeks Pediatrics or 1 week Neurology and 1 week freely chosen block practice (optional)

2nd semester

2 weeks Internal Medicine (Hematology)

2 weeks Pediatrics or 1 week Neurology and 1 week freely chosen block practice (optional)

In case you choose Pediatrics in the 1st semester then you have to choose Neurology in the 2nd semester and vice versa.

5th year block practice	possible clinic/hospital department
Internal Medicine (Gastroenterology)	Internal Medicine, Infectology, Dermatology
Internal Medicine (Hematology)	Internal Medicine, Infectology, Dermatology
Pediatrics	Pediatrics
Neurology	Neurology
Freely Chosen Block Practice (optional)	Ophthalmology, Orthopedics, Oral Surgery, Otolaryngology, Radiology, Urology

Calendar for the 4th and 5th year block practice in the academic year 2016/2017:

semester	weeks	dates
1.	11-12	November 21, 2016 - December 2, 2016
	13-14	December 5, 2016 - December 16, 2016
2.	11-12	April 24, 2017 - May 5, 2017
	13-14	May 8, 2017 - May 19, 2017

CHAPTER 14
ACADEMIC PROGRAM FOR THE 1ST YEAR

Department of Foreign Languages

Subject: **HUNGARIAN CRASH COURSE**
Year, Semester: 1st year/1st semester
Number of teaching hours:
Practical: **36**

1st week:
Practical: 1st day: Introduction, The Hungarian alphabet, Vowel harmony. Ki vagy? Köszönések. Personal pronouns, Conjugation of the verb "lenni".2nd day: Köszönések (Greetings). Magyar nevek, magyar családnevek. Számok (Numbers). Fontos telefonszámok, telefonszámok kiolvasása.3rd day: Magyar pénz. How many? Ordinal numbers. Hogy vagy? Milyen nyelven beszélsz? Word formation with "-ul, -ül".4th day: Mit csinálsz? Present tense verbal endings. Adverbs of time. Hová mész ma este? "Lenni" in past and future. Adverbs of place.5th day: Mit kérsz? Te vs. ön/maga. Object of the sentence. Revision of previous topics.

2nd week:
Practical: 1st day: Kérsz egy kávét? Word formation. Plural marker. Tud/akar/szeret/szeretne gitározni. Infinitive. 2nd day: Milyen idő van ma? "-ik" group verbs. Irregular verbs in the present tense. Postán. Vasútállomáson. Mit eszünk ma este? Double negation. The negative of "van, vannak".3rd day: Tetszik a ruhád. Possessive. Az emberi test. Nekem van.4th day: Milyen szeme van? Absence of "van, vannak". Comparison. Summary. Practice.5th day: End course exam. Oral minimal requirement exam.

Requirements

9.00 - 10.30: language classes
10.30 - 11:00 break
11.00 - 12.30: language classes

Assessment: five grade evaluation (AW5).

Evaluation: Based on a written final test (80 %) + class participation + daily word quizzes (20 %).

Passing the oral exam is a minimal requirement for the successful completion of the Hungarian Crash Course. The oral exam consists of a role-play randomly chosen from 7 situations announced in the beginning of the course. Further minimal requirement is the knowledge of 200 words announced at the beginning of the course.

STUDENTS WHO DO NOT ATTEND THE HUNGARIAN CRASH COURSE DUE TO THEIR OWN FAULT OR FAIL THE ORAL EXAM HAVE TO TAKE AN EXTRA COURSE FOR AN ADDITIONAL FEE OF 500 USD DURING THE FIRST SEMESTER.

Subject: **HUNGARIAN LANGUAGE I/1.**
Year, Semester: 1st year/1st semester
Number of teaching hours:
Practical: **24**

1st week:
Practical: Revision.

2nd week:
Practical: Pretest

3rd week:
Practical: Unit 1

4th week:
Practical: Unit 2

5th week:
Practical: Unit 2

6th week:
Practical: Unit 3

7th week:
Practical: Revision (Mid-term test)

8th week:
Practical: Unit 4

9th week:
Practical: Unit 5

10th week:
Practical: Unit 5

11th week:
Practical: Revision.

12th week:
Practical: End-Term test. Oral minimum exam.

Requirements

Attendance

Language class attendance is compulsory. The maximum percentage of allowable absences is 10 % which is a total of 2 out of the 15 weekly classes. Students arriving late for the classes are not allowed to enter the class. Being late is counted as an absence. If the number of absences is more than two, the final signature is refused and the student must repeat the course. Students are required to bring the textbook or other study material given out for the course with them to each language class. Active participation is evaluated by the teacher in every class. If students' behaviour or conduct does not meet the requirements of active participation, the teacher may evaluate their participation with a "minus" (-).
If a student has 5 minuses, the signature may be refused due to the lack of active participation in classes.

Testing, evaluation

In each Hungarian language course, students must sit for 2 written language tests and a short minimal oral exam.

A further minimum requirement is the knowledge of 200 words per semester announced on the first week. There is a (written or oral) word quiz in the first 5-10 minutes of the class, every week. If a student has 5 or more failed or missed word quizzes he/she has to take a vocabulary exam that includes all 200 words along with the oral exam. The results of word quizzes are added to the average score of the written tests.

The oral exam consists of a role-play randomly chosen from a list of situations announced in the beginning of the course. Failing the oral exam results in failing the whole course. The result of the oral exam is added to the average of the mid-term and end-term tests.

Based on the final score the grades are given according to the following table:

Final score	Grade
0 - 59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

If the final score is below 60, the student once can take an oral remedial exam covering the whole semester's material.

Consultation classes: In each language course once a week students may attend a consultation class with one of the teachers of that subject in which they can ask their questions and ask for further explanations of the material covered in that week. These classes are optional.
Course book: Győrffy, E.: Hogy s mint? I.
Website: Audio files to the course book, oral exam topics and vocabulary minimum lists are available from the website of the Department of Foreign Languages: ilekt.med.unideb.hu.

Department of Medical Chemistry

Subject: **MEDICAL CHEMISTRY**
Year, Semester: 1st year/1st semester
Number of teaching hours:
Lecture: **48**
Seminar: **60**
Practical: **45**

1st week:
Lecture: Introduction to Medical Chemistry. Quantum theory and the atom. Electronic structure and the periodic table. Types of chemical bonds. Covalent bonding and properties of molecules.
Seminar: Introduction to Medical Chemistry. Quantum theory and the atom. Electronic structure and the periodic table. Types of chemical bonds. Covalent bonding and properties of molecules.
Practical: Laboratory safety instructions. Fire-regulations. Chemical calculations. Concentration of solutions.

2nd week:
Lecture: Intermolecular forces. Changes of state. Kinetic-molecular theory of gases and liquids. Solutions and colloids.
Seminar: Intermolecular forces. Changes of state. Kinetic-molecular theory of gases and liquids. Solutions and colloids.
Practical: Laboratory techniques: laboratory equipments, volumetric apparatus. Filtration. Preparations of solutions. Chemical analysis of drinking-water.

3rd week:
Lecture: Chemical equilibrium. Ionic equilibria. Acids and bases: Acid base equilibria. Bronsted Lowry and Lewis theories
Seminar: Chemical equilibrium. Ionic equilibria. Acids and bases: Acid base equilibria. Bronsted Lowry and Lewis theories
Practical: Quantitative analysis. Acid-base titrations: strong acid-strong base, weak acid-strong basetitrations. Chromatography I. Paper chromatography: separation of food dyes and separation of metalions.

4th week:
Lecture: Thermochemistry and thermodynamics. Chemical kinetics.
Seminar: Thermochemistry and thermodynamics. Chemical kinetics.
Practical: Quantitative analysis. Acid-base titrations: strong acid-strong base, weak acid-strong basetitrations. Chromatography I. Paper chromatography: separation of food dyes and separation of metalions.

5th week:
Lecture: Electrochemistry. Thermodynamics of redox reactions. Introduction to organic chemistry. Stereochemistry.
Seminar: Electrochemistry. Thermodynamics of redox reactions.Introduction to organic chemistry. Stereochemistry.
Practical: Chromatography II. Ion exchange chromatography. Gel filtration. Desalting of egg-white solution. Reactions kinetics. Kinetic study of the saponification reaction of ethylacetate. Kineticanalysis of the oxidation of iodide ion using the Landolt-method.

6th week:
Lecture: Saturated and unsaturated hydrocarbons. Aromatic hydrocarbons.
Seminar: Saturated and unsaturated hydrocarbons. Aromatic hydrocarbons.
Practical: Chromatography II. Ion exchange chromatography. Gel filtration. Desalting of egg-white solution. Reactions kinetics. Kinetic study of the saponification reaction of ethylacetate. Kineticanalysis of the oxidation of iodide ion using the Landolt-method.

Self Control Test

7th week:
Lecture: Alcohols and phenols. Organic halogen compounds. Aldehydes and ketones and quinones. Ethers. Organic sulfur compounds.
Seminar: Alcohols and phenols. Organic halogen compounds.
Practical: Elektrometry. Electrometric pH measurement. Potentiometric titrations. Determination of buffering capacity. Spectrophotometry. Photometric determination of inorganic phosphate. Determination of acidlabile phosphate in organic compounds.

8th week:
Lecture: Nitrogen containing compounds Carboxylic acids and carboxylic acid derivatives
Seminar: Aldehydes and ketones and quinones. Ethers. Organic sulfur compoundsNitrogen containing compounds
Practical: Elektrometry. Electrometric pH measurement.Potentiometric titrations. Determination ofbuffering capacity. Spectrophotometry. Photometric determinationof inorganic phosphate. Determination of acidlabile phosphate in organic compounds.

9th week:
Lecture: Amino acids and peptides Proteins (Structure, function and regulation)
Seminar: Carboxylic acids and carboxylic acid derivatives Amino acids and peptides
Practical: Redox titrations. Iodometric titrations. Titrations with potassium bromate. Enzyme kinetics.Assay of glycogen phosphorylase activity.

10th week:
Lecture: Proteins in action. Carbohydrates.
Seminar: Proteins (Structure, function and regulation) Enzymes and enzyme regulation
Practical: Redox titrations. Iodometric titrations.Titrations with potassium bromate. Enzyme kinetics. Assay of glycogen phosphorylase activity.

11th week:
Lecture: Glycolytic pathway and tricarboxylic

acid cycle. Lipids.
Seminar: Carbohydrates. Glycolytic pathway and tricarboxylic acid cycle Regulation of metabolic pathways
Practical: Qualitative analysis of mono- and disaccharides. Polarimetry. Polarimetric analysis of carbohydrates. Quantitative protein analysis: Biuret assay. Bradford assay. Assay of glucose. Enzymatic determination of glucose in blood serum.
Self Control Test

12th week:
Lecture: Regulation of metabolic pathways. Nucleotides and nucleic acids.
Seminar: Lipids Nucleotides and nucleic acids.
Practical: Qualitative analysis of mono- and disaccharides. Polarimetry. Polarimetric analysis of carbohydrates. Quantitative protein analysis: Biuret assay. Bradford assay. Assay of glucose. Enzymatic determination of glucose in blood serum.

13th week:
Lecture: Chromatine structure. Coordination chemistry. Function and transport of alkaline and alkaline earth metal cations.
Seminar: Genes and chromatine Coordination chemistry. Function and transport of alkaline and alkaline earth metal cations
Practical: Analysis of inorganic salts and complexes. Complexometric titrations. Photometric determination of iron.

14th week:
Lecture: Transition metals: iron, copper, zinc. Biological functions of the nonmetallic elements: oxygen, selenium, halogens
Seminar: Transition metals: iron, copper, zinc. Biological functions of the nonmetallic elements: oxygen, selenium, halogens
Practical: Analysis of inorganic salts and complexes. Complexometric titrations. Photometric determination of iron.

15th week:
Lecture: Research opportunities for students at Dept. Medical Chemistry Preparation for the exam
Seminar: Research opportunities for students at Dept. Medical Chemistry Preparation for the exam
Practical: Practical exam.
Self Control Test

Requirements

The program consists of lectures, seminars and laboratory practices. Attendance at laboratory practices and seminars is recorded. Students should attend at least 80% of seminars and 100% of laboratory practices. Missed and not accepted practices can be made up by the students on the same week or the next week (if the missed lab is still running and the laboratory teacher permits). If the student fails the practical examination (on week 15), (s)he cannot get exemption from the written part of final examination and her/his final exam will also cover the laboratory practices.
Three control tests (general chemistry; organic chemistry; bioorganic and bioinorganic chemistry) covering the topics of lectures and seminars will be written during the semester. Preparation for the tests and exams should be based on the official textbooks, lectures and seminars.
Control tests and final exams will be assessed as follows*:

Percentage (%)*	Mark
0-56	fail (1)
57-65	pass (2)
66-75	satisfactory (3)
76-84	good (4)
85-100	excellent (5)

*Percentage values may slightly vary depending on the actual number of questions in the

tests/exams.
The final exam consists of a written exam and an oral examination. The written test is composed of multiple choice questions arranged into three modules: general chemistry; organic chemistry; bioorganic and bioinorganic chemistry. The student may get exemption from any module(s) of the final written exam in case (s)he successfully completed the control tests of the corresponding module. Results of control tests and exam modules can be carried to B or C chance exams. The student can only pass the written part of the exam if the result of all three modules is at least "pass (2)". The second part of the final exam is an oral exam covering all three modules. Only students who passed the written exam qualify to sit the oral exam.
Students who have successfully passed the exam but want to improve their mark are allowed to take one improvement exam.
In case the students take the exam in the second semester at the end of an exam course, then all three modules of the exam must be taken and results of previous control tests or exam modules cannot be considered.

Division of Biomathematics

Subject: **BIOSTATISTICS**
Year, Semester: 1st year/1st semester
Number of teaching hours:
Seminar: **28**

1st week:
Lecture: 1. Introduction, random variables, qualitative variables, quantitative variables, discrete and continuous random variables 2. Counting techniques (permutations and combination), set theory, definition and properties of probability, conditional probability, Bayes's theorem

2nd week:
Lecture: 3. Descriptive statistics, ordered array, frequency distribution, cumulative frequency distribution, histogram mean, median, mode, range, variance
Seminar: Material related to lecture 1.

3rd week:
Lecture: 4. Probability distributions (discrete, continous), Binomial and Poisson distributions
Seminar: Material related to lecture 2.

4th week:
Lecture: 5. Normal distribution, standard normal distribution, problems for normal and standard normal distributions
Seminar: Material related to lecture 3.

5th week:
Lecture: 6. Sampling, sampling distributions (special focus on SEM and the central limit theorem).
Seminar: Material related to lecture 4.

6th week:
Lecture: 7. Hypothesis testing, type I and type II errors
Seminar: Material related to lecture 5.

8th week:
Lecture: 8. Statistical tests (z, t and F tests)
Seminar: Material related to lecture 6.

9th week:
Lecture: 9. Clinical implications of conditional probability (sensitivity, specificity, positive and negative predictive values). Analysis of discrete random variables.
Seminar: Material related to lecture 7.

10th week:
Lecture: 10. Summary
Seminar: Material related to lecture 8.

11th week:
Seminar: Material related to lecture 9.

Requirements

Aim of the course:

The aim of the subject is to give an introduction to biostatistical methods, which can be used in different branches of medicine to solve biostatistical problems and to evaluate experimental results. In addition to providing a solid theoretical foundation the course will also introduce the students to the art and science of performing the simplest calculations.

Short description of the course

Brief introduction to the most basic concepts of calculus (slop, fitting, area under the curve); counting techniques; descriptive statistics; algebra of events; probability; random variables; statistical distributions and their properties; binomial, Poisson and normal distributions; sampling techniques and characterization of samples; statistical test (z, t, F and chi2 tests)

Attendance

Conditions for signing the lecture book
Signing of the lecture book is denied if there are more than 2 absences from groupwise seminars.

Self control test

Students will write a grade-offering course test between weeks 12-14. The structure of this test will be identical to that of the final exam.

Exam

Students will write a grade-offering course test between weeks 12-14. The structure of this test will be identical to that of the final exam.

Final grade

Evaluation of the grade-offering test and the final exam is identical. - If the score of part A is less than 75% (30 out of 40 points), the student fails the grade-offering test or the final exam. Bonus points for lecture attendance are not added to the result of part A. If a student passes part A (i.e. the score is larger than or equal to 75%) on an exam or the grade-offering course test, the result is valid for his/her subsequent exam chances, i.e. it does not have to be retaken. - If the result of part A is less than 75%, part B is not evaluated (except for a C chance exam). If the student passes part A, bonus points (10p) for lecture attendance are added to the score of part B (max 100p) resulting in a final score (max 110p), which does not contain the score of part A. Based on this final score the following grades are offered:

- FS<55 fail
- 55≤FS<65 pass
- 65≤FS<75 satisfactory.
- 75≤FS<85 good
- 85≤FS excellent

A grade of 2 or better achieved on the grade-offering test is valid for the final exam. The bonus points for lecture attendance and the exemption from retaking part A of the exam are only valid for the course in which they have been achieved, i.e. they are not valid for repeated courses or exam courses. Rules for C-chance exams If the result of the written part of a C-chance exam is at least a pass (2) according to the rules pertaining to A- and B-chance exams, the grade of the C-chance exam will be what is to be offered based on the rules of the A- and B-chance exams. Part B of the written part of a C-chance exam will be scored even if the score of part A is less than 75%. If the result of a C-chance exam is a fail (the score of part A is less than 75% or the grade of part B with the bonus points is a fail), the written part will be followed by an oral exam. In this case the grade of the C-chance exam will be determined by the result of the written test and the performance on the oral exam.

Reading materials

Wayne W. Daniel: Biostatistics, A foundation for Analysis in the Health Sciences, John Wiley&Sons

Exemptions

Requests for exemptions from the Biostatistics course have to be turned in to the Credit Transfer Committee. Such requests cannot be directly turned in to the Biomathematics Division or the Department of Biophysics and Cell Biology.

Information for repeaters

Credits achieved in a semester cannot be transferred to other semesters. Therefore, students repeating the course are subject to the same rules and requirements as those taking the course for the first time.

Rules for calculator

Rules for calculator usage during course tests and the final examination In order to ensure a fair evaluation, to avoid disturbances in the testing room, and to protect the security of the test material the following types of calculators are NOT permitted: - calculators with built-in computer algebra systems (capable of simplifying algebraic expressions) - pocket organizers, handheld or laptop computers - any device capable of storing text. Calculators with a typewriter keypad (so-called QWERTY devices), electronic writing pads and pen-input devices are not allowed either. Calculators with letters on the keys (e.g. for entering hexadecimal numbers or variable names) are permitted as long as the keys are not arranged in QWERTY format. - calculators or other devices capable of communicating with other devices - calculators built into wireless phones - calculators with paper tape or models that make noise In general, students may use any four-function, scientific or graphing calculator except as specified above. Sharing calculators during tests is not allowed, and the test proctor will not provide a calculator.

Division of Biophysics

Subject: **BIOPHYSICS**
Year, Semester: 1st year/1st semester
Number of teaching hours:
Lecture: **30**
Seminar: **30**
Practical: **22**

1st week:
Lecture: 1. Introduction. Electromagnetic waves , the properties of light (interference, photoelectric effect, photon theory). Matter waves.
2. X-ray, X-ray crystallography.
Seminar: Introduction.

2nd week:
Lecture: 3. Thermal radiation, light absorption and emission. Atomic and molecule spectra, absorption spectroscopy.
4. Fluorescence spectroscopy, applications of fluorescence.
Seminar: Material related to lectures 1 and 2.
Practical: Week 2-11: Practicals in rotation system. Labs to be performed: (1) Measurement of diffusion constant; (2) Optical measurements; (3) Microscopy; (4) Computer tomography and blood pressure measurement; (5) Measurement with a Geiger-Müller counter. Attenuation of nuclear radiation. For detailed information (timetable, protocols, requirements, etc.) see the web page of the Department.

3rd week:
Lecture: 5. Lasers and their application in medicine.
6. Optics, optical microscopy, electron microscopy.
Seminar: Material related to lectures 3 and 4.
Practical: Practicals in rotation system.

4th week:
Lecture: 7. Physical properties of sound, ultrasound, Doppler principle. Medical applications of ultrasound.
8. Nuclear physics. Nuclear binding energy, radioactivity, law of radioactive decay, radioactive series.
Seminar: Material related to lectures 5 and 6.
Practical: Practicals in rotation system.

5th week:
Lecture: 9. Features of nuclear radiation and its interaction with absorbing material. Detection of radiation.
10. Radiation biophysics: target theory, direct and indirect action of radiation. Dosimetry. Biological effects of radiation.
Seminar: Material related to lectures 7 and 8.
Practical: Practicals in rotation system.

6th week:
Lecture: 11. Experimental and diagnostic application of isotopes. Accelerators, Gamma camera.
12. Principles of tomographic methods. PET, SPECT and X-ray absorption CT.
Seminar: Material related to lectures 9 and 10.
Practical: Practicals in rotation system.

7th week:
Lecture: 13. Basic principles of Nuclear Magnetic Resonance (NMR) and Electron Spin Resonance (ESR).
14. Magnetic resonance imaging (MRI). Magnetic resonance spectroscopy (MRS).
Seminar: Material related to lectures 11 and 12
Practical: Practicals in rotation system.
Self Control Test

8th week:
Lecture: 15. Free enthalpy, chemical potential.

Thermodynamic probability, Brownian motion, osmosis.
16. Diffusion at the molecular level, statistical interpretation. Fick's I. and II. Law.
Seminar: Material related to lectures 13 and 14.
Practical: Practicals in rotation system.

9th week:
Lecture: 17. The structure of biological membranes. Membrane transport.
18. Thermodynamic equilibrium potentials (Nernst, Donnan). Diffusion potential, Goldman-Hodgkin-Katz equation.
Seminar: Material related to lectures 15 and 16.
Practical: Practicals in rotation system.

10th week:
Lecture: 19. Resting potential, action potential, and electrical excitability. Measurement of membrane potential.
20. Ion channels (gating, selectivity), the "patch clamp" technique.
Seminar: Material related to lectures 17 and 18
Practical: Practicals in rotation system.

11th week:
Lecture: 21. The physical background of ECG and EEG.
22. Fluid mechanics, blood circulation.
Seminar: Material related to lectures 19 and 20.
Practical: Practicals in rotation system.

12th week:
Lecture: 23. The human ear. Mechanism of hearing. The Weber-Fechner law.
24. The human eye. Photoreceptors. The molecular mechanism of vision.
Seminar: Material related to lectures 21 and 22.
Practical: Spare lab.
Self Control Test

13th week:
Lecture: 25. Biomechanics.
26. Flow cytometry and its application in medicine.
Seminar: Material related to lectures 23 and 24.
Practical: Practical exam.

14th week:
Lecture: 27. Biophysics of respiration
28. Modern microscopic techniques, near field, atomic force microscopy, confocal laser scanning microscopy.
Seminar: Material related to lectures 25 and 26.
Practical: Practical exam.

15th week:
Lecture: 29. Research in the Department
30. Preparation for the exam: question, answers
Seminar: Material related to lectures 27 and 28.

Requirements

Requirements

1. Lectures

Attendance to lectures is emphatically recommended. All material covered in lectures is an integral part of the subject and therefore included in the self-control tests and the final exam. Some new concepts and ideas are discussed in the lectures only and are not present in the textbook.

2. Seminars

Attendance to seminars is compulsory, however, a student may miss maximum 7 (seven) seminars. Students may attend the seminars according to their group assignment only. In the seminars, students are encouraged to ask questions related to the topic of the lectures discussed (see timetable of lectures and seminars). Besides, students may prepare short presentations (7-15 minutes) about the topic of the seminars (max. 2 students/seminar). The topic list for short presentations is posted to the web page of the Department. The talks are graded on a scale of 0-3. This grade counts toward the bonus points earned during the semester. Students obtaining less than 3 points for the presentation may prepare an additional one (in the student's own group) given that spots are still available. In this case the better score is considered for bonus points (the two presentations are not cumulative). To get the maximum 3 points for the presentation the followings must be fulfilled:

- keeping the allocated time (min. 7, max. 15 min);
- good quality of the figures (axis labels, colour combinations, appropriate resolution);
- simply reading the text from the slides is not appropriate
- teaching merit of the presentation (too many slides without proper explanation is not accepted here).

The presenting student must show up at the beginning of the class to allow time for file uploading and technical arrangements; students arriving late may be denied of the chance to present their work.

3. Practicals

Attendance to labs is mandatory. One (that is only 1) lab missed with acceptable excuse can be completed during the spare practical on week 12 with a written permission (recorded in the lab logbook) of the manager of education (permission is given during the office hours only). Students may attend the practicals according to their group assignment only. For the practicals a separate logbook should be prepared which is graded at the end of the lab on a scale between 0-3. (Getting 0 means that the lab is not accepted and it has to be repeated.) However, the lab tutor may test the students' preparation for the practical any time during the practical and – based on the result – might instruct the student to repeat the lab (scheduling and conditions are the same as for absences). At the end of the semester, the grades for your logs and your attitude during labs will be summed up as a Practical Grade (PG) on a scale of 0-3. Detailed requirements of the labs (reading for the labs, instructions for logbook preparation, details of the grading system, etc.) are posted on the webpage of the Department.

Practical exam (week 13 or 14): Students can take a lab exam during their regular lab class on week 13 or 14. It is not allowed to repeat the lab exam to improve the grade. The duration of the exam is approximately 30 minutes and students have to perform an experiment based on the semester work, assigned randomly. The examiner checks the record of the experiment and also may ask questions from the labs. The grading will be on a scale of 0-3 (PE grade) based on the record of the experiment, calculations/graphs (concept, work plan, clarity and punctuality are primary consideration) as well as oral performance.

Evaluation of the practical part:

PG+PE >=3 and PE >0, practical part accepted, exempted from practical exam on the day of the Final Exam. (a practical exam with 0 points has to be repeated regardless of the practical grade)
1 < PG+PE < 3 practical part accepted, practical exam on the day of the Final Exam.
PG+PE =< 1, practical part is not accepted, the semester is not accepted.

For students who were exempted from attending the practicals, but have to take the lab exam, the exam is evaluated as a pass or fail.

4. Exemptions

In order to get full exemption from the *Biophysics* course the student has to write an application to the Educational Office. The Department of Biophysics and Cell Biology does not accept such applications. Applications for exemptions from part of the courses are handled by the department. The deadline for such applications is Friday on the third week. No application will be considered after this date. The following documents have to be submitted to the study adviser: 1. application with an explanation why the student thinks that he/she is eligible for an exemption; 2. certificates about the courses the student has taken; 3. a reliable description of the curriculum of the courses taken. An application is rejected, accepted, or in most cases students applying for an exemption will be examined by the Biophysics Chairman before granting an exemption. Applicants will be notified whether they have to take such an examination. The deadline for taking such an exam is Friday on week 5.

5. Conditions for signing the lecture book

- 7 or fewer absences from seminars;
- All labs accepted, PG+PE > 1.

6. Self-control tests

There will be 2 self-control tests (SCT) during the semester (week 7 and week 12).

Topics for the 1st SCT: lectures up to (including) week 5, and discussed on seminars on week 6.

Topics for the 2nd SCT: lectures up to (including) week 10, and discussed on seminars on week 11. Approximately 90% of the questions will focus on the topics not included in the 1st SCT.
None of the SCTs are obligatory. The type of the questions will be similar to those on the final exam (FE). The SCTs will include five minimum requirement questions as well proportional to the SCT topics plus the physics background questions. Each SCT will be graded (0-100 %, 0% for absence) and the results of the two SCTs will be averaged (X_{ave}). The missed test is counted as 0% in the calculation of the average. Missed SCTs cannot be made up at a later time. Based on the written tests students may obtain the following bonus points and exceptions from the final exam:

i) if X_{ave} is at least 66 points, the student is exempted from part A of the biophysics final exam (see below);
ii) according to X_{ave} SCT bonus points earned to the FE are as follows:

X_{ave}	SCT bonus points	X_{ave}	Bonus points	X_{ave}	bonus points
0- 34.99	0	55-60.99	7	73-78.99	10
35-49.99	5	61-65.99	8	79-	11
50-54.99	6	66-72.99	9	85-	see point iii)

iii) if X_{ave} is at least 85 the student is eligible for a grade-offering oral exam conducted at the end of

the semester, where – based on his/her performance – grades 4 or 5 can be offered. Topics of the oral exam exclusively are lectures that were not included in the two SCTs (i.e. lectures from Week 11 on).
If the student does not show up in the oral exam or his/her performance is not sufficient on the grade-offering exam, no grades are offered and the student should take the regular written FE during the exam period.

7. Final Examination (FE)

Students have three chances (A, B, C) for passing the biophysics final exam in the winter exam period after the semester in which the course was taken.
The FE consists of 3 parts:
Part I.: Practical exam. The practical exam is similar to that explained in section 3. Those reaching PG+PE >=3 and PE >0 during the semester are exempted. Practical exam taken in the exam period is evaluated as pass or fail, independent of the practical grade (PG). The result of the practical exam is not counted into the result of the written exam (part III. of the FE). The result of a successful practical exam is valid for further exam chances (B- or C-chances).

Part II.: Minimum requirement questions. It consists of a written quiz of 20 minimum requirement questions. One must pass this part to have the written test (part III.) evaluated. Minimum requirement questions and the answers thereto are provided on the website of the Department (biophys.med.unideb.hu). 16 out of 20 have to be answered correctly in order to pass this part. Exemption from this part of the FE is discussed in 6. i). This part is evaluated as pass or fail, once passed it is valid for further exam chances (B- or C-chance) of the FE. The result of the minimum requirement questions are not counted into the result of the written test (part III. of the FE).

Part III.: Written exam. It consists of essays, fill-in-the-missing-phrase type questions, relation analysis and various simple test and multiple-choice questions etc. Part III. will only be evaluated if part I. and part II. are both passed. However, those failing part II. can still do the practical exam (part I.) on the day of the FE. The total bonus for the semester (SCT bonus points (max. 11) + seminar bonus points (max. 3)) will be added to the score of the written exam ONLY IF a minimum score of 45% is achieved in part III. of the FE. Additional exemptions are in point 6. iii)
Evaluation of the FE:

Grade is calculated based on the sum of written exam score + bonus points (see conditions for the bonus points above)

Grade	written exam score + bonus points
fail (1)	0 – 54.99
pass (2)	55 – 64.99
satisfactory (3)	65 – 74.99
good (4)	75 – 84.99
excellent (5)	85 –

Rules for C-chance exams:

The C-chance exams are conducted by a committee. All exemptions regarding Part I. and Part II. of the FE gained in the given semester apply to the C-chance as well. The evaluation process of the C-chance exam differs from the regular procedure (A- and B-chance) in the followings:

-Part III. is evaluated even if Part II. is failed.

-If either Part II. or Part III. is failed an oral exam is conducted.

-Part I. of the exam must be conducted in front of the committee.

If the student passes all three parts of the FE (either based on exemptions or C-chance written results) the grade will be determined by the result of part III.

Dates, sites and detailed instructions for SCTs and the FE will be announced on the notice board of the Department of Biophysics and Cell Biology and on the educational web site (biophys.med.unideb.hu).

8. Rules for the usage of calculators during self-control tests and the final examination

In order to ensure a fair evaluation, to avoid disturbances in the testing room, and to protect the security of the test material the following types of calculators are NOT permitted:

- calculators with built-in computer algebra systems (capable of simplifying algebraic expressions)
- pocket organizers, handheld or laptop computers
- any device capable of storing text. Calculators with a typewriter keypad (so-called QWERTY devices), electronic writing pads and pen-input devices are not allowed either. Calculators with letters on the keys (e.g. for entering hexadecimal numbers or variable names) are permitted as long as the keys are not arranged in QWERTY format.
- Calculators or other devices capable of communicating with other devices
- Calculators built into wireless phones
- Calculators with paper tape or models that make noise

In general, students may use any four-function, scientific or graphing calculator except as specified above. However, we reserve the right to prohibit the usage of ANY type of calculator, computer and data storage and retrieval device during some tests if no calculations or only very simple calculations are necessary.
Sharing calculators during tests is not allowed and the test proctor will not provide a calculator.

9. Information for repeaters

- if all labs and the practical exam were completed and accepted during the failed semester, the student is exempted from repeating these;
- if all labs were completed and accepted during the failed semester without a valid practical exam,

the student must do it as a part of the final exam (section 7 b));
- attendance to seminars is compulsory (see point 2);
- all exemptions and bonuses obtained during the failed semester (self-control tests, exemption from minimals) are lost;
- according to the relevant rules (point 6) self-control tests may be written and exemptions may be obtained again;
- in the case of schedule collisions with 2nd year classes we ask students to choose 2nd year groups such that conflicts with the 1st year subjects can be avoided (i.e. the student is still considered to be a 1st year student!).

10. Information for Exam Course students

Points 1-6 and 9 are irrelevant. Point 8 applies fully.
Point 7 applies with the following modifications: students can only keep the exemption regarding the practical part of the exam (Part I) which was earned during the semester preceding the exam course.
Bonus points and the exemption from taking part II of the exam are not valid for exam courses. These are valid for the course in which they have been achieved, i.e. if one passes part II in a given exam course it will be valid for B and C chances of that exam course.

Further information: Zsolt Fazekas, Ph.D., manager of education, Dept. of Biophysics and Cell Biology

E-mail: biophysedu@med.unideb.hu

Office hours: The location and time of office hours are posted in the News section of the Department's web page.

Division of Emergency Medicine

Subject: **FIRST AID AND REANIMATION**
Year, Semester: 1st year/1st semester**,** 1st year/2nd semester
Number of teaching hours:
Lecture: **6**
Practical: **15**

1st week:
Lecture: Definition of "first aid"; first aid levels; time factor; behaviour of first responder in the field; the emergency call

2nd week:
Lecture: Unconsciousness; airway obstruction; airway opening maneuvers.

3rd week:
Lecture: Death as a process; determining of clinical death; the different oxygen demand of the brain depending on age; establishing unconsciousness or death; assessment of vital signs; assessment of breathing, circulation, pupils and muscle tone

4th week:
Lecture: Reanimation on the spot – organization problems; the theory of CPR; complications during the CPR; effect, results and success during CPR

5th week:
Practical: Examination of breathing and circulation; the chest-thrust; airway opening maneuvers; the recovery position (Gábor maneuver); one hour

6th week:
Practical: Practicing the ventilation (one hour)

7th week:
Practical: Practicing the chest compression (one hour)

8th week:
Practical: CPR training without equipment (two hours)

9th week:
Practical: CPR training, two-rescuer method (two hours)

10th week:
Practical: Bleeding control with direct pressure and pressure point techniques; bandages and fixation; equipments, tools and maneuvers; general rules of provisory injury therapy; pressure bandage for controlling of arterial and venous bleeding on the spot (two hours)

11th week:
Practical: Bandages for head, nose; ears, eyes; chin, body and extremities; practicing the bandages (two hours)

12th week:
Practical: First aid in fractures, luxations, distortions and extended soft-tissue injuries; bandage for fixation with special triangle; Schantz collar; stifneck; Dessault bandage; fixation of finger and hand fractures; usage of Kramer splint and pneumatic splint (two hours)

13th week:
Practical: CPR training (two hours)
Self Control Test

14th week:
Lecture: Burning; first aid in burning diseases; shock

15th week:
Lecture: Intoxication; guideline of poisoning in toxicology; typical intoxications, special signs, first aid

Requirements

Condition of signing the Lecture book:

Attendance at practices is compulsory. The tutor may refuse to sign the Lecture book if the student is absent from the practices more than twice in a semester. Missed practices should be made up for after consultation with the practice tutor. Facilities for a maximum of 2 make-up practices are available at the Ambulance Station in Debrecen. The current knowledge of students will be tested two times in each semester in written test.

Institute of Behavioural Sciences, Faculty of Public Health

Subject: **BASICS OF BEHAVIOURAL SCIENCES**
Year, Semester: 1st year/1st semester
Number of teaching hours:
Lecture: **20**

1st week:
Lecture: Introduction. Behavioural Sciences.

2nd week:
Lecture: Basics of Bioethics.

3rd week:
Lecture: Basics of Medical Anthropology.

4th week:
Lecture: Basics of Medical Sociology.

5th week:
Lecture: Basics of Medical Psychology I.: Human Development.

6th week:
Lecture: Basics of Medical Psychology II..: Emotions and motivations.

7th week:
Lecture: Basics of Medical Psychology III.: Learning and Memory.

8th week:
Lecture: Basics of Medical Psychology IV.: Personality and Psychological Disorders.

9th week:
Lecture: Basics of Medical Psychology V.: Social Influence and Social Cognition.

10th week:
Lecture: Medical Psychology VI. Psychological Methods and Research in Psychology.

11th week:
Lecture: Written test exam

Requirements

Course objectives:

The aim of the course is to familiarize the students with the most important psychological aspects of health and illness, the psychological characteristic of medical profession as well as the healing/caring process. The main schools of psychology are also introduced. The course is intended to give basic knowledge for the purpose of understanding the phenomena of motivation, memory, socialization, empathy as far as they are relevant for future medical doctors. This means the first steps toward the more specialised courses like medical psychology and behavioural medicine, as well as electives to be introduced in the third and fourth academic years.

First year students should pass “End of Semester Examination” (ESE) at the end of the semester. The Department of Behavioural Sciences will adhere to the requirements of the Rules and Regulations for English Program Students. The student must be present and the examination at the designated time. (He/she must explain the reason for any absence from the examination to the Departmental Adviser within 1 day of the day of examination.)

Subject: **COMMUNICATION SKILLS**
Year, Semester: 1st year/1st semester
Number of teaching hours:
Practical: **20**

1st week:
Lecture: Introduction. Appointment of the semester.

2nd week:
Lecture: Elements of communication. Communicational channels.

3rd week:
Lecture: Verbal and non-verbal communication.

4th week:
Lecture: Empathy. Problems of empathy. Psychophysiology of empathy. Active listening.

5th week:
Lecture: Interpersonal skills and style of communication.

6th week:
Lecture: Anxiety/Assertivity/Aggression in communication.

7th week:
Lecture: Conflict management. The difference between feedback and criticism.

8th week:
Lecture: Doctor-patient communication. The role of confidence.

9th week:
Lecture: Field practice.

10th week:
Lecture: Field practice.

11th week:
Lecture: Movie.

12th week:
Lecture: Discussion the experiences about the movie.

13th week:
Lecture: Exam (Introduction to medical psychology). Discussion of the results.

14th week:
Lecture: Presentation of the field study. Feedback for the presenters.

15th week:
Lecture: Presentation of the field study. Feedback for the presenters. Feedback for the teacher. Deadline of giving the essay. Closing the semester.

Requirements

Aims:

Introducing and recognizing fundamental characteristics of human communication and developing basic knowledge, skills and attitudes which are most important in doctor patient relationship. This course serves as a basis for the continuation of third year studies of more specific communicational knowledge needs for healing and curing in the field of medical practice.

Framework and process of learning:

In form of small-group learning discussions, role-plays, observational tasks will be introduced by which students can be active participants in learning by acquiring not only theoretical issues. Because teachers guide semi-structured seminars, student will be facilitated to give feedback, express opinions and propose available topics, which could build into to learning process.
During first seminars individual learning objectives can be elaborated together with teacher and classmates and can be achieved alongside the main objectives of the whole group.

Standpoints of the observational task of communication class:

For the purpose of developing so called observational skills, a special task will be introduced. Students will be requested to watch systematically human behaviours at different places where one can perceive various forms of formal and informal communication (two weeks will be given for completing observations instead of attending seminars during this period. Seminars will be continued after two weeks break).

Sensitivity toward relating phenomena can be enhanced by these observational tasks. Several places of health case system, like wards, surgeries for outpatients, waiting rooms or other places like libraries, the campus where many human interactions can be observed are available.
Students will be asked to prepare a presentation and deliver it in front of the group. (Presentations will be held on the following week after finishing observations) and write an essay on the basis of their experience (volume: 4-5 pages, relevant theoretical background can be embedded. Deadline of giving in is the second week following the presentations).

The presentation will be given for the whole group and classmates will give feedback using structured criteria-system (see formative Assessment table on the back of the sheet. Presentation skills, proper use of nonverbal communicational channels can be assessed by which improvement of personal communicational skills can be facilitated.

After completed observational task the basic verbal communicational skills will be practiced using role-plays (or simulated patients- at given groups). Main forms of possible doctor-patient conversations can be discussed, as history taking, problem-, supportive-, and bad-new-conversations.

Oral Presentation: Formative Assessment
Skills and Qualities
Content/Text
Answers the question/deals effectively with the task. Demonstrates appropriate skills in analysis/synthesis/evaluation/application etc. Use of evidence/examples etc.
Structure/Logic
Forecasting e.g. introduction.

Sign positing e.g. beginning and end of subtopics, key points/foci (highlighting important points) linking, sequencing, summarising, closure i.e. concluding.
Delivery/Presentation
Voice (intonation, emphasis, pace, pauses, and silences).
Eye contact; posture, mannerisms, appearance, rapport with audience, timing etc. Audio Visual Aids.
Handling Questions
Responding engaging others in discussion, managing the audience (e.g. encouragement, constructive feedback).
Knowledge, depth or answer

Department of Anatomy, Histology and Embryology

Subject: **ANATOMY, HISTOLOGY AND EMBRYOLOGY I.**
Year, Semester: 1st year/2nd semester
Number of teaching hours:
Lecture: **29**
Practical: **86**

1st week:
Lecture: General introduction. Epithelial tissue: covering and lining epithelia
Practical: Anatomy: Anatomical terminology. Bones and joints of the upper limb. a. Anatomical terminology. Terms of positions and directions. Bones of the upper limb. Reconstruction of the carpus from individual bones. b. Joints of the upper limb. Please pay special attention to the following issues: Classification of the articular surface according to the shape. Note the presence of disci and menisci. Describe the joint capsule, extracapsular and intraarticular ligaments, bursal cavities and other accessory parts of the joint. - Classification of synovial joints. Freedom, axes and planes of movements at synovial joints. Correlation between the shape of the articular surface and the freedom of movements. Function of individual joints: their contribution to the action of the upper limb. Histology: Introduction to histological methods. The microscope and the resolution. Using the virtual microscope: Case Center and Panoramic Viewer. The evaluation and interpretation of histological sections. Always keep in mind: What you can see in the microscope is a thin (almost 2-dimensional) section of a 3-dimensional object. 1. Small intestine (HE)

2nd week:
Lecture: Osteology and arthrology - introduction. The muscular system - general introduction. Innervation of the muscles.
Practical: Anatomy: Dissection of the upper limb: part one and two a. Dissection of the upper limb: part one. Surface anatomy of the upper limb. Show the surface projections of superficial veins and cutaneous nerves on the cadaver, show the sites where the fascia is pierced by superficial veins and nerves. Projections and landmarks of the deep elements. Lymph nodes and lymphatic drainage of the upper limb. Places of the intravenous injections. Palpate the pulse on the upper limb. Incise the skin from the deltoideopectoral sulcus to the wrist and fold it laterally. Peel off the skin of the hand separately and fold it into the distal direction. Dissection of the infraclavicular region: incise the skin along the clavicle and fold it downward! b. Dissection of the volar side of the upper limb. Axillary fossa, medial and lateral bicipital sulci, cubital fossa, palmar region. The dissection of the latter region can be commenced after finishing the preparation of the infraclavicular region. Show clearly the origin and insertion of muscles. Remove all fasciae. Histology: Epithelial tissues: simple covering and lining epithelia 1. Mesothelium (mesentery, Silver impregnation) 2. Endothelium (small intestine, HE stain) 3. Simple squamous epithelium, simple cuboidal epithelium (kidney, HE stain) 4. Simple columnar epithelium with microvilli (small intestine, HE stain) 5. Pseudostratified columnar epithelium ciliated (trachea, HE stain) 6. Demonstration: movement of cilia (video) Make schematic drawings of the epithelial tissues. Identify epithelial tissues on the basis of the distribution and form of nuclei at low-power magnification.

3rd week:
Lecture: Glandular epithelium. Connective tissue - part one
Practical: Anatomy: Dissection of the upper limb: parts three and four. a. Arteries, veins and nerves on the volar side of the upper limb. Dissection of the deep structures. Continue the dissection of the medial and lateral bicipital sulci, the axillary region, cubital fossa, carpal canal, synovial sheaths of the flexor digitorum. Spare the flexor retinaculum. Dissect the nerves

and blood vessels on one of the fingers. Dissection of the superficial and deep palmar arches. Show clearly the origin and insertion of muscles. b. Dorsal side of the upper limb. Peel off the skin of the dorsal surface and fold it proximally and then medially towards the thorax. Peel off the skin of the dorsal surface of the hand and fold it into the distal direction. Muscles of the shoulder.
Histology: Stratified epithelial tissues. l. Stratified squamous nonkeratinizing epithelium (esophagus, HE stain) 2. Stratified squamous keratinizing epithelium (skin, HE stain) 3. Stratified columnar epithelium (urethra masculina, HE stain) 4. Transitional epithelium: urothelium (ureter, HE stain)

4th week:
Lecture: Connective tissue - part two. Clinical anatomy of the upper limb.
Practical: Anatomy: Dissection of the upper limb: parts five and six. a. Dorsal side of the upper limb: deep structures. The osteo-fibrous tunnels deep to the extensor retinaculum. Action of individual muscles and muscle groups of the upper limb. Nerve supply of muscles. Cardinal symptoms of injuries to nerve trunks: paralysis of different muscle groups. b. Completion of the dissection of the upper limb.
Histology: Glandular epithelium, pigment epithelium 1. Sebaceous, sweat and apocrine glands (axillary skin, HE stain) 2. Serous and mucous glands (submandibular gland, HE stain) 3. Serous, mucous glands (sublingual gland, PAS+H stain) 4. Pigment epithelium (retina). 5. Pigment containing cells (skin, methyl-green) (Classification of exocrine glands, mechanism of secretion and their microscopical features, the chemical character of the secretion product. Localization of different types of glands in various organs.)

5th week:
Lecture: Connective tissue-part three. Adipose tissue. Cartilage
Practical: Anatomy: SELF CONTROL: upper limb. a. CONSULTATION: The upper limb. (Bones, joints, muscles, blood vessels and nerves) b. SELF CONTROL: The upper limb. (Bones, joints, muscles, blood vessels and nerves). Histology: Cells of the connective tissue: l. Mesenchyme (umbilical cord, HE stain) 2. Fibroblasts (granular tissue, HE stain) 3. Mast cells (healing wound from rat skin, Toluidin blue stain) 4. Macrophages (Skin, Trypan blue - nuclear fast red stain) 5. Demonstration: l. Plasma cells (lymph node, HE stain) 2. Fibroblasts (tissue culture, H stain)

6th week:
Lecture: Histology of bone. Development and growth of the bone.
Practical: Anatomy: Bones of the lower limb. The structure of the pelvis. Joints of the lower limb. a. Bones of the pelvic girdle: hip bone, sacrum. Joints, ligaments and walls of the pelvis. Statics of the pelvis. Bones of the lower limb. b. Joints of the lower limb. Follow the instruction that was given at the upper limb.
Histology: Fibers of the connective tissue: 1. Collagen fibers (large intestine, HE stain) 2. Collagen fibers (large intestine, Azan stain) 3. Elastic fibers (aorta, orcein stain) 4. Reticular fibers (liver, silver impregnation) 5. Collagen and elastic fibers (spermatic cord, Van Gieson and Resorcin- fuchsin) Make distinction between collagen and elastic fibers. Fine structure of collagen fibers.

7th week:
Lecture: Muscular tissue - part one. Muscular tissue - part two.
Practical: Anatomy: Dissection of the lower limb: part one and two. a. Surface anatomy of the lower limb. Show the surface projections of the following structures on the cadaver: cutaneous nerves, superficial veins. Projections of the deep structures: femoral artery, popliteal artery, anterior and posterior tibial arteries, arteries of the sole and dorsum of the foot, femoral and ischiadic nerves. Femoral canal, femoral triangle, popliteal fossa and their structures. Lymph nodes of the lower limb. Places of the intramuscular injections. Palpate the pulse on the lower limb. Remove the skin from the ventral surface. Make incisions along the inguinal ligament along the midline all the way down to the level of the ankles. Fold the skin laterally in the thigh and

leg, and distally in the foot. b. Dissection of the ventral surface of the lower limb. Muscles of the ventral part of the lower limb. Hiatus subinguinalis. Adductor and femoral canal. Saphenous opening. Femoral triangle. Histology: CONSULTATION (Basic histological methods. Epithelial and connective tissues.)

8th week:
Lecture: Spermiogenesis. Oogenesis. The structure of the foot.
Practical: Anatomy: Dissection of the lower limb: parts three andfour. a. Dissection of the dorsal surface of the lower limb. Incise the skin at the level of the heel, and fold it back in the rostral direction as far as the iliac crest, and keep continuous with the skin of the back. Leave the skin covering the perineal region in position. The skin of the sole is removed at the level of the plantar aponeurosis starting from the calcaneus and is folded back at the toes. Spare the superficial nerves and blood vessels. Muscles of the dorsal surface of the lower limb. b. Dissection of the gluteal region, popliteal fossa and the sole. Clear all fasciae from the gluteus maximus muscle before transsection. Note the relationships of the fascia of back and thigh (thoracolumbar, gluteal fascia, iliotibial tract). Histology: SELF CONTROL: (Basic histological methods. Epithelial and connective tissues.)

9th week:
Lecture: Fertilization, beginning of the pregnancy. Clinical anatomy of the lower limb
Practical: Anatomy: Dissection of the lower limb: parts five andsix. a. Dissection of the dorsal surface of the lower limb. Cut the tendo calcaneus and fold back the triceps surae. b. Dissection of the structures at the medial malleolus. Arteries and nerves of the dorsal surface of the lower limb. Actions and movements of the muscles and joints of the lower limb. Muscle actions in different forms of joint movements. Nerve supply of muscles. Cardinal symptoms of the injuries to peripheral nerve trunk - peripheral paralysis of different muscle groups.
Histology: The adipose tissue and the cartilage. 1. Fat cells (skin, Osmium + H stain) 2. Hyaline cartilage (trachea, HE stain) 3. Elastic cartilage (epiglottis, orcein stain) 4. Fibrocartilage (knee joint, HE stain) 5. Fibrocartilage (knee joint, Azan stain) 6. Fibrocartilage and hyaline cartilage (knee joint, toluidin-blue stain) 7. Intervertebral disc (HE stain) Demonstration: White and brown adipose tissues (adrenal gland, HE)

10th week:
Lecture: Gastrulation. The early differentiation of the mesoderm. Histology of the blood vessels
Practical: Anatomy: SELF CONTROL: lower limb. a. CONSULTATION: lower limb (bones, joints, muscles, blood vessels, nerves). b. SELF CONTROL: lower limb (bones, joints, muscles, blood vessels, nerves). Histology: Histology and development of the bone. l. Cross section of compact bone (Schmorl stain). 2. Longitudinal section of compact bone (Schmorl stain). 3. Intramembranous ossification (skull of a rat, HE stain) 4. Enchondral ossification and the epiphysial plate. (rabbit knee joint, HE stain) 5. Enchondral ossification and the epiphysial plate. (rabbit knee joint, Azan stain) 6. Enchondral ossification and the epiphysial plate. (rat knee joint, toluidin-blue stain)

11th week:
Lecture: The differentiation of the ectoderm and mesoderm. Blood
Practical: Anatomy: Bones and joints of the thoracic cage and vertebral column. The muscles of the back. a. Bones and joints of the thorax b. The structure of the thorax and vertebral column. Movements of the thoracic cage. Muscles of the back. Structure of the posterior abdominal wall. Thoracolumbar fascia.
Histology: Muscle tissue l. Striated muscle (HE stain). 2. Striated muscle (iron-H stain). 3. The smooth muscle (large intestine) HE stain. 4. The cardiac muscle (HE stain) 5. The cardiac muscle (PTAH) Demonstration: Electron micrographs of longitudinal sections of striated muscle.

12th week:
Lecture: The differentiation of the entoderm, the folding of the embryo. Bone marrow
Practical: Anatomy: The skull: parts one and

two a. Parts of the skull: the braincase and the facial skeleton. The bones of the braincase - overview. Main parts of the bones of the braincase. Parts of the braincase: the vault /calvaria/ and the cranial base. The structure of the braincase. b. Recapitulation of isolated bones: frontal, temporal, parietal, occipital, sphenoid bones. Superior view of the cranial base. Subdivisions of the internal cranial base: anterior, middle and posterior cranial fossae. Parts and foraminae of the fossae.
Histology: The microscopic structure of blood vessels. l. Elastic artery (HE stain). 2. Elastic artery (orcein stain). 3. Muscular artery and vein (HE stain) 4. Large intestine (HE stain) 5. Demonstration: Spermatic cord (Van-Gieson resorcin fuchsin stain)

13th week:
Lecture: Fetal membranes. Stages of development: embryonic and fetal periods. Twins. Developmental mechanisms The formation of blood cells.
Practical: Anatomy: The skull: parts three and four a. Inferior aspect of the skull. Vault of the skull (calvaria), sutures, fonticuli. b. Bones of the facial skeleton including the mandible - overview Individual bones: shape, main parts. The structure of the facial skeleton. Histology: Blood. Bone marrow. 1. Sinusoids (Hypophysis, HE stain) 2. Bone marrow (HE stain) 3. Peripheral blood smear (May-Grünwald-Giemsa stain) 4. Demonstration: Bone marrow smear (May-Grünwald-Giemsa stain) video

14th week:
Lecture: Development of the skull and vertebraeOverview of general embryology
Practical: Anatomy: Skull - parts five and sixa. The orbit, nasal cavity, and paranasal sinuses. Facies malaris. b. The pterygopalatine fossa, temporal fossa, infratemporal fossa. The temporomandibular joint, atlantooccipital and atlantoaxial joints.Histology: SELF CONTROL (Adipose tissue, cartilage, bone, development and growth of the bone, muscular tissue. The histology of blood vessels, blood and bone marrow.)

15th week:
Lecture: -
Practical: Anatomy: SELF CONTROL. Bones and joints of the thoracic cage and vertebral column. The muscles of the back. Bones and joints of the skull. a. SELF CONTROL: Bones and joints of the thoracic cage and vertebral column. The muscles of the back. Bones and joints of the skull. b. SELF CONTROL - REMEDIAL: Bones and joints of the thoracic cage and vertebral column. The muscles of the back. Bones and joints of the skull. Histology: SELF CONTROL: REMEDIAL SELF CONTROL: Embryonic development.

Requirements

Concerning attendance, the rules written in the Regulations Governing Admission, Education and Examinations of the University are valid. The attendance on the seminars and practices and at least 30% of the lectures is compulsory. The presence in practices and seminars will be recorded. The head of the department may refuse to sign the Lecture Book if a student is absent more than twice from practices and seminars (including anatomy, histology and embryology) in one semester even if he/she has an acceptable reason. Compensation of practices and seminars is possible only on the same week at another student's group. The compensation of three practices and/or seminars is allowed (including anatomy, histology and embryology) in one semester.
Rules of examinations:
Midterm examinations:
The dates and topics of the midterm examinations are indicated in the English program Bulletin. The exams cover the topics of lectures and practices of the semester and include relevant material from official textbooks. The midterm exams will be evaluated with points.
Improvement of a failed midterm examination:

Failed midterm examinations can be improved if the score of the failed midterm examination is between 40 and 59 %. With this restriction the following midterm examinations can be improved: With this restriction improvement of the midterm examination is possible as follows:
One of the failed anatomy and one of the failed histology examinations can be improved on educational week 15 at the time of the respective practicals.

Five grade evaluation of the overall academic performance of the student at the end of the semester:

At the end of the semester the overall academic performance (OAP) of the students will be evaluated with a five grade mark (OAP mark) on the basis of the following rules:
The performance of the students on the midterm examinations from anatomy, histology and embryology will be evaluated separately on each self control. To obtain a pass or better OAP mark the student has to collect at least 60% of the total score from each anatomy, histology and embryology self controls. If the student does not reach the 60% limit from all parts the OAP mark is fail (1). If the midterm performance of the student is at least 60% from all parts, the scores of the three parts (anatomy, histology, embryology; max. 100% each) will be added and the OAP mark will be calculated on the basis of the following rules:

Overall performance	Mark on the midterm exams
36 - 41%	2 (pass)
42 - 47%	3 (satisfactory)
48 - 53%	4 (good)
54 - 60%	5 (excellent)

End-semester exam at the end of the 2nd semester

The end semester exam is an oral exam in anatomy and written in histology and embryology, that covers the topics of lectures and practices of the semester as well as the relevant material in the official textbooks. Those students who have got a pass (2) or better OAP mark may ask the department to accept it as a mark for the end semester exam. Those students who have got a fail (1) OAP mark have to sit for the end semester exam, but the student will be examined only from those parts from which he/she did not reach the 60% limit on the midterm examinations. The first exam is an A-chance exam.

The end of semester oral examination at the end of the 2nd semester consists of the following parts:

Oral part.
Anatomy. 3 preparations
a. upper limb
b. lower limb
c. back - skull

Written parts:
Embryology
Histology I.: microtechnic, epithelial tissue, connective tissue
Histology II.: adipose tissue, cartilage, bone, bone formation muscle tissue, blood vessels, red bone marrow, blood
If the student, on the basis of his/her performance on the midterm examinations, earn an exemption

(collecting at least 60% of the total score) from one or more parts of the end-semester exam, the results of the midterm examinations will be converted into partial end-semester marks as follows:

Overall performance	Mark on the midterm exams
60 - 69%	2 (pass)
70 - 79%	3 (satisfactory)
80 - 89%	4 (good)
90 - 100%	5 (excellent)

Registration and postponement: Through the NEPTUN system.

Department of Biochemistry and Molecular Biology

Subject: **MOLECULAR BIOLOGY**
Year, Semester: 1st year/2nd semester
Number of teaching hours:
Lecture: **42**
Seminar: **14**
Practical: **15**

1st week:
Lecture: Molecular dimensions of life in space and time. Energies governing molecular interactions. Covalent and non-covalent molecular interactions. The importance of water. Molecular organization of cells. The importance of water. The molecular organization of the cells. Origin of eukaryotic cells. Cellular compartmentalization. Organization and hierarchy of biological structures. Proteins. Structure and function of proteins. Structural organization of proteins. Protein folding. Techniques for studying proteins structures. Protein evolution.

2nd week:
Lecture: Enzymology. Characterization and classification of enzymes. General features of enzyme action: enzyme specificity, the active site. The transition state theory. Examples of catalytic action: ribonuclease-A, lysozyme, and carboxypeptidase-A. Enzyme kinetics: the Michealis-Menten and Briggs-Haldane kinetics. Definition and determination of KM and vmax. Multisubstrate reactions. Enzyme inhibition: irreversible and reversible inhibition of enzymes. Competitive, non-competitive and uncompetitive inhibition. Regulation of the enzymes by allostery. Medical significance of enzymes. Isoenzymes.

3rd week:
Lecture: Chemical features of DNA. DNA packaging in prokaryotes and eukaryotes. Histones and nucleosomes. DNA as an information storage material. The central dogma of molecular biology. Definition of the genome. Molecular nature of genes. Coding and noncoding genome sequences. Chromosomal and extrachromosomal genomes in prokaryotes. The gene organization in prokaryotes. Eukaryotic genome. Mitochondrial and nuclear genomes. Gene structure in eukaryotes. Genome evolution. Vertical inheritance and horizontal gene transfer.

Extrachromosomal and bacteriophage/virus genomes. Mobile genetic elements. Genome evolution in prokaryotes. Pathogenicity islands. Genome evolution in eukaryotes. Exon-shuffling.

4th week:
Lecture: DNA isolation. Enzymatic modifications of DNA molecules. DNA polymerases. Ligases. Nucleases. Restriction endonucleases and DNA methylases. Separation of DNA molecules according to the size. Application of restriction endonucleases. Creating recombinant DNA: vectors, strategy of DNA cloning. Genomic libraries.

5th week:
Lecture: Molecular biological methods relying on DNA-DNA hybridization. Fundamental aspects of nucleic acid hybridization, main steps of the hybridization procedure. Southern-blotting. In situ hybridization. DNA chip. Molecular background of DNA polymerization. Primers. The basics of chemical synthesis of primers. DNA-polymerization-based molecular biological methods. Theory of Polymerase Chain Reaction (PCR). DNA sequencing. Genome sequencing projects.

6th week:
Lecture: Prokaryotic and eukaryotic genome replication. Replication initiation. The structure of the replication fork. Replication of leading and lagging DNA strands. Solution for the topological problems caused by the replication process. Problems associated with the replications of non-circular chromosomes; the telomeres and telomerase. Molecular biology of recombination. DNA damaging agents, mutations. Principles of DNA repair. Main types of DNA-repair, the excision repair and removal of non-complementary nucleotides (mismatch repair).

7th week:
Lecture: Overview of gene expression and its significance. The chemical features of RNA. Main RNA classes. Principles of RNA polymerization. Reverse transcriptases. Enzymatic modifications of RNA. Ribonucleases. Transcription in prokaryotes. Stages of transcription. Transcription regulation in prokaryotes. The promoter. Transcription factors. Binding of transcription factors to the DNA. The operon. Repressors and activators. The mode of operation of the lac and ara operons. Catabolite repression.

8th week:
Lecture: Transcription in eukaryotes. Transcription of mRNAs. Stages of eukaryotic transcription. Formation of caps (capping). Excision of introns (splicing), snRNAs and the splicosome. The polyadenylation. Alternative splicing. Export of mRNA. Quality control of mRNA. Transcription and posttranscriptional modifications and transport of rRNA and tRNA.
Practical: Protein blotting and immunological identification by specific antibodies.
Self Control Test

9th week:
Lecture: Regulation of transcription in eukaryotes. Transcription regulation by epigenetic modifications. The role of DNA methylation. The importance of DNA packaging in transcription regulation. The role of histone modifications in DNA packaging. Transcription regulation through regulation of transcription initiation. Regulatory sequences located on the DNA. Promoters and enhancers/silencers. Eukaryotic transcription factors.
Practical: Protein blotting and immunological identification by specific antibodies.

10th week:
Lecture: Regulating multiple genes at the same time. Gene clusters, isolator sequences. The role of noncoding RNA in regulation of gene expression. Molecular biological methods for studying transcription and transcription regulation. RNA isolation and separation based on size. Northern blotting. Synthesis of cDNA. Construction, sequencing and screening of cDNA libraries. RT-PCR. Microarray technology.
Practical: Protein blotting and immunological identification by specific antibodies.

11th week:
Lecture: Translation. The genetic code. Codons, anticodons and tRNAs. Loading of tRNA with amino acids. Wobbliness of the codon-anticodon recognition and its evolutionary significance. Ribosome structure. Biochemistry of protein synthesis. Translation initiation, elongation and termination. Energy balance of the translation process. Comparison of prokaryotic and eukaryotic translation. Regulation of protein synthesis. Protein maturation. Protein folding.
Practical: Studies on phosphatases

12th week:
Lecture: Protein fates. Synthesis and degradation of cytoplasmic and nuclear proteins. Cytoplasmic, nuclear and membrane targeting. The signal recognition particle. Transition of polypeptide chain through the membrane. Posttranslational modifications of the proteins: ubiqutination and the proteasome system. Proteases.
Practical: Studies on phosphatases

13th week:
Lecture: Posttranslational protein modifications: phosphorylation-dephosphorylation, glycosylation, acylation, prenylation, carboxylation and ADP-ribosylation. Methods for purification, separation and characterization of proteins. Immunochemical methods applied in molecular biology: ELISA, Western blotting, immunofluorescence and immunoprecipitiation.
Practical: Studies on phosphatases

14th week:
Lecture: Protein expression systems. Expression libraries. Protein expression in biotechnology. Modification of the genome: transgenesis. Creation and significance of transgenic mice. Gene therapy and its importance. The significance of molecular biology in medicine, the molecular medicine.

15th week:
Self Control Test

Requirements

Requirements for signing the semester: attendance in laboratory practices and seminars.
Required knowledge from Molecular Biology: topics of molecular biology presented at the lectures (slides are available at the http://bmbi.med.unideb.hu web site, username: student, password: student2016) and topics discussed in the seminars.
Attendance on the lectures is not compulsory, but recommended: in case of one lecture absence seminar bonus points are erased, in case of two lecture absences all collected points (control test points) are also erased. Please arrive in time for the lectures, because the door of the lecture hall will be closed at the beginning of the lectures. Repeaters can collect bonus points without visiting the lectures.
On the **seminars**, lectures of the previous week can be discussed. Based on the knowledge and activity of the students on the seminars, the best students can collect 6 bonus points during the semester. (6 bonus points can be given to max. 20 % of the students, 3 bonus points can be given to max 30% of the students). Half of the seminar bonus points can also be added to the result of the written exam. In case of the seminars maximum three absences are accepted. Students can’t make up a seminar with another group. Seminars are not obligatory for repeaters if they previously attend them.
All of the laboratory practices have to be performed, if someone is absent due to any serious reason, proved by medical paper, the missing experiment have to be performed within the three weeks practical period joining to another group (after obtaining permission from the practical teacher of the other group). Period of the practices: “Western-blot” on week 8-10, “Study of phosphatases” on week 11-13. The laboratory practice leader through signing the practice "lab-book" of the student acknowledges the acceptance of a practice. Students have to be prepared for the practices. Please check our homepage to get more information and the schedule of the practices

(http://bmbi.med.unideb.hu/Education/Molecular Biology)! For obtaining the signature students need to attend the two practices, submit the laboratory books in the required format. Practices are not obligatory for repeaters if they previously managed them.
Control tests: During the semester students can write two control tests from the material of the lectures and seminars. Both tests are composed of 40 single choice test questions (one correct answer must be marked among five possible answers, each good answer is 1,25 points. By the two control test max. 2 x50 points can be collected. Control tests are not obligatory.
Offered grades: at the end of the semester, on the basis of the collected points, grade will be offered. During the semester 100 (+6) points can be collected by the two control tests of the material of the lectures (50+50 points) and by the seminar activity (6 points). Grades: 2 (pass): 60-69.5 points, 3 (satisfactory): 70-79.5 points, 4 (good): 80-89.5 points and 5 (excellent): 90-106 points.
Students have to decide to accept the offered grade until beginning of the exam period. If someone accept the grade, it will be registered in the Neptun and the grade can be improved once during the exam period. If one declines the offered grade one must take exam in the exam period.
Semester points will be automatically erased of those students, who break the rules of test writing.
Semester exam: Those students who did not collect 60 points during the semester (or didn't accept the offered grade) have to take a written exam in the exam period. The written exam composed of 40 single choice test questions (one correct answer must be marked among five possible answers, each good answer is 1.25 points). By the test maximum 50 points can be collected, and half of the seminar bonus points is also added to the result of the exam. 60% (30 points) is needed to get a passing mark, and the grade increases with every 5 points (30-34.5 pass, 35-39.5 satisfactory, 40-44.5 good, 45-50 excellent).
If a student fails the "C" written exam, the department provides him/her a chance to prove his/her knowledge in an oral exam in front of an examination committee. If the student passes the oral exam he/she will be given a grade 2 (pass). The department will provide one examination date per week during the exam period.
Improvement exam: It is allowed to take one improvement exam for a fee in the form of a semester exam. Both the offered grade and the exam grade can be improved. The policy of the institute is that one may not worsen the already achieved grade.
Exemption from the written part of the final "Biochemistry and molecular biology" exam: Those students who collect at least 220 points during the three semesters taught by the Department of Biochemistry and Molecular Biology and have more than 60 points from each of the three semesters during the course of their Biochemistry and Molecular Biology studies (Molecular Biology, Biochemistry I., Biochemistry II.) will be exempted from having to write a written part of the biochemistry and molecular biology final exam. Minimum questions of the Biochemistry final exam will also contain basic questions of Molecular Biology.
Please follow the announcements of the department on the announcement table (LSB downstairs 1st corridor), and on the website (http://bmbi.med.unideb.hu)

Department of Foreign Languages

Subject: **HUNGARIAN LANGUAGE I/2.**
Year, Semester: 1st year/2nd semester
Number of teaching hours:
Practical: **30**

1st week:
Practical: Organization of the course. Revision

2nd week:
Practical: Pretest

3rd week:
Practical: Unit 6

4th week:
Practical: Unit 6

5th week:
Practical: Unit 7

6th week:
Practical: Unit 7

7th week:
Practical: Unit 8

8th week:
Practical: Revision. Mid-term test

9th week:
Practical: Unit 9

10th week:
Practical: Unit 10

11th week:
Practical: Unit 10

12th week:
Practical: Unit 11

13th week:
Practical: Unit 11

14th week:
Practical: Revision. End-term test.

15th week:
Practical: Oral minimum requirement exam.
Evaluation

Requirements

Attendance

Language class attendance is compulsory. The maximum percentage of allowable absences is 10 % which is a total of 2 out of the 15 weekly classes. Students arriving late for the classes are not allowed to enter the class. Being late is counted as an absence. If the number of absences is more than two, the final signature is refused and the student must repeat the course. Students are required to bring the textbook or other study material given out for the course with them to each language class. Active participation is evaluated by the teacher in every class. If students' behaviour or conduct does not meet the requirements of active participation, the teacher may evaluate their participation with a "minus" (-). If a student has 5 minuses, the signature may be refused due to the lack of active participation in classes.

Testing, evaluation

In each Hungarian language course, students must sit for 2 written language tests and a short minimal oral exam.

A further minimum requirement is the knowledge of 200 words per semester announced on the first week. There is a (written or oral) word quiz in the first 5-10 minutes of the class, every week. If a student has 5 or more failed or missed word quizzes he/she has to take a vocabulary exam that includes all 200 words along with the oral exam. The results of word quizzes may modify the end-semester evaluation.

The oral exam consists of a role-play randomly chosen from a list of situations announced in the beginning of the course. Failing the oral exam results in failing the whole course. The result of the oral exam is added to the average of the mid-term and end-term tests.

Based on the final score the grades are given according to the following table:

Final score	Grade
0 - 59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

If the final score is below 60, the student once can take an oral remedial exam covering the whole semester's material.

Consultation classes

In each language course once a week students may attend a consultation class with one of the teachers of that subject in which they can ask their questions and ask for further explanations of the material covered in that week. These classes are optional.

Course book: See the website of the department.

Website: Audio files to the course book, oral exam topics and vocabulary minimum lists are available from the website of the Department of Foreign Languages: ilekt.med.unideb.hu.

Department of Human Genetics

Subject: **MEDICAL GENETICS**
Year, Semester: 1st year/2nd semester
Number of teaching hours:
Lecture: **30**
Practical: **30**

1st week:
Lecture: (1) Introduction to genetics, molecular genetics and genomics. DNA is the genetic material. (2) Molecular organization of chromosomes in prokaryotes and eukaryotes. The human genome. Cell division: mitosis. (3) Cell division: meiosis. The structure of the genes.
Practical: Seminar. How to study. Required and advised readings. Laboratory safety rules in student's laboratories. The nucleus and the chromatin. Cell division, mitosis and meiosis.

2nd week:
Lecture: (4) The function of genes. Gene expression. *(This lecture will be in extra time on Monday morning.)* (5) Gene regulation in prokaryotes. (6) Gene regulation in eukaryotes. (7) Cytogenetics I. Karyogram, ideogram, banding techniques. Human autosomal trisomies.
Practical: Seminar on gene structure, function, regulation.

3rd week:
Lecture: (8) Cytogenetics II. Abnormalities of the X and Y chromosomes. Sex determination in

humans. *(This lecture will be in extra time on Monday morning.)* (9) Cytogenetics III. Structural aberrations of human chromosomes. Genomic imprinting. Uniparental disomy. Molecular cytogenetics. (10) Epigenetics, the genetic role of RNA. (11) Transmission genetics. Genes and alleles. Genotype and phenotype. Monohybrid cross. Mendel's 1st law. Reciprocal cross and test cross. Autosomal and X-linked genes.
Practical: Seminar on cytogenetics.

4th week:
Lecture: (12) Dihybrid cross. Mendel's 2nd law. Different types of inheritance. Dominant and recessive genes: a molecular view. Genotype and phenotype. Extranuclear inheritance. (13) Gene interactions, epistasis, lethal genes. Multiple alleles. (14) The genetic basis of complex inheritance.
Practical: Seminar on mendelian genetics I. Theoretical background, problem solving.
Self Control Test (1st test in extra time on Monday morning.)

5th week:
Lecture: (15) Mutation and repair.
Practical: Study of X chromatin: the Barr body. Demonstration of mammalian chromosomes. Preparation of metaphase spreads.

6th week:
Lecture: (16) Human genetic diversity. DNA polymorphism. (17) Human genetic diversity. Genetics of blood types and MHC. (18) Genomics, proteomics, the human genome project.
Practical: Detection of human polymorphism by polymerase chain reaction.

7th week:
Lecture: (19) Population genetics. (20) The molecular, biochemical and cellular basis of genetic diseases I. (21) The molecular, biochemical and cellular basis of genetic diseases II.
Practical: PCR evaluation of the human polymorphism experiment.
Induction of beta-galactosidase in E. coli cells.

8th week:
Lecture: (22) The treatment of genetic diseases. (23) Cancer genetics and genomics. (24) Pharmacogenetics, pharmacogenomics Ecogenetics and ecogenomics.
Practical: Seminar on mendelian genetics II. Problem solving. Pedigree analysis. Polymorphisms.

9th week:
Lecture: (25) Human gene mapping and disease gene identification. (26) Human gene mapping and disease gene identification. (27) Bacterial genetics
Practical: Seminar on molecular genetics of inherited human diseases. Mutation, repair.
Self Control Test (2nd test in extra time on Monday morning.)

10th week:
Lecture: (28) Developmental genetics and birth defects. (29) Prenatal diagnosis. Personalized medicine. (30) Genetic counseling and ethical issues.
Practical: Seminar on population genetics.

11th week:
Lecture: Medical genomics lectures 1-3.
Practical: Complementation test. The gene concept.

12th week:
Lecture: Medical genomics lectures 4-6.
Practical: Seminar. General consultation.

13th week:
Lecture: Medical genomics lectures 7-9.
Practical: Seminar. General consultation.
Self Control Test (3rd test in extra time.)

14th week:
Lecture: Medical genomics lectures 10-12.
Practical: Medical genomics seminar 1.

15th week:
Lecture: Medical genomics lectures 13-15.
Practical: Medical genomics seminar 2.

Requirements

Conditions of signing the lecture book:

Concerning attendance, the rules are set out in the Rules and Regulations of the University are clear. The presence of students at laboratory practices and seminars is obligatory and will be recorded. Students are responsible for signing the list of attendance. The professor refuses his/her signature in the student's Lecture Book for the semester's course-work in the case of over four weeks of absence, even if the student has an acceptable excuse.
If the student is absent from more than two practices or seminars, the semester will be accepted only if he/she passes an examination based on the material covered by the laboratory classes of the semester (labtest). Students have to take notes during lab classes and seminars. The notes are occasionally inspected and signed by the instructors. If 3 or more laboratory or seminar notes are missing, the student must take a labtest to qualify for the signature of the lecture book. Missed laboratory classes may only be made up for in the classes with other groups during the same week. For permission to make up a missed laboratory class please consult the academic advisor. If the student is absent from more than 4 practices and seminars, the signature will be denied and the student has to repeat the semester.
During the semester there will be three self-control tests offered in the 4th, 9th and 13th weeks. The questions include multiple choice and short essay questions, figures, pedigrees, definitions, etc. Based on the % average of the three tests a final grade will be offered according to the next table:

Percentage (%) Mark
60.00 - 64.99 pass (2)
65.00 - 74.99 satisfactory (3)
75.00 - 84.99 good (4)
85.00 - 100 excellent (5)

Attendance of at least two of the tests is obligatory and it is a condition for signing your lecture book. Those students who want a better mark have to take the regular end of semester "A" exam. The result of this ESE is binding, it can be better, the same or worse than the offered mark. Students with lower achievement than 60 % should take the regular ESE.

Rules concerning repeaters:

Attendance of labs and seminars for those repeaters who have a signed lecture book from the previous year (i.e. they failed, or they are repeaters because they have never taken Genetics exam) is dispensable. Students should register for the subject electronically during the first weeks of the semester. They have to register also for the practical part, but with the group constructed for repeaters with signature from a previous year. They can take the three midterm tests in order to qualify for an offered grade based on these tests, or for test bonuses and they take the regular exam at the end of the semester. They cannot have home-work bonuses. Students, who did not earn a signature in the previous year have to register and attend the labs and seminars and they are considered as the other students registering the course at the first time.

Exemption requests:

Applications for exemption from the course (based on previous studies at other schools) should be submitted during the first two weeks of the semester. Requests are not accepted after that deadline!

Exemption is granted if an "assessment of knowledge" test is passed. The passing limit is 50%.

End of Semester Exam(regular assessment of your course work):

There will be a written examination (ESE) at the end of the semester that covers all the material of the semester taken in the lectures, seminars, and laboratory practices. The examination questions include multiple choice and short essay questions, figures, definitions, etc. The marks are based on the student's performance, expressed in percentage (%) as shown in the table below:

Percentage (%) Mark
0 - 49.99 fail (1)
50.00 - 64.99 pass (2)
65.00 - 74.99 satisfactory (3)
75.00 - 84.99 good (4)
85.00 - 100 excellent (5)

The percentage values include the student's performance at the ESE as well as the bonus percentage they have obtained by taking the three mid-semester tests, and submitting the homeworks. The bonus percentage is based on the average result of the three mid-semester tests. Absence counts as 0%. Bonuses are calculated only in the year of acquisition.
Further bonus points (1 points each) are given for the timely and correct completion of the following midterm home-works:
Analysis of human karyograms. Problem solving in genetics. Use of databanks through the Internet. Problem solving in population genetics. Maximum number of bonus points is 14.
The submission of home-works is voluntary. Homeworks are not accepted after the submission deadline.
As a first task of the examination medical student receives 10 basic questions. You have to answer correctly at least 7 of them to qualify for the exam. If you cannot answer correctly the required minimum number of questions your exam is considered unsuccessful. You have to pass this basic question exam only once in a semester. If you have to repeat the semester, you have to repeat the basic question exam, too. Students, who received offered grade do not have to answer the basic questions.

The slides of the lectures and up-to-date information can be found at www.genetics.dote.hu, username: medical_genetics, password: arachnodactylia. Click on "Oktatás" (teaching) and Downloads or Information and Medical genetics.

Division of Cell Biology

Subject: **CELL BIOLOGY**
Year, Semester: 1st year/2nd semester
Number of teaching hours:
Lecture: **30**
Seminar: **25**
Practical: **20**

1st week:
Lecture: 1. Introduction.
2. Cell membrane. Membrane transport
Seminar: Introduction, preparation for labs, signing up for short presentations.

2nd week:
Lecture: 3.ABC transporters and related diseases
4. Ion channels, membrane potential.
Seminar: Material related to lectures 1-2.
Practical: See schedule on the web page (labs 1 through 4 in small groups, rotary system).

3rd week:
Lecture: 5. Calcium homeostasis
6.Osmo-, volume and pH regulation
Seminar: Material related to lectures 3-4.
Practical: See schedule on the web page (labs 1 through 4 in small groups, rotary system).

4th week:
Lecture:
7. Cellular organelles. Trafficking between cellular organelles, overview.
8.Intracellular membrane systems I: lysosome, peroxisome, endoplasmic reticulum.
Seminar: Material related to lectures 5-6.
Practical: See schedule on the web page (labs 1 through 4 in small groups, rotary system).

5th week:
Lecture: 9. Intracellular membrane systems II: The Golgi complex, endo- and exocytosis, protein sorting.
10.The nuclear envelope. Transport through the nuclear pores
Seminar: Material related to lectures 7-8.
Practical: See schedule on the web page (labs 1 through 4 in small groups, rotary system).

6th week:
Lecture: 11. The nucleus
12.Structure of chromtatin
Seminar: Material related to lectures 9-10.
Practical: See schedule on the web page (labs 1 through 4 in small groups, rotary system).
Self Control Test

7th week:
Lecture: 13. Cytoskeleton I: microtubules.
14.Cytoskeleton II: intermedier filaments, actin cytoskeleton.
Seminar: Material related to lectures 11-12.
Practical: See schedule on the web page (labs 1 through 4 in small groups, rotary system).

8th week:
Lecture: 15. Cell energetics/mitochondrion.
16.Cell-cell contacts, cell-extracellular matrix contacts.
Seminar: Material related to lectures 13-14.
Practical: See schedule on the web page (labs 1 through 4 in small groups, rotary system).

9th week:
Lecture: 17. Cell signaling I. General concepts. Nuclear receptors. G-protein coupled receptors.
18.Cell signaling II. Receptor tyrosine kinases. The Ras/MAPK, PI3K/Akt and PLC/CaMK pathways.
Seminar: Material related to lectures 15-16.
Practical: See schedule on the web page (labs 1 through 4 in small groups, rotary system).

10th week:
Lecture: 19. Cell signaling III. Pathways to the nucleus. Oncogenes in signaling.
20. Cell signaling IV. Cell-cell communication in the nervous and immune systems.
Seminar: Material related to lectures 17-18.
Practical: See schedule on the web page (spare labs).

11th week:
Lecture:

21. Mitosis, meiosis. Experimental systems for studying the cell cycle.

22.Mechanics of mitotic cell division
Seminar: Material related to lectures 19-20.
Practical: See schedule on the web page (spare labs).
Self Control Test

12th week:
Lecture:

23. Regulation of the mitotic cell division.
24.Cell fates I: Overview / differentiation.
Seminar: Material related to lectures 21-22.
Practical: See schedule on the web page (labs 1 through 4 in small groups, rotary system).

13th week:
Lecture: 25. Cell fates II: Stem cells.
26.Cell fates III: Cell senescence, apoptosis.
Seminar: Material related to lectures 23-24.

14th week:
Lecture: 27. Cell fates IV: Tumor cell biology.
28.Cells in broader context: Interactions with drugs, viruses and bacteria.
Seminar: Material related to lectures 25-26.
Self Control Test

15th week:
Lecture: 29. Cellular motility.

30. Main features of the prokaryotic and eukaryotic cells: an overview.
Seminar: Material related to lectures 27-28.

Requirements

Lectures:
Attendance of lectures is indispensable for acquiring the knowledge required to pass! They are your best source of synthesized and structured information. Some new concepts are discussed exclusively at the lectures. To further facilitate attendance, an attendance bonus system was introduced also in the case of Cell Biology lectures: If a student is present in every lecture, he/she automatically receives 5 bonus points which is added to the result of the final exam score. Attendance will be checked randomly. The student will lose all these (5) bonus points, if he/she is caught missing any one of the lectures at these random checkings OR proves completely ignorant about the subject of the particular lecture, based on questions to be answered orally or in written on-site. Certificates of any kind, including a medical certificate, will NOT be considered.

Books to be studied:

4th ed. of Essential Cell Biology (Alberts et al.,Garland Publ Inc. 2014. ISBN: 978-0-8153-4454-4) is the course book recommended as a foundation. It is concise, easy to read and the thorough knowledge of the material contained in its chapters (1. and 11-20.) is absolutely necessary for passing at the Final Exam. The preceding chapters contain explanations for basic molecular concepts: these chapters serve as reference and will not be directly asked in tests, except for certain parts indicated by the lecturer and also published in our website. In addition, there is a lot of additional information presented at lectures, and also discussed in the seminars, which the students are also required to know. The slides presented in lectures will be provided at the department website; however, you must attend the lectures and take notes to be able to interpret them. To read a full-text version of this additional material we recommend two books: Molecular Cell Biology (Lodish et al.) and Molecular Biology of the Cell (Alberts et al.)

Seminars:
In the seminars, students should ask their questions related to the topic of the lectures discussed (see final timetable of lectures and seminars that will be announced in the 1st week of the semester). In addition to controlling presence in lectures, the students will be asked a few keywords relevant to the lectures discussed at the seminars, from those published on our website, on a regular basis. The average total percentage performance on these brief tests must be above 60 %, below this the students lose their 5 lecture bonus points.

Every student (two in each group in every seminar) will give a short presentation on the topic of one of the lectures discussed in the seminar. The topics will be distributed in the first seminar. The talks are graded on a scale of 0-3. The presentation has to be a free talk, not a reading. The duration of a presentation should not exceed 15 minutes. You have to read the relevant background information from your textbook and make the topic understandable to your fellow students. You should use the lecture material available at the cell biology website to make your presentation easy to follow. You are expected to be ready to present at least 10 slides of the lecture, from those that contain figures/pictures, rather than just explanatory text. Only exceptionally good presentations that clearly present good summaries of the lectures are awarded with 3 points. It is the professor / tutor in the seminar who alone decides the number of bonus points awarded, based on his/her own judgment. The material covered in the presentations is fully part of the SCT-s and the Final Exam. Including extra material obtained through the student's own research in textbooks or the internet will be appreciated, but will not substitute for a clear and detailed knowledge of the lecture/textbook material.

Labs:

Completing all labs, and writing up the results and their interpretation in a lab log book on the spot is required. You must prepare for the lab before the lab starts. The compulsory preparation for the lab includes the writing of an introduction to your lab logbook BEFORE THE LAB that outlines the problem you will address in the lab and the methods and approaches that are used to answer the question. ONLY HANDWRITTEN, BOUND LAB LOG BOOKS ARE ACCEPTABLE! The student's preparation and their work at lab will be graded by the teachers giving 0-3 bonus points. If a student's preparation is considered unacceptable by the tutor (e.g. the handwritten introduction is missing in the lab logbook, etc.), he/she gets 0 point. The average value of the lab bonus points is added to the exam points at the end of the semester. After completing the lab, the lab tutor should sign on the cover of the log book certifying your presence and sign separately for the acceptance of your work. You are eligible for this second signature only if you know what and why you did during the lab and what the result was. You should obtain these two signatures and the grade at the end of the lab and no later. Lack of the second signature means, that the lab is not accepted and it has to be repeated. Maximum one practice can be missed with medical or official excuses (or repeated because lack of second signature), and it must be made up for in the spare practical.

Reading source for the lab:

A Cell Biology lab manual written by the members of the department is available on the web site.

Lab schedule:

Small groups (subgroups) consist of 3-7 people for doing the various labs in a rotary system are formed in the first seminar. The rotary system is published on the web page and shown on the lab door. If you missed the first seminar you will be put into a subgroup where you fit and you should check your assignment with your fellow students.

YOU ARE NOT ALLOWED TO CHANGE SUBGROUPS!

Self-control Tests (SCT-s):

There are two SCT-s. The dates and topics for SCT-s will be announced on week 1 of the semester. Exact times and locations for each group will be posted during the semester. Types of the SCT questions are akin to the Final Exam questions; i.e. true or false, simple selection, multiple selection, relation analysis, fill in questions or define a definition type questions may be awaited. Lab questions will be included in the 2nd self-control test as well as in the Final Exam test, to approximately 10% of the total points.

Based on the score of the SCT-s, you receive bonus points that count towards your grade in the Final Exam.

Conversion of SCT points into bonus points for Final Exam:

Bonus points based on the score (as a %) of an SCT. The bonus points are calculated as 0,05 x score (as a %). Maximum 5 bonus points can be earned with each SCT, so totally 10. Writing the SCT-s is highly recommended. If you miss a SCT, you will miss valuable points from your Final Exam score!

Grade offering based on SCT results:

For those performing well on SCT-s, i.e. earning 50 % or more in the average of the two SCT-s, based on the sum of their bonus points (lab points + lecture bonus + short presentation) and average SCT result we offer final grades as follows:

60-69.5points:	pass (2)
70-79.5points:	satisfactory (3)
80-89.5points:	good (4)
above 90 points:	excellent (5)

The offered grades will be posted on the Neptun system where students must declare acceptance or refusal. Accepting the grade means exemption from the final exam, so the accepted grade will be entered into the lecture book as the final grade. Students without offered grade must attend the Final Exam (see below). If a student did not accept the offered grade, but his/ her average of the two SCT-s is 60 % or more, he/she does not have to write A-part of the written Final Exam (see later). They got 14 points.

The conditions for signing the lecture book are the following:

(1) presence at, and acceptance of all the labs.
(2) presence at the seminars.

Rules concerning repeaters:

Attendance of labs is not compulsory if you had all the four labs accepted last year and your lecture book was signed. Please note, however, that questions on the lab will be part of the SCT-s and the Final Exam.

Attendance of seminars is compulsory.

Final Exam: The exam is a written test of two parts (A and B).

Part A:

Part A of the written test is a set of 10 questions addressing the basic concepts listed among the key-words published in our website. These questions will include 5 brief descriptions of basic concepts, and 5 questions of yes/no type. The descriptions should contain 2 valuable and relevant facts/statements on the subject asked, for maximal score (2 points each; partial points may be considered). The A test has to be completed in 10 minutes. You will need to collect at least 14 points to pass the A test. Those earning below 14 points in part A fail the entire exam without regard to their score on part B, what will not be corrected and scored in this case. The score of a passed A test will be added to the score of part B, thus yielding 14-20% of the total exam points.

Part B:

Part B is a complex test, including two short essays (2x10=20%), fill-in, short answer, multiple choice, relation analysis, sketch/picture-recognition as well as simple choice and yes/no questions (50%). It contains material from the textbook, lectures and seminars. The lab questions are a section of the part B exam (to approximately 10% of the total test points).

Cell Biology part A written max. 20 points
Cell Biology part B written max. 80 points

Bonus points will be added only if the score of A+B part alone is above 50%:
Cell Biology short presentation bonus max. 3 points
Bonus points for lecture attendance max. 5 points
Cell Biology lab bonus points max. 3 points
Bonus points based on SCT scores max. 10 points
Total 121 points

Your grade on the Final Exam:

below 60% points:	fail (1)
60-69.5% points:	pass (2)
70-79.5% points:	satisfactory (3)
80-89.5% points:	good (4)
above 90% points:	excellent (5)

Repeated exams:

On repeated exams during the exam period of the 2nd semester, points earned from SCT-s, lecture attendance, lab points during the current semester and from short presentations are valid throughout. However, all bonuses and merits expire by next spring exam period except for Cell Biology lab points and bonus points for short presentations. Note that all parts have to be repeated on repeated exams, that is, cell biology written part B (including the lab questions), and cell biology written part A with less than 14 points.

The test/exam grade earned should reflect the true knowledge of the student. Therefore, if there are doubts whether the result of the written tests (SCTs, A, B, exam) really reflect the true knowledge of the student, the teachers/professors may also ask oral questions so as to be able to give a grade they

deem justified.
The C chance exam always starts with a written part (similarly to A and B chance exams) and if the student fails on the written part, it is followed by an oral exam in front of a committee. The committee summarizes the results of both parts and decides the grade, not necessarily averaging them.

Exemptions:

In order to get full exemption from the cell biology course the student has to write an application to the Educational Office. The Department of Biophysics and Cell Biology does not accept such applications. Applications for exemptions from part of the courses are handled by the department. The deadline for such applications is Monday on the second week. The following documents have to be submitted to the study adviser: 1. application with an explanation why the student thinks that he/she is eligible for an exemption; 2. certificates about the courses the student has taken; 3. a reliable description of the curriculum of the courses taken. The decision about exemption is based on a result of an "open-book"' exam test on the third week. Applicants will be notified whether they have to take such an examination.

Further Information:

* Study advisor from Cell Biology: Zsolt Fazekas Ph.D. (cellbioedu@med.unideb.hu)

* Info regarding tests, seminars, lectures is posted on the lab door ("Biophysics lab", ground floor, Theoretical Building), the department bulletin board and http://biophys.med.unideb.hu.
User names and passwords will be given out at the first cell biology seminar during the first week of the semester.

* We offer to keep an e-mail contact with the students whenever possible. This is smooth, fast and effective. Please write to cellbioedu@med.unideb.hu.

* Personal consultation with the study advisor: office hours are posted on the web site and the bulletin board of the Department. For appointments outside office hours please write an email.

Recommended books accessible online free of charge can be reached at the following URLs:
Lodish et al.: MOLECULAR CELL BIOLOGY (4th ed.):
http://www.ncbi.nlm.nih.gov/bookshelf/br.fcgi?book=mcb
Alberts et al.: MOLECULAR BIOLOGY OF THE CELL (4th ed.):
http://www.ncbi.nlm.nih.gov/bookshelf/br.fcgi?book=mboc4
Every online book can be searched electronically for keywords.

CHAPTER 15
ACADEMIC PROGRAM FOR THE 2ND YEAR

Department of Anatomy, Histology and Embryology

Subject: **ANATOMY, HISTOLOGY AND EMBRYOLOGY II.**
Year, Semester: 2nd year/1st semester
Number of teaching hours:
Lecture: **51**
Practical: **130**

1st week:
Lecture: Topographical anatomy of the head and neck - part one. Topographical anatomy of the head and neck- part two. Topographical anatomy of the oral and nasal cavities. Anatomy, histology and development of the teeth.
Practical: Anatomy: Topographical anatomy of the head and neck I.-II. a. Topographical anatomy of the head and neck: part one. Surface anatomy: Show the surface projections and landmarks of the following structures on the cadaver: Head: cutaneous branches of the trigeminal nerve. Branches of the facial nerve on the face and neck. Facial, superficial temporal and external carotid arteries. Retromandibular vein. Parotid gland and parotid duct. Lymph nodes and lymphatic drainage of head. Neck: Triangles of the neck. Superficial veins (ext. jugular vein). Cutaneous branches of the cervical plexus. Position of the hyoid bone, thyroid cartilage, thyroid gland. The carotid sheath (vagina vasorum) and its structures. The site of cricothyrotomy. Surface projection of the apex of the lungs. Relations of the scalene muscles. Lymphatic drainage of the neck. Make schematic drawings of these structures! Incise the skin in the midline and peel off laterally. The incision of the facial skin has to be made from the medial part of the orbit down to the philtrum passing round the nose, then continued through the lower lip to the chin. At the neck region a vertical incision has to be made in the midline, from the base of the mandible to the sternum, and a transversal incision along the clavicle. The skin is to be folded laterally. Attention: Branches of the supraclavicular nerves cross the clavicle! b. Dissect the superficial structures: branches of the Vth and VIIth cranial nerves, facial artery and vein, parotid duct, cutaneous branches of the cervical plexus, superficial cervical artery, external jugular vein, triangles of the neck. Careful preparation of the muscles of face. Face: Topography of the parotid gland. Nerves and blood vessels related to the parotid gland. Remove the parotid gland only one side by careful preparation of branches of the facial nerve and blood vessels. Dissection of the frontal and temporal regions. Neck: dissection of the supraclavicular triangle. Spare the sternocleidomastoid muscle.
Histology: a. - b. Repetition of general histology 1. Large intestine (HE stain) 2. Trachea (HE stain) 3. Esophagus (HE stain) 4. Axillary skin (HE stain)5. Urethra masculina (HE stain) 6. Ureter (HE stain) 7. Granulation tissue (healing wound from rat skin) (HE stain) 8. Knee joint (HE stain) 9. Cardiac muscle (PTAH) 10. Blood smear (May-Grünwald-Giemsa stain)

2nd week:
Lecture: Pharynx. Larynx. Development of the face, and oral and nasal cavities. Development of the pharyngeal gut.
Practical: Anatomy: Topographical anatomy of the head and the neck: III.-IV. a. Dissection of the submandibular triangle. Continue the dissection of the frontal, temporal and supraclavicular regions. Cut the sternocleidomastoid muscle. At the side of the intact parotid gland dissect the structures which pierce the gland. The parotid gland itself remains in position. b. Carotid triangle and the middle part of the neck. Sulcus lateralis linguae, muscles of the floor of the mouth. Topography of the

salivary glands. Dissection of the scalenotracheal fossa. Branches of the subclavian artery. Repetition of the superficial regions of the head and neck.
Histology: a. - b. Lip, tongue and salivary glands 1. Lip (HE stain). 2. Tongue (filiform and fungiform papillae) (HE stain). 3. Tongue (circumvallate papillae) (HE stain) 4. Parotid gland (HE stain) 5. Submandibular gland (HE stain) 6. Sublingual gland (PAS + H stain)

3rd week:
Lecture: Clinical anatomy of the head and neck - part one. Clinical anatomy of the head and neck - part two. Lymphatic tissue - part one. Lymphatic tissue - part two.
Practical: Anatomy: Topographical anatomy of the head and the neck: V.-VI. a. Head: Infratemporal fossa. At the side of the removed parotid gland dissect the alveolar nerve and artery from the mandibular canal and remove that half of the mandible. Cut out the masseter, the external and internal pterygoid muscles by careful preparation of the structures between the two pterygoid muscles. Preparation of the inferior alveolar nerve, lingual nerve, chorda tympani, maxillary artery, auriculotemporal nerve, middle meningeal artery, stylohyoid, styloglossus, stylopharyngeus muscles, glossopharyngeal nerve. Remove the lateral plate of the pterygoid process of the sphenoid bone. Find the muscles of the soft palate. b. Dissection of the nucheal region from the external occipital protuberance to the 7thoracic vertebra. Occipital artery, muscles of the nucheal region from layer to layer. Identify the suboccipital triangle and its elements. Remove all muscles attached to the occipital bone. Make visible the posterior arch of the atlas and exarticulate the atlantooccipital joint. Cut through the alar ligaments and the apical ligament. Bend the head forward. The head remains connected to the body only through the pharynx and esophagus. In the other cadaver, structures related to the pharynx are dissected.
Histology: a. - b. Tooth. l. Tooth grinding (Fuchsin) 2., 3. Development of teeth (teeth primordia in the rat's head) (HE stain). 4., 5. Development of teeth (teeth primordia in the rat's head) (Azan stain).

4th week:
Lecture: Lymphatic tissue - part three. The skin. The hypothalamo-hypophyseal system. Hypopysis and epiphysis.
Practical: Anatomy: Topographical anatomy of the head and the neck: VII.-VIII. a. Open the posterior wall of the pharynx and investigate the related structures. Study the faucial isthmus. b. Demonstration of the median section of the head and neck. Conclusion of the dissection of the pharynx and larynx. Demonstration of the pharynx, larynx, tongue, palatine and lingual tonsil.
Histology: a. Lymphatic tissues - part one 1. Thymus (HE stain) 2. Lymphatic follicle (large intestine) HE stain 3. Lymph node (HE stain) 4. Demonstration: Cells of the lymph node (video) b. Lymphatic tissues part two 1.Spleen (HE stain) 2.Palatine tonsil (HE stain) 3.Lingual tonsil (HE stain)

5th week:
Lecture: Thyroid gland, parathyroid gland, suprarenal gland. The APUD system. Heart - part one. Heart - part two.
Practical: Anatomy: Topographical anatomy of the head and the neck: IX. SELF CONTROL. a. Repetition of the topographic anatomy of the head and neck. b. SELF CONTROL: Topographical anatomy of the head and neck. Pharynx, larynx, oral and nasal cavities.
Histology: a. The skin1.Fingertip (HE stain) 2.Skin (HE stain) 3. Mammary gland (HE stain) b. Endocrine organs - part one1. Hypophysis (HE stain) 2. Hypophysis (Azan stain) 3. Epiphysis (HE stain)

6th week:
Lecture: Heart - part three. Development of the heart - part one. Development of the heart - part two. Trachea and lungs.
Practical: Anatomy: Dissection of the thoracic cavity I-II. a. Surface projections of the thoracic organs. On the anterior thoracic wall show the following landmarks, projection lines of the heart and its orifices, the auscultation areas of the cardiac valves, margins of the cardiovascular shadow, projections of the lungs, pleurae and

pleural recesses. Presentation of radiographs. b. Structure of the thoracic wall. Topography of the intercostal spaces. Lymphatic drainage of the breast. After removing the pectoralis major muscle, dissect the intercostal branches of the internal thoracic artery and the intercostal muscles. Opening of the thoracic cavity: exarticulate the sternoclavicular joint and cut the ribs along the anterior axillary fold. Compare the surface projection lines on the body and in youratlaseswith the in situ positions of the thoracic organs. Mediastinum and its divisions. Histology: a. Endocrine organs - part two 1. Thyroid gland (HE stain) 2. Parathyroid gland (HE stain) 3. Suprarenal gland (HE stain) 4. Demonstration: Thyroid gland: parafollicular cells (C) cells (silver impregnation, immunohistochemistry) b. CONSULTATION Histology of the lip, tongue, salivary glands, teeth (with its development), lymphatic tissue, skin, endocrine organs.

7th week:
Lecture: Pleural sac. Development of the respiratory system. Mediastinum. Esophagus. Clinical anatomy of the organs of the thorax. Structure of the abdominal wall.
Practical: Anatomy: Dissection of the thoracic cavity III.-IV. a. Study of the heart on isolated preparations. Size and position of the heart. External anatomy of the heart. Preparation of arteries and veins of the heart. Internal anatomy of the atria and the ventricles of the heart. Types and functions of the heart valves. Layers of the heart wall. The conducting system. Functional aspects of the circulatory system. Pulmonary and systemic circulation. b. In situ dissection of the heart, its vessels and chambers. Topography of the heart and pericardium and its sinuses. Open the pericardium between the superior and inferior vena cava and near the diaphragm along an L shaped line. Demonstration of the excised heart. Dissect the coronary arteries, the coronary sinus, the small cardiac vein, the great cardiac vein, the middle cardiac vein. Open a window on the anterior surface of the right auricle and turn backward. Remove and wash the coagulated blood to make the structures of the right atrium and the right atrioventricular orifice visible. Then cut a window on the anterior surface of the right ventricle starting from the conus, and turn the flap caudally while preserving the moderator band. Investigate the structures of the right ventricle including the tricuspid valve. Make a hole on the left ventricle by cutting out a piece of its wall, and identify its structures through the opening. The semilunar valves are studied at the aortic and pulmonary orifices after making window-like holes on their anterior walls. Presentation of radiographs.
Histology: a.- b. SELF CONTROL

8th week:
Lecture: Digestive system - introduction. Development of the primitive gut. Stomach. Small intestines. Large intestine.
Practical: Anatomy: Dissection of the thoracic cavity V.-VI. a. Study the pleura and its recesses. Remove the lungs and inspect the surfaces. Discuss schematic drawings of atlases of the medial surfaces of the lungs. Dissect bronchopulmonary segments (in one of the lungs) and bronchial arborization (in lung). Structures of the posterior mediastinum. b. Structures of the posterior mediastinum. Dissection of the intercostal vessels and nerves. Topography of the intercostal space and the cupula pleurae. Presentation of radiographs. Histology: a. Respiratory system. 1. Larynx (HE stain) 2. Trachea (HE stain) 3. Lung (HE stain) 4. Lung (The vascular system filled with drawing ink + HE) b. Digestive system - part one 1. Esophagus (HE) 2. Stomach (HE stain) 3. Stomach (PAS+H) 4. Demonstration: Stomach (GEP cells: silver impregnation and immunohistochemical reaction)

9th week:
Lecture: Histology of the stomach and the intestines. Pancreas. Liver - part one. Liver - part two. Portal system. Peritoneum. Lesser sac of the peritoneum.
Practical:
Anatomy: SELF CONTROL: Dissection of the abdominal cavity I. a. SELF CONTROL. Anatomy of the thorax. Development of the heart, respiratory system, face, oral ad nasal

cavities, pharyngeal gut. b. Demarcate the regions of the abdominal wall and cavity and discuss the surface projections of abdominal organs on the cadaver. Dissection of the median abdominal and the inguinal regions. Structure of the posterior abdominal wall (repetition). Presentation of radiographs.
Histology: a. Digestive system - part two 1. Gastro-duodenal junction (HE stain) 2. Gastro-duodenal junction (PAS+H stain) 3. Jejunum (HE stain) 4. Jejunum (Goldner's stain) b. Digestive system - part three 1. Colon (HE stain) 2. Demonstration: Colon (GEP cells, immunohistochemical reaction) 3. Appendix (HE stain) 4. Rectum (HE stain)

10th week:
Lecture: Development of the peritoneum and intestines. Separation of the body cavities. Retroperitoneum. Gross anatomy of the kidneys.
Practical: Anatomy: Dissection of the abdominal cavity II.-III. a. Structure of the abdominal wall, layers of the abdominal wall, thoracolumbar fascia. Opening of the abdominal cavity. Inspection and identification of the abdominal organs. Presentation of radiographs. b. Dissection of the lesser omentum and branches of the celiac trunk. Dissection of the blood vessels of the small and large intestines. Memorise the position of the abdominal viscera. Presentation of radiographs.
Histology: a. Digestive system - part four 1. Pancreas (HE stain) 2. Demonstration: Pancreas (GEP cells: silver impregnation and immunohistochemical reaction) 3. Liver from pig (HE stain) 4. Liver from pig (Azan stain) 5. Human liver (HE stain) 6. Liver from rat (Trypan blue vital stain + Nuclear fast red stain) 7. Gall bladder (HE) b. SELF CONTROL: Respiratory system. Digestive system.

11th week:
Lecture: Structure of the kidneys and urinary system. Development of the urinary system. Topographical anatomy of the wall of the pelvis and perineal region. Male genital organs: testis and epidydimis.
Practical: Anatomy: Dissection of the abdominal cavity IV.-V.a. Dissection of the blood vessels. Discussion of the abdominal lymphatic system. Removing the intestines from the duodeno-jejunal flexure to the sigmoid colon-rectal border (only from one cadaver). Cut and demonstrate the inner surface of different parts of the intestine (including the cecum). In the cadaver from which intestines were removed dissect the structures of the retroperitoneal region. b. Topography and relations of the stomach, duodenum, pancreas and spleen. Liver: inspect and make a drawing of the visceral (inferior) surface. Topography and sheaths of the kidney. Layers of the retroperitoneal space.
Histology: a. SELF CONTROL REMEDIAL b. Urogenital system - part one 1. Kidney - coronal section (HE stain)

12th week:
Lecture: Ductus deferens, spermatic cord, seminal vesicle, prostate, scrotum. Penis. Mechanism of erection. Female genital organs: the ovary. Anatomy of the uterine tube and the uterus. Broad ligament. Vagina.
Practical: Anatomy: Dissection of the abdominal cavity VI-VII. a. Paired visceral branches of the abdominal aorta. Kidneys, suprarenal glands. - Dissection of the kidney, demarcate a lobe of the kidney. b. Dissection of the retroperitoneal space. Diaphragm. Openings of the diaphragm and its piercing structures. Lumbar plexus. Parietal branches of the abdominal aorta.
Histology: a. Urogenital system - part two 1. Kidney - tangential section (HE stain) 2. Kidney (Vascular infiltration with drawing ink + HE stain) b. The urogenital system - part three l. Ureter (HE stain) 2. Urinary bladder (HE stain) 3. Urethra masculina (HE stain) 4. Cross section of an embryonic penis (HE stain) 5. Demonstration: Penis (HE stain)

13th week:
Lecture: Attachment and peritoneal relations of the uterus. Female external genital organs. Structure of the uterus and uterine tube. Menstrual cycle and its endocrine regulation. Implantation. The pregnant uterus. Placenta - part one.
Practical: Anatomy: True pelvis and perineal

region I.-II.a. Topography of the organs in the true pelvis. External genital organs - demonstration. Dissection of the branches of the internal iliac artery. b. Dissection of the perineal region. Structures of the anal region. Ischiorectal fossa. (Removing of the lower limbs from one of the cadavers).Histology :a. Urogenital system - part fourl. Testis and epididymis (HE stain) 2. Spermatic cord (HE stain) 3. Seminal vesicle (HE stain)4. Prostate (HE stain) 5. Demonstration: Prostate (Goldner's stain) b. Urogenital system - part fivel. Vagina (HE stain)2. Ovary (HE stain) 3. Ovary with corpus luteum (HE stain)

14th week:
Lecture: Placenta - part two. Fetal circulation. Development of the blood vessels. Development of the genital organs. Subdivision of the cloaca. Sexual differentiation. Sexual anomalies of genetic and hormonal origin.
Practical: Anatomy: True pelvis and perineal region III.-IV. a. Dissection of the urogenital region and external genital organs. Nerves and blood vessels on the dorsal surface of the penis. Preparation of the roots of penis/clitoris. Preparation of the corpora cavernosa and corpus spongiosum penis. Layers of the scrotum. Preparation of the pelvis for median section. b. Halving of the pelvis in the median plane. Dissection of the organs of the true pelvis from the lateral aspect. Branches of the internal iliac artery. Make schematic drawings of the female and male pelvic organs. Histology: a. Urogenital system - part sixl. Uterine tube (HE stain) 2. Uterus - proliferative stage (HE stain) 3. Uterus - secretory stage (HE stain)Demonstration: Uterine tube with peg-shaped cells (HE stain) b. Urogenital system - part seven 1. Pregnant uterus (HE stain) 2. Placenta (HE stain)

15th week:
Lecture: -
Practical: Anatomy: True pelvis and perineal region V. a. Male and female genital organs - demonstration of excised preparations. Placenta. Sacral plexus. b. SELF CONTROL. Anatomy of the abdominal cavity, pelvis and perineal region. Histology: a. SELF CONTROL. Histology of the urogenital system. b. -

Requirements

Concerning attendance, the rules written in the Regulations Governing Admission, Education and Examinations of the Faculty of Medicine, University of Debrecen are valid. The presence in practices, seminars and lectures will be recorded. The head of the department may refuse to sign the Lecture Book if a student is absent more than four times from practices (including anatomy, histology and embryology) in one semester even if he/she has an acceptable reason. Compensation of practices is possible only on the same week at an other student's group. The compensation of three practices is allowed (including anatomy, histology and embryology) in one semester.

Rules of the examinations:

Midterm examinations;

Attendance in the midterm examinations is compulsory. The exams cover the topics of lectures, seminars and practices of the semester, and include relevant material from official textbooks. Three anatomy and three histology midterm examinations will be organized with the following topics:

Anatomy 1: Gross and topographic anatomy of the head and neck.
Anatomy 2: Gross and topographic anatomy including visceral relations of the organs of the thorax.

Anatomy 3: Gross and topographic anatomy including visceral relations of the organs of the abdomen, pelvis and perineum.
Histology 1: Histology of the lip, tongue, salivary glands, teeth (with its development), lymphatic tissue, skin, endocrine organs.
Histology 2: Respiratory system and digestive system. Histology 3: Histology of the urogenital system.

Evaluation of the midterm examinations:

Midterm examinations will be evaluated with points. The midterm examination is successful in case of 60% or better performance. In case of successful midterm examinations the student will be exempted from the corresponding parts of the final practical examination.

Improvement of a failed midterm examination:

Failed midterm examinations can be improved if the score of the failed midterm examination is between 40 and 59 %. With this restriction the following midterm examinations can be improved:
With this restriction improvement of the midterm examination is possible as follows:

In case of failing the 1st or 2nd anatomy midterm examinations, one of them can be improved failed on the 11th week (on Monday at 8 o'clock). In Histology either the 1st or the 2nd midterm examination can be improved on educational week 11 at the time of the “a” practical.

Conversion of the successful midterm examination to grades for the end of semester final exam:

The achievements on successful midterm examinations are converted to grades for the end of semester final exam on the basis of the following scheme of conversion:

60-69 % 2 (pass)
70-79 % 3 (satisfactory)
80-89 % 4 (good)
90-100 % 5 (excellent)

Final examination at the end of the 1st semester:

The final examination consists of a practical and a theoretical parts. The examination begins with the practical part. Students can sit for the theoretical part only after passing all parts of the practical examination.

Practical examination:

The exam is an oral examination conducted with the continuous aid of anatomical and histological preparations.

The exam consists of the following parts:
1. Anatomy (3 topics from different regions of the human body)
a. Head and neck: (gross and topographic anatomy including visceral relations)
b. Visceral organs 1: (gross and topographic anatomy including visceral and skeletal relations of the organs of the thorax)

c. Visceral organs 2: (gross and topographic anatomy including visceral and skeletal relations of the organs of the abdomen, pelvis and perineum
2. Histology (3 slides)
a. Histology 1: Histology of the lip, tongue, salivary glands, teeth (with its development), lymphatic tissue, skin, endocrine organs.
b. Histology 2: Respiratory system and digestive system.
c. Histology 3: Histology of the urogenital system. The parts of the exam will be evaluated separately from each other. The exam is successful if the student pass all six parts successfully. On the "B" and "C" examinations the student will be exempted from the parts that have been successfully passed previously.

Theoretical examination

The exam is an oral examination. The topics of the examination are formulated in a way that students should present a synthetic knowledge from anatomy, histology and embryology. On the "B" and "C" examinations the entire theoretical examination has to be repeated.

Calculation of the mark for the final examination

To calculate the mark for the final examination the performance on both the practical and theoretical examinations will be taken into consideration.

Registration for the examination:

Students are supposed to register for the exam through the NEPTUN system.

Department of Biochemistry and Molecular Biology

Subject: **BIOCHEMISTRY I.**
Year, Semester: 2nd year/1st semester
Number of teaching hours:
Lecture: **42**
Seminar: **14**
Practical: **30**

1st week:
Lecture: Energy in biology. Oxidative phosphorylation. The citric acid cycle and its regulation. The mithocondrial genom.
Practical: Safety instructions and fire regulations. Introduction to the practicals.

2nd week:
Lecture: Introduction. Main pathways of the carbohydrate metabolism, central role of glucose. Absorption and transport of monosaccharides. Carbohydrate metabolism in various tissues. Glycolytic pathway. Rapoport-Luebering shunt. Energy production of the glycolytic pathway. Non-physiological inhibitors of the glycolytic pathway. Shuttle pathways. Cori cycle. Glucose-alanine cycle. Gluconeogenesis. Substrates of the gluconeogenesis.
Practical: Determination of the activity of glycolytic enzymes (aldolase, LDH), electrophoresis of LDH.

3rd week:
Lecture: Regulation of the glycolytic pathway in

liver and muscle. Regulation of gluconeogenesis. Glycogen in liver and muscle. Degradation and synthesis of glycogen. Regulation of glycogen synthesis and degradation. Metabolism of galactose and fructose.
Practical: Determination of the activity of glycolytic enzymes (aldolase, LDH), electrophoresis of LDH.

4th week:
Lecture: Pentose phosphate pathway. Synthesis of disaccharides. Metabolism of glucuronic acid. Inherited diseases in the carbohydrate metabolism. Biochemistry of diabetes mellitus. Pyruvate dehydrogenase complex.
Practical: Determination of the activity of glycolytic enzymes (aldolase, LDH), electrophoresis of LDH.

5th week:
Lecture: Organization of lipid structures. Mixed micelles in the digestive tract. Lipoproteins in blood plasma. Covalent interactions between proteins and lipids. Oxidation of fatty acids. Synthesis of fatty acids.
Practical: Study on transaminases.
Self Control Test

6th week:
Lecture: Synthesis of triacyl-glycerol. Lipid metabolism during starvation. Ketone bodies.
Practical: Study on transaminases

7th week:
Lecture: The mevalonate metabolic pathway. Synthesis of cholesterol Cholesterol transport in the body. The LDL receptor and its gene. Excretion of cholesterol. Biochemical explanation of elevated blood cholesterol levels.
Practical: Study on transaminases

8th week:
Lecture: Steroid hormones. Bile acids. Vitamin D. Eicozanoids. Lipid peroxidation. Synthesis of sphyngolipids and phospholipids
Practical: Studies on the coupling of mitochondrial electron transport by proton motive force to ATP synthesis.

9th week:
Lecture: Comparison of the amino acid metabolism with the carbohydrate and lipid metabolisms. Formation and utilisation of the intracellular amino acid pool. Nitrogen balance. Exogenous amino acid sources, digestion of proteins. Amino acid transports. Structure and function of glutathione. Endogenous amino acid sources: intracellular protein breakdown. Common reactions in the amino acid metabolism: fate of the nitrogen. Transaminations and deaminations. Enzymes containing pyridoxal phosphate cofactors, and their mechanism of action: stereoelectronic control. Formation and elimination of ammonia in the body. Nitrogen transport between the tissues.
Practical: Studies on the coupling of mitochondrial electron transport by proton motive force to ATP synthesis.

10th week:
Lecture: The urea cycle and its regulation. Mitochondrial carbamoyl phosphate synthetase. Intracellular glutamine cycle. Decarboxylation and carboxylation reactions in the amino acid metabolism. C1 transfer and transmethylation, related enzyme and vitamin deficiencies. Monooxygenation and dioxygenation reactions. Fate of the carbon skeleton of amino acids: glucogenic and ketogenic amino acids. Degradation of amino acids in the pyruvate pathway. Transport function of alanine. Degradation and synthesis of cysteine. Formation and utilization of PAPS. Degradation and synthesis of serine and glycine. Pathways of threonine degradation. Degradation of amino acids in the - ketoglutarate pathway. Degradation of histidine, histidinemia.
Practical: Studies on the coupling of mitochondrial electron transport by proton motive force to ATP synthesis.
Self Control Test

11th week:
Lecture: Degradation and synthesis of proline. Degradation and synthesis of arginine and ornithine, their precursor functions: NO, creatine, polyamines. Aspartate and asparagine

degradation and synthesis in the oxaloacetate pathway. Degradation of amino acids in the succinyl-CoA pathway. The vitamin requirements and enzyme deficiencies in the propionyl CoA succinyl CoA conversion. Degradation of isoleucine and valine, related enzyme deficiencies. Comparison of leucine degradation with the degradation of isoleucine and valine. Degradation of lysine and tryptophane, their precursor functions. Carnitine synthesis. Degradation of phenylalanine and tyrosine, related enzyme deficiencies and precursor functions. Synthesis and degradation of cathecolamines.
Practical: Evaluation and discussion of the practices. Control test.

12th week:
Lecture: Nucleotide pool. Digestion and absorption of nucleic acids. Sources of atoms in purine ring. De novo synthesis of purine nucleotides. Regulation of purine nucleotide synthesis. Salvage pathways for the purine bases. Degradation of purine nucleotides. Diseases associated with purine nucleotide metabolism.

13th week:
Lecture: De novo synthesis of pyrimidine nucleotides. Regulation of pyrimidine nucleotide synthesis. Salvage pathways for the pyrimidines. Degradation of pyrimidine nucleotides. Nucleoside and nucleotide kinases. Synthesis of deoxythymidilate. Nucleotide coenzyme synthesis (NAD, FAD, CoA). Antitumour and antiviral action of base and nucleoside analogues.

14th week:
Lecture: Biochemistry of nutrition. Energy requirement. Basic metabolic rate. Energy content of the food. Energy storage and thermogenesis. Biochemical mechanism of obesity. Protein as N and energy source. N balance. Essential amino acids. Protein malnutrition. Vegetarianism. Clinical aspects of protein nutrition. Carbohydrates and lipids. Pathological mechanisms in obesity. Vitamins. Structure, biochemical functions. Relationship between the biochemical functions and the symptoms of deficiency. Essential inorganic elements of the food (metabolism, function, deficiency).

Requirements

Requirements for signing the semester: attendance in laboratory practices and seminars.

Required knowledge from Biochemistry I.: topics of metabolism presented at the lectures (slides are available at the http://bmbi.med.unideb.hu web site, username: student, password: student2016) and topics discussed in the seminars.

Attendance on the **lectures** is not compulsory, but recommended: in case of one lecture absence seminar bonus points are erased, in case of two lecture absence all collected points (control test points of the semester) are also erased. Please arrive in time for the lectures, because the door of lecture hall will be closed at the beginning of the lecture.

On the **seminars** the lectures of the previous week can be discussed. New scientific information connected to the lectures will also be presented; those materials will also be asked on the exams. On the seminars, based on the activity and knowledge maximum 20 % of the students can collect 8 bonus points and maximum 30 % can collect 4 bonus points (ask details from the seminar teachers). In case of the seminars maximum three absences are accepted. Students can’t make up seminar with another group.

Every **laboratory practices** must be performed, if someone is absent due to any serious reason proved by medical papers, the missing experiment have to be performed within the three weeks practice period joining another group (after obtaining permissions from both practice teachers). In case of more than one remedial practice, students cannot get any points for the additional practice units.

Achievements during the semester will be evaluated in terms of points. During the semester 100 (+ 8) points can be collected. 100 points could come from the laboratory test (8 points), note book (3x 4 points) and from the control tests of the material of the lectures (80 points). Control tests consist of test questions and recognition of chemical structures. The list of the chemical structures can be found on the homepage of the department. Bonus points earned by the seminar activity (8 points) will be added to the total collected points (half of the bonus points will be added to the result of the semester exam).

In the first semester, grade will be offered on the basis of the collected points for all those students, who collected at least 60 points (and reached at least 60% of the practical points!): pass for 60-69,5 points; satisfactory for 70-79,5 points; good for 80-89,5 points; excellent for 90-108 points. Those students who want to get a better grade, can take an exam. Those, who did not collect 60 points, have to take a written exam in the exam period.

At the written **end-semester exam** 50 points can be collected, it consists of single- and multiple choice test questions from the lecture material (45 points) and from the practice (5 points). 60% (30 points) is needed to get a passing mark, and the grade increases with every 5 points (30-34.5 pass, 35-39.5 satisfactory, 40-44.5 good, 45-50 excellent).

Those students who collect at least 220 points during the three semesters from the three main courses (Molecular Biology, Biochemistry I., Biochemistry II.) of the Department of Biochemistry and Molecular Biology and have more than 60 points from each subjects will be exempted from the written part of the final exam.

Please follow the announcements of the department about the control tests, exams and other current information on the announcement table (LSB downstairs, 1st corridor), and on the website (http://bmbi.med.unideb.hu).

Department of Foreign Languages

Subject: **HUNGARIAN LANGUAGE II/1.**
Year, Semester: 2nd year/1st semester
Number of teaching hours:
Practical: **30**

1st week:
Practical: Revision.

2nd week:
Practical: Pretest.

3rd week:
Practical: Unit 1

4th week:
Practical: Unit 2

5th week:
Practical: Unit 3

6th week:
Practical: Unit 4

7th week:
Practical: Unit 5

8th week:
Practical: Revision. Mid-term test.

9th week:
Practical: Unit 6

10th week:
Practical: Unit 7

11th week:
Practical: Unit 8

12th week:
Practical: Unit 9

13th week:
Practical: Unit 10

14th week:
Practical: Revision. End-term test.

15th week:
Practical: Oral minimum exam. Evaluation.

Requirements

Attendance

Language class attendance is compulsory. The maximum percentage of allowable absences is 10 % which is a total of 2 out of the 15 weekly classes. Students arriving late for the classes are not allowed to enter the class. Being late is counted as an absence. If the number of absences is more than two, the final signature is refused and the student must repeat the course. Students are required to bring the textbook or other study material given out for the course with them to each language class. Active participation is evaluated by the teacher in every class. If students' behaviour or conduct does not meet the requirements of active participation, the teacher may evaluate their participation with a "minus" (-). If a student has 5 minuses, the signature may be refused due to the lack of active participation in classes.

Testing, evaluation

In each Hungarian language course, students must sit for 2 written language tests and a short minimal oral exam.

A further minimum requirement is the knowledge of 200 words per semester announced on the first week. There is a (written or oral) word quiz in the first 5-10 minutes of the class, every week. If a student has 5 or more failed or missed word quizzes he/she has to take a vocabulary exam that includes all 200 words along with the oral exam. The results of word quizzes are added to the average score of the written tests.

The oral exam consists of a role-play randomly chosen from a list of situations announced in the beginning of the course. Failing the oral exam results in failing the whole course. The result of the oral exam is added to the average of the mid-term and end-term tests.
Based on the final score the grades are given according to the following table:

Final score	Grade
0 – 59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

If the final score is below 60, the student once can take an oral remedial exam covering the whole semester's material.

Consultation classes: In each language course once a week students may attend a consultation class with one of the teachers of that subject in which they can ask their questions and ask for further explanations of the material covered in that week. These classes are optional.
Course book:
Audio files to the course book, oral exam topics and vocabulary minimum lists are available from the website of the Department of Foreign Languages: ilekt.med.unideb.hu.

Department of Physiology

Subject: **MEDICAL PHYSIOLOGY I.**
Year, Semester: 2nd year/1st semester
Number of teaching hours:
Lecture: **60**
Seminar: **30**
Practical: **45**

1st week:
Lecture: Introductory remarks
Preparation for laboratory practices
Humoral regulation of cell function
Membrane transport mechanisms
Electrical properties of the cell membrane

2nd week:
Lecture: Mechanisms underlying the action potential
Neuromuscular junction
Synapse
The autonomic nerves
Basic receptor function
Regulation of striated muscle contraction
Smooth muscle physiology

3rd week:
Lecture: Physiology of the body fluids, homeostasis
Red blood cells, blood types
Blood plasma, jaundice
Hemostasis
Blood derivatives in human therapy

4th week:
Lecture: Electrical properties of the heart
Mechanisms of the different types of arrhythmia; the ECG
Excitation-contraction coupling in cardiac muscle
Cardiac Ca^{2+} -entry mechanisms
Contractile properties of the heart

5th week:
Lecture: Effects of humoral agents and the autonomic nervous system on the heart
The cardiac output and the cardiac cycle
Principles of hemodynamics
Features of arterial circulation

6th week:
Lecture: Microcirculation
Lymphatic circulation, venous circulation
Components of vascular tone
Cardiovascular reflexes I.
Cardiovascular reflexes II.

7th week:
Lecture: Humoral control of circulation
Endothelial functions
Integrated regulation of circulation
Pulmonary circulation
Cerebral and coronary circulation

8th week:
Lecture: Splanchnic, cutaneous and muscular circulation
Circulatory shock
Regulation of cell function
"My heart"

9th week:
Lecture: Mechanics of respiration
Compliance, work of breathing
Gas transport in the blood
Control of breathing
Neural regulation of gastrointestinal functions

10th week:
Lecture: Endocrine and paracrine regulation of gastrointestinal functions
Motor functions of the gastrointestinal tract I.
Motor functions of the gastrointestinal tract II.
Secretion of saliva and gastric juice
Exocrine functions of pancreas, liver and intestines

11th week:
Lecture: The liver
Absorption of nutrients
Food intake and its regulation
Energy balance
Regulation of body temperature
Energetics of muscle contraction

12th week:
Lecture: Energetics of muscle contraction
Exercise physiology
Regulation of cardiovascular functions in physiological and pathological conditions
Integrated response of the cardiovascular and respiratory system
Measurements of intracellular Ca2+ cc

Requirements

1. **Signature of Lecture Book**

Attendance of lectures, laboratory practices and seminars is compulsory. The signature of the Lecture Book may be refused for the semester in case of more than four absences from the seminars and/or more than two absences from the practices. Completion of a missed seminar with a different group is not possible. All missed practices must be must be made up, however this does not reduce the number of absences! Completion of all topic sheets in the Exercise Book, each verified by the signature of the teacher, is also a precondition of the signature of the Lecture Book. If one has five or more lecture absences, the end-semester examination (ESE) may not be substituted with the average test score (see later). Each student must attend seminars with the group specified by the Education Office. For continuous updates on all education-related maters, please check the departmental web-site (http://phys.dote.hu).
The lectures of Medical Physiology I. are listed at the web site of the Department of Physiology (http://phys.dote.hu)

2. **Evaluation during the semester**

The knowledge of students will be tested 3 times per semester in the form of a written test (multiple

choice questions). Participation on mid-semester written tests is compulsory. If one wishes to improve on his/her general performance, it is possible to take a make-up (remedial) test on one of the three topics. Note that the calculation of the average score will be based upon the result of the remedial test, even if it is worse than the original score. At the end of the 2nd semester the 1st semester test results will be used to calculate your bonus points. The bonus points are valid only for a given academic year! Calculation of bonus points is detailed at the description of Medical Physiology II.
Laboratory practical knowledge of the students will be tested at the end of the first semester as part of the Closing Lab, evaluation with two level marks (accepted or not accepted). As a precondition of attending the Closing Lab, the fully completed Exercise Book (with all the verified topics) must be presented during the Closing Lab. Students are expected to perform the given experiment on their own and must be familiar with theoretical background also. In case of a negative result, the Closing Lab can be repeated, but only once. If the final evaluation of the Closing lab is "Not Accepted", then the student will be given laboratory practical questions on the end-semester examination.

3. **Examination**

The first semester is closed by an oral end-semester exam (ESE) covering the topics of all lectures, seminars and laboratory practices of the semester. The list of exam questions is available on the departmental website (http://phys.dote.hu). If the final evaluation of the Closing lab is "not accepted", then the student will be given laboratory practical questions, too.
The ESE mark based on the average score of mid-semester tests will be offered if - one's average score of the three mid-semester tests is above 60%, and - (s)he successfully completed the Closing Lab, and - (s)he has fewer than 5 lecture absences, and - the Dept. of Physiology verifies the semester (signature of lecture book).
The mark based on the average score of mid-semester tests is calculated according to the following

score	mark
0 – 59 %:	fail
60 – 69 %	pass
70 – 79 %	satisfactory
80 – 89 %	good
90 – 100 %	excellent

- If one is not satisfied with this result, (s)he may participate in ESE during the examination period.

Department of Anatomy, Histology and Embryology

Subject: **NEUROBIOLOGY (NEUROANATOMY, NEUROBIOCHEMISTRY, NEUROPHYSIOLOGY)**
Year, Semester: 2nd year/2nd semester
Number of teaching hours:
Lecture: **62**
Seminar: **15**
Practical: **52**

1st week:
Lecture: The histology of the nervous system. I. The neuron. The histology of the nervous system. II. The neuroglia. Relations of neurons and neuroglial cells. The development of the nervous system – neurohistogenesis. Parts of the nervous system. The development and structure of the spinal cord.
Seminar: See practical.
Practical: a. Dissection of the brain: part one,: Demonstration of the cerebral hemispheres and lateral ventricles. Flechsig's cut. Demonstration of the cerebral blood vessels and cisterns. Main steps in the dissection: removing of the membranes is followed by surface demonstration. At the right hemisphere a horizontal section is to be made at the level of corpus callosum. The position of the lateral ventricle can be felt on this side. First the central portion of the lateral ventricle, then its frontal and occipital horns are to be opened. After removing the operculum, the insula and the superior temporal gyrus become visible. Establish the position of the temporal horn with the aid of a probe then open the horn. On the left hemisphere the so-called Flechsig's section is made to explore the basal ganglia. Remove the trunk of the corpus callosum, cut and fold back the fornix. Demonstration of the tela choroidea of the 3rd ventricle. b. Dissection of the brain: part two. The third ventricle, diencephalon. Midsagittal section of the brain. Explore the brainstem by removing the remaining parts of the hemisphere. Demonstration of the midbrain. In order to explore the cerebellar nuclei, a section is made directed from the superior cerebellar peduncle to the ventral surface of the cerebellum. Cut out a wedge-shaped part of the cerebellum for the observation of the 4th ventricle. Make a schematic drawing of the floor of the 4th ventricle. Demonstration of the pons and the medulla. Histology: Nervous tissue 1. Peripheral nerve (HE stain) 2. Peripheral nerve (OsO_4 + H stain) 3. Spinal ganglion (HE stain) 4. Sympathetic ganglion (Bielschowsky's silver method) 5. Neuroglia: Astrocyte from cerebral cortex and medulla (Cajal's gold method)

2nd week:
Lecture: The development and structure of the brain stem. The fourth ventricle. The development and structure of the diencephalon. The third ventricle. The development and structure of the telencephalon. The lateral ventricles. The structure of the cerebral cortex.
Seminar: See practical.
Practical: Anatomy: a. Dissection of the brain - part three. Gross anatomy of the brain stem and its structures. Cranial nerve nuclei. Attachment of cranial nerves to the brain. Structure of the brainstem – discussion. b. Dissection of the spinal cord. Opening of the vertebral canal on a separate torso. Gross anatomy of the spinal cord and its structure - discussion. Scalp. Meninges. Blood supply of the brain. Cerebrospinal fluid. Opening of the cranial cavity. Structure of the scalp and vault, meninges. Demonstration: blood supply of the brain. Discussion of the flow of the cerebrospinal fluid. Histology: Spinal cord 1. Spinal cord (HE stain) 2. Spinal cord (Bielschowsky's silver method) 3. Spinal cord (Golgi impregnation) 4. Only for demonstration: b. Frog spinal cord labeled with cobalt lysine 1. dorsal root filling 2. ventral root filling 3. intracellular labeling

3rd week:
Lecture: The structure of the cerebellum. The structure and pathways of the medulla oblongata. The structure and pathways of the pons and mesencephalon. The meninges. Blood circulation and cerebrospinal fluid.
Seminar: See practical.
Practical: Anatomy: a. Dissection of the brain - part four. Dissection on in situ brain. Follow the instructions given at the dissection of the excised brain.b. Dissection of the brain - part five. Preparation of the brainstem in situ. Cranial and dural exits of the cranial nerves. Histology: Structure of the cerebellar and cerebral cortex. l. Cerebellum (HE stain) 2. Cerebellum ($AgNO_3$ impregnation according to Bielschowsky) 3. Cerebellum (Golgi impregnation) 4. Cerebrum (Nissl stain) 5. Cerebrum (Golgi impregnation)

4th week:
Lecture: The anatomy of the eye. The muscles

of the eyeball, conjunctiva, eyelids, lacrimal apparatus. The oculomotor system. The structure of the retina. The visual pathway. The gross anatomy of the middle ear and the inner ear.
Seminar: See practical.
Practical: Anatomy: a. Dissection of the brain - part six. Conclusion of brain dissections. Structures of the cranial base. Venous sinuses of the dura mater. Cranial exits of the cranial nerves. Review of cranial nerves (n. V)b. Dissection of the brain - part seven. Coronal sections of the brain. Review of cranial nerves (n. VII)Histology: Sense organs: part one l. Eye (HE) 2. Eyelid (HE) 3. Lacrimal gland (HE)

5th week:
Lecture: The vestibular system. The acoustic system. The taste and olfactory systems.
Seminar: See practical.
Practical: Anatomy: a. Dissection of the brain - part eight. General review. Review of cranial nerves (n. IX, X, XI, XII)b. Dissection of the visual organs. Dissection of the eye and orbital structures. Review of the visual system and the control of eye movements Dissection of the middle and inner ear. Review of the vestibular and auditory systems Histology: Sense organs: part three. 1. Inner ear (HE)

6th week:
Lecture: The neuronal excitatory process, roles of the ionic channels. (P) Features and significance of the central excitatory and inhibitory synapses. (P) Basic forms of neuronal interaction in the central nervous system, neuronal integration. (P)
Practical: Anatomy: a. SELF CONTROL b. Histology: SELF CONTROL

7th week:
Lecture: Metabolism of the central nervous system. (B)Signal propagation and transmission. (B) Postsynaptic mechanisms of neurotransmission. (B) Roles and effects of amine neurotransmitters I. (B) Roles and effects of amine neurotransmitters II. (B) Axonal transport, degeneration, regeneration. (A) Signal transduction in the nervous system. (A) Synaptic and non-synaptic neurotransmission. Interneuronal synapses. Ultrastructure and molecular architecture. (A)
Practical: Anatomy: a. SELF CONTROL b. Histology: SELF CONTROL

8th week:
Lecture: Receptors. Primary afferents. Sensory functions of the spinal cord.The somatosensory system. The viscerosensory system. General characteristics of the receptros, somato- and viscerosensory functions. (P)

9th week:
Lecture: Physiology of temperature and pain sensation. (P) Neuronal mechanisms of the pain sensation, theoretical background of therapy. (P)

10th week:
Lecture: Signal generation in sensory organs. (B) Information storage. (B)

11th week:
Lecture: Optics of the vision. (P) Retinal mechanism of the vision. (P) Central processing of the visual information. (P) Physiology of the auditory function. (P) Somatomotor functions of the spinal cord. The motor end plate. The motor unit. The spinal motor apparatus. (A)Reflex functions of the spinal cord and brain stem. Proprioceptive reflexes and nociceptive reflexes. (A)The somatomotor sístem. The hierarchy of the motor system. The basal ganglia and the cerebellum as part of the somatomotor system. (A)

12th week:
Lecture: The visceromotor system. (A) Spinal control of skeletal muscle activity. (P) Vestibular apparatus and movement coordination. (P) Roles of the brain stem and cerebellum in the coordination of movements. (P)

13th week:
Lecture: Roles of the basal ganglia and cerebral cortex in the coordination of movements. (P) Physiology of taste and smell. (P) The monoaminergic system. (A) The limbic system. (A)Central vegetative regulation I. (P) Central vegetative regulation II. (P) EEG, sleep. (P)

Learning, memory. (P)

Requirements

The neurobiology course is an integrated one, delivered as a joint effort of three departments (Departments of Anatomy, Histology and Embryology; Biochemistry; Physiology). The educational activities of the Neurobiology course include lectures, seminars and practices. Most of the regulations concerning these activities are specific to the individual departments and will be introduced by the respective education officers.

In the detailed program of the course (which, in fact, corresponds to the list of requirements) as well as here, both the compulsory and suggested textbooks are listed. Note, however, that the requirements of the course include material delivered in the lecture hall only, not necessarily available in the recommended textbooks, while in other cases some information in the suggested textbook is not regarded as part of the exam material.

Attendance of the lectures, seminars and practices is compulsory, although one may have five absences from the lectures and two absences of in the following distribution: neuroanatomy and neurohistology together: two absences; neurophysiology (seminar and practices) two absences together. If one collects six or more lecture absences (regardless of the reason of the absences) all the exam advantages are withdrawn without further notice. In the case of three or more absences from either the practices or seminars, the verification of the lecture book may be refused. Making up the missed seminars and practices may be possible, but the individual departments determine the actual procedure.

During the term, three self-controls (SCs) are organised. If one meets the passing conditions (see below), the end-semester examination may be substituted with the result achieved on the basis of these tests (i.e. exemption of the final exam). The maximum achievable score is **100 points** in the following distribution:

Neuroanatomy:**50 points**
Neurobiochemistry**10 points**
Neurophysiology**40 points**

The first SC (week 7) is organised by the Department of Anatomy. It has two parts: neurohistology
Practicum and neuroanatomy oral/practicum. All three departments participate, however, in the second (week 10) and third (week 14) self-controls (both of them are written tests). The first SC can be repeated once, on the 8th week. Either the 2nd or the 3rd SCs may also be repeated at the end of the semester, but not both. In this case, all subjects (neuroanatomy, neurophysiology and nerobiochemistry) of either the 2nd or the 3rd SCs have to be repeated and the previously achieved scores are lost. Any remedial can be made only in the case of the respective regular SCT has been attempted.

The points collected in the frame of the three SCs will be summarised on a subject and departmental basis.
If someone collects at least 60 % of the total number of points for all five subjects individually provided by the departments, she/he will be exempted of the end-semester examination (ESE).

Please, note that in the case of the Anatomy Department, the 60 % limit is separately applicable for the neurohistology practicum, neuroanatomy oral/practicum and the cumulative written score achieved in the frame of the 2nd and 3rd SCs. If someone fails to reach the 60 % in the case of any of the subjects of a department then the student must take the examination on the appropriate subject(s) during the examination period (the actual dates will be determined later).

If someone reaches the 60 % limit of all departmental scores (i.e. all subjects), the ESE result is calculated
as follows:

Total number of points score

0 – 59 points:	fail
60 – 69 points:	pass
70 – 79 points:	satisfactory
80 – 89 points:	good
90 – 100 points:	excellent

If someone wishes to improve the result of her/his ESE, it can be done on any of the exam days (registration is required). Please note, that in this case all previous exam results are lost.

Details of the self-controls on a departmental basis:
Anatomy (neuroanatomy, neurohistology):
The total number of points available in the frame of the first SC:
Neurohistology practicum:10 points
Neuroanatomy oral/practicum:20 points
If the score of the first SC is less than 60 % (regarding either part of the SC) it can be repeated on the following week. Additional 20 points can be collected in the frames of the 2nd and 3rd SCs. The preconditions of the exam exemption: at least 6 points on histology practicum; at least 12 points on neuroanatomy oral/practicum and at least 12 points on the written tests.

Biochemistry(neurobiochemistry):
Altogether 10 points can be collected in the frames of the 2nd and 3rd SCs. One must have at least 6 points for the exemption.

Physiology(neurophysiology):
Altogether 40 points can be collected in the frames of the 2nd and 3rd SCs. One must have at least 24 points for the exemption. Four extra points can be collected from neurophysiology practicals on the 14th academic week during the Neurophysiology closing lab. In case of a failure there is no possibility of improvement. Nevertheless, the maximum achievable neurophysiology score is 40 points and these extra 4 points are valid only and exclusively in the current academic year (students repeating Neurobiology can register for the end-semester neurophysiology closing lab again.)

Department of Biochemistry and Molecular Biology

Subject: **BIOCHEMISTRY II.**
Year, Semester: 2nd year/2nd semester
Number of teaching hours:
Lecture: **45**
Seminar: **15**
Practical: **30**

1st week:
Lecture: Levels of eucariotic gene expression. The active chromatin. Regulation of transcription. Regulation at the mRNA level. Translational regulation. Posttransational events. Gene therapy.
Practical: Introduction to the practicals.

2nd week:
Lecture: Term and levels of regulation. Significance and interrelationship between metabolic, cytokine, hormonal and neuronal regulation. Forms of external signals. Receptors and transducers. Systems increasing the sensitivity of regulation: allosteria, substrate cycle, interconversion cycle, cascades. Signalling pathways of nonpenetrating signals. Ionchannel receptors. Seven transmembrane domain receptors G proteins and GTP-ases. The adenylate cyclase and the phospholipase C signalling pathway. G proteins and GTP-ases. The adenylate cyclase and the phospholipase C signalling pathway. Control of enzyme activity.
Practical: Study on blood clotting

3rd week:
Lecture: Other phospholipases. cGMP phosphodiesterase sytem. Signalling via one-hydrophobic domain proteins: the cGMP system. Coupling of tyrosin kinase receptors to the signaling pathways, raf, MAP kinases. Metabolic effects of insuline.
Practical: Study on blood clotting

4th week:
Lecture: Signals acting via cytoplasmatic targets : the NO system. Coupling of signaling pathways to the regulation of genes and to the actin filament movement. Nuclear receptors. Signal crosstalks.
Practical: Study on blood clotting

5th week:
Lecture: Biochemistry of cell proliferation. Mitotic cascade. M-phase kinase. Products and biochemical function of protooncogenes. Mechanism of oncogene formation.
Practical: Fractionation and quantitative determination of plasma proteins.

6th week:
Lecture: Tumor suppressor genes and their biochemical function. Biochemical features of terminal differentiation. Biochemistry of programmed cell death.
Practical: Fractionation and quantitative determination of plasma proteins.

7th week:
Lecture: Stress proteins and enzymes in eukariotic cells. Heat shock proteins and their functions under normal circumstances. Hsp 70 and hsp 60 protein families. Role of chaperones and chaperonins. Thermotolerance of the cell. Hsp 90 protein family and their role in the cells. Transcriptional regulation of heat shock genes. Stress signals.
Practical: Fractionation and quantitative determination of plasma proteins.

8th week:
Lecture: Biochemistry of the liver. Biotransformation. Biochemical consequences of ethanol consumption.
Practical: Study on neurotransmitters

9th week:
Lecture: Biochemistry of the blood. Metabolism of red blood cells. Genetic diseases leading to haemolysis. Hemoglobin; structure, function and

regulation. Pathological forms of hemoglobin. Specific biochemical reactions of leukocytes. Leukocytes and inflamma-tion. Serum proteins.
Practical: Study on neurotransmitters

10th week:
Lecture: Uroporphynoids, hem-proteins. Synthesis of hem, regulation of the synthesis in eukariotic cells. Degradation of hem: formation, conjugation and excretion of bile pigments. Hem oxygenase. Disorders in hem metabolism. Iron transport, storage and distribution in the human body. Molecular regulation of the iron level in cells: stability of transferrin receptor and ferritin mRNA, IRE binding protein. Risk of the free iron and intracellular hemolysis.
Practical: Study on neurotransmitters

11th week:
Lecture: Cellular, humoral and vascular aspects of blood clotting. Structure, activation, adhesion and aggregation of thrombocytes. Classification of blood clotting factors and their role. Factors depending on vitamin K.
Practical: Evaluation of the results of practicals. Control test. Visit of the department.

12th week:
Lecture: Contact phase of blood coagulation. Blood clotting in the test tube and in the body. Classification of blood coagulation. Role of thrombocytes and the vascular endothel. Limiting factors , inhibitors and activators of blood coagulation. Fibrinolysis.

13th week:
Lecture: Biochemistry of the extracellular matrix: function and components. Glucosaminoglycans and proteoglycans. Collagens: structure, function and genetic origin. Synthesis of type I. collagen. Macromolecular organization of collagen monomers. Disorders in the synthesis of collagen. Collagenases. Structure and function of elastin. Elastase. Structure and functional domains of fibronectins. Plasma and tissue fibronectins, genetic background: alternative splicing. Receptors of fibronectins: integrins and other type of receptors. Role of fibronectins. Other adhesion proteins (laminin, entactin, thrombospondin, von Willebrand factor, tenascin, etc).

14th week:
Lecture: Biochemistry of the sport. Biochemistry of the cytoskeleton. Proteins of myofibrils. Molecular mechanism for the generation of force. Metabolic fuel of muscle. Metabolism of muscle in various work load. Effect of exercise. Special metabolism of the skin.

15th week:
Lecture: Adaptation, health, disease.

Requirements

Requirements for signing the semester: attendance in laboratory practices and seminars.

Required knowledge from Biochemistry II.: topics of cell-and organ biochemistry presented at the lectures (available at the http://bmbi.med.unideb.hu web site, username: student, password: student2016) and discussed in the seminars.

Attendance on the **lectures** is not compulsory, but recommended: in case of one lecture absence seminar bonus points are erased, in case of two lecture absences all collected points (control test points of the semester) are also erased. Please arrive in time for the lectures, because the door of lecture hall will be closed at the beginning of the lecture. Repeaters can collect bonus points without visiting the lectures.

On the **seminars** the lectures of the previous week can be discussed. On the seminars, based on the activity and knowledge maximum 20 % of the students can collect 8 bonus points and maximum 30

% can collect 4 bonus points (ask details from the seminar teachers). These bonus points will be added to the total points collected during the semester. In case of the seminars maximum three absences are accepted. Students can't make up seminar with another group. Seminars are not obligatory for repeaters (if they previously attend them).

Every **laboratory practices** must be performed, if someone is absent due to any serious reason proved by medical papers, the missing experiment have to be performed within the three weeks practice period joining another group (after obtaining permissions from practice teacher of the other group). In case of more than one remedial practice, students cannot get any points for the additional practice units. Practices are not obligatory for repeaters (if they previously managed them).

Achievement during the semester will be evaluated in term of points.
During the semester 100 (+ 8) points can be collected for the laboratory test (8 points), note book (3 x 4 points) and by the control tests from the material of the lectures (80 points). Control tests consist of single- and multiple choice test questions. Bonus points earned by seminar activity will be added to the total points collected during the semester. Semester points will be automatically erased of those students, who break the rules of test writings.
Those students who finally reach 70 points in this semester, will get 5 bonus points, those who reach 80 points will get 8 bonus points that will be added to the results of the written part of the exam.

Those students, who reaches at least 220 points during the three semesters (Molecular Biology, Biochemistry I., II.), will be exempted from the written part of the final exam (for this exemption at least 60 points must be collected separately in each semester).

Final exam. The final exam consists of a written and oral part for everyone. On the written exam 50 points can be collected, it consists of 50 single- and multiple choice test questions from "Molecular Biology" (5 points), "Metabolism" (15 points), "Cell- and organ biochemistry" (25 points) and from the practices of the three semesters (5 points).

Oral exam can be taken only if the student collects at least 60 % (30 points) in the written part. The successful result of the written part is valid for the "B" and "C" exams. In case of unsuccessful written "C" exam, students will get oral questions, too.

The oral part of the examination starts with one basic question of medical orientation, and molecular biology, that should be answered immediately. The list of these questions will be posted on the website at the end of the semester, together with the exam titles of the final exam. After properly answering the „molecular biology" and „medical" questions, students will have three theoretical questions (from metabolism, from cell- and from organ biochemistry). Students must register for the exams on the NEPTUN until the end of the 15th week.

Please follow the announcements of the department on the announcement table (LSB downstairs 1st corridor), and on the website (http://bmbi.med.unideb.hu)

Department of Foreign Languages

Subject: **HUNGARIAN LANGUAGE II/2.**
Year, Semester: 2nd year/2nd semester
Number of teaching hours:
Practical: **30**

1st week:
Practical: Revision.

2nd week:
Practical: Pretest.

3rd week:
Practical: Unit 11

4th week:
Practical: Unit 13

5th week:
Practical: Unit 13

6th week:
Practical: Unit 14/1

7th week:
Practical: Unit 14

8th week:
Practical: Revision. Mid-term test

9th week:
Practical: Unit 15

10th week:
Practical: Unit 15

11th week:
Practical: Unit 16

12th week:
Practical: Unit 16

13th week:
Practical: Unit 16

14th week:
Practical: Revision. End-term test.

15th week:
Practical: Oral minimum exam. Evaluation.

Requirements

Attendance

Language class attendance is compulsory. The maximum percentage of allowable absences is 10 % which is a total of 2 out of the 15 weekly classes. Students arriving late for the classes are not allowed to enter the class. Being late is counted as an absence. If the number of absences is more than two, the final signature is refused and the student must repeat the course. Students are required to bring the textbook or other study material given out for the course with them to each language class. Active participation is evaluated by the teacher in every class. If students' behaviour or conduct does not meet the requirements of active participation, the teacher may evaluate their participation with a "minus" (-).
If a student has 5 minuses, the signature may be refused due to the lack of active participation in classes.

Testing, evaluation

In each Hungarian language course, students must sit for 2 written language tests and a short minimal oral exam.

A further minimum requirement is the knowledge of 200 words per semester announced on the first week. There is a (written or oral) word quiz in the first 5-10 minutes of the class, every week. If a student has 5 or more failed or missed word quizzes he/she has to take a vocabulary exam that includes all 200 words along with the oral exam. The results of word quizzes are added to the average score of the written tests.

The oral exam consists of a role-play randomly chosen from a list of situations announced in the beginning of the course. Failing the oral exam results in failing the whole course. The result of the oral exam is added to the average of the mid-term and end-term tests.

Based on the final score the grades are given according to the following table:

Final score	Grade
0 - 59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

If the final score is below 60, the student once can take an oral remedial exam covering the whole semester's material.

Consultation classes: In each language course once a week students may attend a consultation class with one of the teachers of that subject in which they can ask their questions and ask for further explanations of the material covered in that week. These classes are optional.

Course book: See the website of the department.

Website: Audio files to the course book, oral exam topics and vocabulary minimum lists are available from the website of the Department of Foreign Languages: ilekt.med.unideb.hu.

Department of Physiology

Subject: **MEDICAL PHYSIOLOGY II.**
Year, Semester: 2nd year/2nd semester
Number of teaching hours:
Lecture: **36**
Seminar: **18**
Practical: **27**

1st week:
Lecture: Preparation for laboratory pract.
Principles in renal physiology
Quantitative description
Glomerular filtration

2nd week:
Lecture: Regulation of GFR
Tubular transport I.
Tubular transport II.

Urinary concentration & dilution

3rd week:
Lecture: Water-balance, osmoregulation
Control of body fluid volume
Acid-base balance
Acid-base disturbances, K-homeostasis

4th week:
Lecture: Ca-homeostasis, physiology of bone
Micturition, diuretics, clinical correlates

8th week:
Lecture: General principles of endocrinology
Mechanisms of hormone action
Hypophysis Growth hormone

9th week:
Lecture: The thyroid gland I.
The thyroid gland II.
Glucocorticoids I.
Glucocorticoids II.
The hormones of adrenal medulla
The actions of catecholamines

10th week:
Lecture: The hormones of pancreatic islets I-II.
Regulation of the function of pancreatic islets
Endocrine regulation of metabolism
Hormones of the skin

11th week:
Lecture: Neurobiology lecture

14th week:
Lecture: General principles in the regulation of gonadal functions
Male gonadal functions
Female gonadal functions
Pregnancy, lactation
Spinal neuronal circuits "Rhythm section of the brain"

Requirements

1. **Signature of Lecture Book**

Attendance of lectures, laboratory practices and seminars is compulsory. The signature of the Lecture Book may be refused for the semester in case of more than three absences from the seminars and/or more than two absences from the laboratory practices. In cases of more than four lecture absences these special advantages are withdrawn (see below). Completion of a missed seminar with a different group is not possible. All missed practices must be must be made up, however this does not reduce the number of absences! Completion of all topic sheets in the Exercise Book, each verified by the signature of the teacher, is also a precondition of the signature of the Lecture Book.

Each student must attend seminars and practices with the group specified by the Education Office. For continuous updates on all education-related maters, please check the departmental web-site (http://phys.dote.hu)

The lectures of Medical Physiology II. are listed at the web site of the Department of Physiology (http://phys.dote.hu)

2. **Evaluation during the semester**

The knowledge of students will be tested 2 times during the 2nd semester in the form of a written test (multiple choice questions). Participation on mid-semester written tests is compulsory and the results of all mid-semester tests will be presented to the examiner during the final exam. During this semester there will be no remedial test. We do not provide any possibilities to improve or make-up for missed tests.

Laboratory practical knowledge of the students will be tested at the end of the semester as part of the Closing Lab, evaluation with two level marks (Accepted or Not Accepted). As a precondition of attending the Closing Lab, the fully completed Exercise Book (with all the verified topics) must be presented during the Closing Lab. Students are expected to perform the given experiment on their own and must be familiar with theoretical background also. In case of a negative result, the Closing Lab can be repeated, but only once. If the final evaluation of the Closing lab is "not accepted", then the student will be given laboratory practical questions in the written part of the final exam and the student will lose the advantages which are detailed below.

3.**Examination**

The second semester is closed by the final exam (FE), which is composed of a written test plus an oral section, covering the topics of all lectures, seminars and laboratory practices of the full academic year. The result of the exam is failed if the student fails either on the written part or on the oral part. The list of exam questions is available on the departmental website (http://phys.dote.hu). If the final evaluation of the Closing lab is "not accepted", then the student will be given laboratory practical questions in the written part of the final exam. The laboratory practical questions cover the material of both semesters and the student will lose the advantages what are detailed below.

Depending on the average result of the five self-controls of 2016/2017 academic year, the following special advantages are granted:
The average score of the five mid term tests (three in the first term and two in the second semester) is calculated. (If one took the end-semester examination, the calculation of his/her average is detailed below.
a). If the average score is 80% or higher, there is no need to take the written part of the final exam, and only the oral examination will be performed.
b). If the average score is between 70% and 80%, 10 bonus points will be added to the result of the written part of the final examination.
c). If the average score is between 60% and 70%, 5 bonus points will be awarded.

-If the final evaluation of the Closing lab is "Not Accepted" or the Department of Physiology refuses to sign the lecture book or in cases of more than four lecture absences these special advantages are withdrawn!
- If the result of the written examination together with the bonus points does not reach the 60% limit, the examination attempt will be regarded as a failed exam, without giving the chance to perform the oral part.
If one took the end-semester examination during the 2016/2017 academic year, the mark of the oral exam is converted into percentage scores in the following way (each 1st term self-control will be replaced with these percentage scores):
- If the end-semester examination was taken in order to improve on an otherwise valid grade, the conversion is: 2: 69%; 3: 79%; 4: 89%, and 5: 100%.
- If the examination was attempted because no score could be offered (i.e. one had to take the exam): 2: 65%; 3: 75%; 4: 85%; 5: 95%.

CHAPTER 16
ACADEMIC PROGRAM FOR THE 3RD YEAR

Department of Foreign Languages

Subject: **HUNGARIAN LANGUAGE III/1.**
Year, Semester: 3rd year/1st semester
Number of teaching hours:
Practical: **30**

1st week:
Practical: Orientáció

2nd week:
Practical: Személyi adatok, családi és szociális anamnézis.

3rd week:
Practical: Nőgyógyászati kérdések, korábbi betegségek.

4th week:
Practical: Műtétek, gyakori betegségek.

5th week:
Practical: Jelen panaszok: a fájdalom leírása.

6th week:
Practical: Egyéb kérdéscsoportok: testsúly, hőmérséklet, széklet, vizelet.

7th week:
Practical: Szédülés, hányás, izzadás, köhögés, fulladás. Bőrtünetek.

8th week:
Practical: Revision, practice. Mid-term test.

9th week:
Practical: Gyógyszerelés.

10th week:
Practical: Gyógyszerérzékenység, mellékhatások.

11th week:
Practical: Fizikális vizsgálatok.

12th week:
Practical: Utasítások.

13th week:
Practical: Orvos-beteg kommunikáció - Gyakorlás

14th week:
Practical: Revision, practice. End-term test.

15th week:
Practical: Oral minimum exam.

Requirements

Attendance
Language class attendance is compulsory. The maximum percentage of allowable absences is 10 % which is a total of 2 out of the 15 weekly classes. Being late is counted as an absence. If the number of absences is more than two, the final signature is refused and the student must repeat the course. Students are required to bring the textbook or other study material given out for the course with them to each language class. Active participation is evaluated by the teacher in every class. If students' behaviour or conduct does not meet the requirements of active participation, the teacher may evaluate their participation with a "minus" (-). If a student has 5 minuses, the signature may be refused due to the lack of active participation in classes.

Students may not take Medical Hungarian course before entering the 3rd year.
Students in the 4th, 5th, or 6th year have to pay an additional tuition fee of 500 USD per semester for taking mandatory Hungarian language courses. These students are organized into a separate group from the 3rd year students.

Testing, evaluation

In each Hungarian language course, students must sit for 2 written and oral language tests and at the end of the 2nd semester a final exam.

A further minimum requirement is the knowledge of 200 words per semester announced on the first week. There is an oral word quiz in the first 5-10 minutes of the class, every week. If a student has 5 or more failed or missed word quizzes he/she has to take a vocabulary exam that includes all 200 words along with the oral exam. The results of word quizzes can modify the end-semester evaluation.

The oral exam consists of a role-play randomly chosen from a list of situations announced in the beginning of the course. Failing the oral exam results in failing the whole course. The result of the oral exam is added to the average of the mid-term and end-term tests.

Based on the final score the grades are given according to the following table:

Final score	Grade
0 - 59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

If the final score is below 60, the student once can take an oral remedial exam covering the whole semester's material.

Consultation classes

In each language course once a week students may attend a consultation class with one of the teachers of that subject in which they can ask their questions and ask for further explanations of the material covered in that week. These classes are optional.

Course book: Lampé, Judit, Ph.D.: Jobbulást kívánok I-II.

Website: Oral exam topics and vocabulary minimum lists are available from the website of the Department of Foreign Languages: ilekt.med.unideb.hu.

Department of Immunology

Subject: **IMMUNOLOGY**
Year, Semester: 3rd year/1st semester
Number of teaching hours:
Lecture: **45**
Seminar: **22**
Practical: **8**

1st week:
Lecture: Elements of the immune system and their role in defense against pathogens. Components and cells of the innate response. Characteristics and function of the innate immune response.
Seminar: Elements of the immune system and their role in defense against pathogens. The structure of lymphoid tissues and organs.

2nd week:
Lecture: Characteristics of the acquired immune response. T-lymphocytes. An introduction to antibody structure and function.
Seminar: The structure and function of the immune system, cells and molecules of innate immunity.

3rd week:
Lecture: B-lymphocytes. The structure of lymphoid tissues and organs. Lymphatic circulation, immune surveillance by re-circulation of immunocytes within the immune system.
Seminar: Characteristics of the adaptive response, T-lymphocytes.

4th week:
Lecture: Recognition and elimination of pathogens by the innate arm of the immune system. The complement system. Inflammation and the acute phase response.
Seminar: Antibody isotypes, effector functions of antibodies. B-lymphocytes.

5th week:
Lecture: Structure and function of proteins encoded by the major histocompatiblity (MHC) gene complex. Genetics of MHC. Processing and presentation of antigens, antigen presenting cells.
Seminar: Recognition and elimination of pathogens by the innate arm of the immune system.
Self Control Test

6th week:
Lecture: Requirements and consequence of T-cell activation. Effector function of helper T-cell. Activation and function of cytotoxic T-lymphocytes.
Seminar: Structure and function of proteins encoded by the major histocompatiblity (MHC) gene complex. Antigen processing and presentation.

7th week:
Lecture: Antigen-dependent differentiation of B-lymphocytes. B-cell activation. Production of various antibody isotypes and their functions. Activatory and inhibitory coreceptors of B cells, ITAM and ITIM-mediated signal transduction.
Seminar: T-cell activation, T-cell subsets, effector function of T-cells.

8th week:
Lecture: Generation of B-cell receptor diversity. Antigen-independent differentiation of B-lymphocytes. T-cell development.
Seminar: Activation and differentiation of B-lymphocytes. The function of various antibody isotypes.

9th week:
Lecture: Central tolerance. Mechanisms of peripherial tolerance. The function of regulatory T-cells.
Seminar: Generation of B-cell receptor diversity. B and T cell development.

10th week:
Lecture: The primary and secondary immune response. The development of immunological memory. Active and passive immunization, monoclonal antibodies.
Seminar: Central tolerance. Mechanisms of peripheral immune tolerance. The role of regulatory T-cells.

11th week:
Lecture: The immune response to extracellular pathogens. The immune response to intracellular pathogens. Immune response to viral infection.
Seminar: The primary and secondary immune response. The development of immunological memory. Monoclonal antibodies.
Self Control Test

12th week:
Lecture: Active and passive immunization. Congenital immunodeficiencies I (B-cell deficiencies). Congenital immunodeficiencies II (T-cell deficiencies).
Practical: The methodology of the Enzyme Linked Immunosorbent Assay (ELISA) and its use in clinical diagnosis, clinical and basic research.

13th week:
Lecture: A hypersensitivity reactions, Type I hypersensitivity (Allergy). Hypersensitivity reactions, Type II-IV hypersensitivity. Mechanisms of the development of autoimmune diseases.
Practical: Blood typing, determination of the ABO-type. Agglutination reaction, theory and practice.

14th week:
Lecture: Characteristics of the most common autoimmune diseases. Tumor immunology. Tumor antigens and immune response to tumors. Escape mechanisms of tumors, suppression of anti-tumor responses. Approaches to overcome tumor-induced tolerance mechanisms. A hope for cancer immunotherapy.
Practical: The utility of flow cytometry in diagnosis, in clinical- and basic medical research.

15th week:
Lecture: The immune response associated with tissue and organ transplantation. Immunological aspects of Immune reconstitution. Hematopoietic stem-cell transplantation. Contemporary (hot) topics in Immunology.
Practical: Immunotherapies.
Self Control Test

Requirements

Signing of the Lecture Book:
Participation in the Seminars and the Practical Courses is compulsory. The Department shall refuse to sign the students' Lecture book if he/she is absent from more than two seminars during semester. No absences are allowed from the practices. However, students can make up for a missed seminar or practice with another group; yet, only on the same week. Making up for a seminar should be communicated to both seminar teachers prior to the seminar.
Self control tests (SCTs), offered grades, end-term exam:
During the semester three self control test (SCT) will be organised (weeks 5, 11 and 15).
The first SCT contains the material of the lectures of weeks 1-3 as well as the material of seminars on weeks 1-4. To ensure a solid basic knowledge of immunology, students must score higher than 70% to qualify for the 2nd and 3rd SCT, hence for an offered grade.
The 2nd and 3rd SCT contains the material of lectures 4-10 and 11-14, respectively including the materials of the corresponding seminars and practices.
If a student's score for the first SCT is higher than 70% and the average score of the second and third SCT is higher than 50%, she/he will be offered a grade. Should student accept this offered grade, she/he will be exempted from the end-term exam.
The offered grades are calculated by the following algorithm, based on the cumulative percentage

points of the three SCTs (i.e. 300 points maximum).
170 - 204: pass (2)
205 - 239: satisfactory (3)
240 - 269: good (4)
270 - 300: excellent (5)
Those students who have not qualified for an offered grade must take the end-term exam during the exam period. The end-term exam consists of a written and an oral part.
"A" exam: To qualify for the oral part of an "A" exam, students must score higher than 70% on the written (entry) exam. Students who score less than 70% on the written part will fail (thus, the oral exam will not take place).
"B" exam: "B" exams are identical to "A" exams except when the student failed the oral, but not the written, part of the "A" exam. With a score of higher than 70% on the written part of the "A" exam, the student is exempt from the written exam on the "B" exam.
"C" exam: "C" exams are oral exams only, without a written entry test.
Those students who would like to improve the grade of a successful ("A" or "B" exam) or do not accept the offered grade, are also exempted from the entry test.
The list of exam topics is available on the departmental website (www.immunology.unideb.hu).
Lecture materials and other information concerning education can be found on our website at www.immunology.unideb.hu by clicking the link "For Students".

Department of Internal Medicine

Subject: **PROPEDEUTICS OF INTERNAL MEDICINE (INTERNAL MEDICINE I.)**
Year, Semester: 3rd year/1st semester
Number of teaching hours:
Lecture: **30**
Practical: **30**

1st week:
Lecture: Introduction to clinical medicine. History taking, physical examination I.
Practical: The right behaviour of a physician. Physician-patient relationship, how to approach a patient. Physician - medical staff relationship. The physicians ethical, clinical, human and legal accountability towards the patient. History taking (family and patient's). General symptoms and the compulsory questions

2nd week:
Lecture: History taking, physical examination II. Diagnosis of the diseases of respiratory system.
Practical: The right behaviour of a physician. Physician-patient relationship, how to approach a patient. Physician - medical staff relationship. The physicians ethical, clinical, human and legal accountability towards the patient. History taking (family and patient's). General symptoms and the compulsory questions.

3rd week:
Lecture: Physical examination of the thorax I. Physical examination of the thorax II.
Practical: Inspection, palpation, percussion, auscultation: physical examination. Stature, nourishment, skin, hair. Parenchymal organs: borders, consistency. Normal physical findings. Auscultation of lungs and heart. Blood pressure.

4th week:
Lecture: Examination of the cardiovascular system I. Examination of the cardiovascular system II.
Practical: Inspection, palpation, percussion, auscultation: physical examination. Stature, nourishment, skin, hair. Parenchymal organs: borders, consistency. Normal physical findings. Auscultation of lungs and heart. Blood pressure.

5th week:
Lecture: Examination of the cardiovascular system III. Central and peripheral insufficiency of circulation.
Practical: Thorax and respiratory system: inspection, palpitation, percussion, auscultation. Thorax deformities and variations. Pectoral fremitus. Bronchophony. Percussion of the lungs. Auscultation: bronchial, bronchovesicular, vesicular, tubular respiration. Rales (crepitant, sonorous, clicking, coarse, fine, subcrepitant, medium, bubbling, noist, dry). Pulmonary syndromes (infiltration, atelectasias, pleural effusion, pleuritis, pneumoniaa). Transsudates and exsudates, differences.

6th week:
Lecture: Physical examination of the abdomen. Examination of the kidney and urinary tract.
Practical: Thorax and respiratory system: inspection, palpitation, percussion, auscultation. Thorax deformities and variations. Pectoral fremitus. Bronchophony. Percussion of the lungs. Auscultation: bronchial, bronchovesicular, vesicular, tubular respiration. Rales (crepitant, sonorous, clicking, coarse, fine, subcrepitant, medium, bubbling, noist, dry). Pulmonary syndromes (infiltration, atelectasias, pleural effusion, pleuritis, pneumoniaa). Transsudates and exsudates, differences.

7th week:
Lecture: Kidney failure, glomerulopathic syndromes. Gastrointestinal syndromes I.
Practical: Physical examination of the heart (inspection, palpation, percussion, auscultation). Percussion of cardiac dullness. Normal heart sounds and murmurs. The six qualities of the peripheral pulse. Clinical signs of cardiac failure (left and right ventricular failure).

8th week:
Lecture: Gastrointestinal syndromes II. Gastrointestinal syndromes III.
Practical: Physical examination of the heart (inspection, palpation, percussion, auscultation). Percussion of cardiac dullness. Normal heart sounds and murmurs. The six qualities of the peripheral pulse. Clinical signs of cardiac failure (left and right ventricular failure).

9th week:
Lecture: Examination of the liver, biliary tract and pancreas I. Examination of the liver, biliary tract and pancreas II.
Practical: Abdominal examination (inspection, palpation, percussion, topography). Resistances, enlargement of the liver and spleen, ascites. Differential diagnosis of abdominal pain. The importance of stool.

10th week:
Lecture: Physical examination of peripheral vessels. Bleeding disorders. History taking, diagnostics.
Practical: Abdominal examination (inspection, palpation, percussion, topography). Resistances, enlargement of the liver and spleen, ascites. Differential diagnosis of abdominal pain. The importance of stool.

11th week:
Lecture: Thromboembolism. History taking, diagnosis. Haematological disorders: history taking and diagnosis I.
Practical: Examination of locomotor and nerve system. Practicing skills, repetition.

12th week:
Lecture: Haematological disorders: history taking and diagnosis II. Diagnosis of rare diseases.
Practical: Case histories (2-3 students/case), file preparation with special focus of learned skills.

13th week:
Lecture: Diagnosis of metabolic disorders I. Emergency medicine.
Practical: Case histories (2-3 students/case), file preparation with special focus of learned skills.

14th week:
Lecture: Examination of the locomotor system. Examination of the neuroendocrin system.
Practical: Case histories (2-3 students/case), file preparation with special focus of learned skills.

15th week:
Lecture: Examination of the neurological system. Psychiatric examination of the patients.
Practical: practical exam (own patient's file, questions/answers).

Requirements

The subject Propedeutics of Internal Medicine (AOBEL02T5, AOBEL02T5-K4, AOBEL22T5) includes course material equivalent to 3 credits according to the electronic, Module-based teaching program entitled “Internal medicine skills module”

Department of Laboratory Medicine

Subject: **CLINICAL BIOCHEMISTRY I.**
Year, Semester: 3rd year/1st semester
Number of teaching hours:
Lecture: **30**
Practical: **14**

1st week:
Lecture: 1. Introduction: pathobiochemistry, clinical biochemistry, laboratory diagnostics. 2. Different levels of laboratory diagnostics (reference values, requesting test, interpretation of result).

2nd week:
Lecture: 3. Laboratory aspects of investigating human disorders 4. Pathochemistry and laboratory signs of cell damage

3rd week:
Lecture: 5. Pathobiochemistry of inflammation 6. Pathobiochemistry of plasma proteins

4th week:
Lecture: 7. Clinical biochemistry of tumor metastasis 8. Pathobiochemical alterations in association with tumor growth and metastasis formation and their laboratory detection I.

5th week:
Lecture: 9. Pathobiochemical alterations in association with tumor growth and metastasis formation and their laboratory detection II. 10. Tumormarkers in the diagnosis of malignant diseases

6th week:
Lecture: 11. Inherited metabolic diseases and their laboratory diagnostics I. 12. Inherited metabolic diseases and their laboratory diagnostics II.

7th week:
Lecture: 13. Inherited metabolic diseases and their laboratory diagnostics III. 14. Disorders of iron metabolism. Laboratory diagnostics of microcytic anemias.

8th week:
Lecture: 15. Laboratory diagnostics of hemoglobinopathies 16. Laboratory diagnostics of macrocytic and hemolytic anemias

9th week:
Lecture: 17. Laboratory diagnostics of quantitative platelet disorders. 18. Laboratory diagnostics of acut and chronic leukemias and lymphomas I.

Practical: Notes on Laboratory Safety. Molecular genetic methods in clinical biochemistry.
Self Control Test

10th week:
Lecture: 19. Laboratory diagnostics of acut and chronic leukemias and lymphomas II. 20. Laboratory diagnostics of acute and chronic leukemias and lymphomas III.

Practical: Hematology I. Blood sampling, anticoagulation. Preparation of blood smears, staining.

11th week:
Lecture: 21. History of blood transfusion, blood group serology 22. Biochemistry, inheritance and antigens of ABO blood group system and its clinical significance

Practical: Hematology II. Morphology of red blood cells in different disorders and reticulocyte counting.

12th week:
Lecture: 23. Biochemistry, inheritance and antigens of Rh blood group system and its clinical significance 24. Other blood group system (Kell, Kidd, Duffy, MN, Ss, Ii)

Practical: Hematology III. Determination of hemoglobin and hematocrit. Hematology analyzers.

13th week:
Lecture: 25. Laboratory diagnostics of central nervous system diseases. Laboratory investigation of the cerebrospinal fluid. 26. Clinical biochemistry at the extremes of ages

Practical: Hematology IV. Investigation of peripheral blood smears in hematological malignancies. Myeloma multiplex.

14th week:
Lecture: 27. Clinical biochemistry at the extremes of ages 28. Therapeutic drug monitoring I.

Practical: Transfusiology, ABO and Rh blood group determination.

15th week:
Lecture: 29. Therapeutic drug monitoring II. 30. Vitamins

Practical: Detection of irregular antibodies. Antibody screening and compatibility testing.
Self Control Test

Requirements

Participation at practicals: Attendance of practicals is obligatory. Altogether one absence in the first semester and two absences in the second semester are permitted. In case of further absences, the practicals should be made up for by attending the practicals with another group in the same week, or a medical certificate needs to be presented. Please note that strictly only a maximum of 3 students are allowed to join another group to make up for an absence.
Requirements for signing the Lecture book: The Department may refuse to sign the Lecture book if the student is absent from practicals more than allowed in a semester.
Assessment: The whole year 5 written examinations are held, based on the material taught in the lectures and practicals. At the end of the first semester the written examinations are summarized and assessed by a five grade evaluation. If the student failed - based on the results of written exams - he must sit for an oral examination during the examination period. At the end of the year the written examinations are summarized and assessed. The student is exempt from written minimum entry test if her/his evaluation based on the 1st and 2nd semester points average is equal to or above 70% of

the whole year total points. The final exam at the end of the second semester consists of two parts: a written minimum entry test and an oral exam (1 theoretical, 1 practical topic and 1 practical picture). The practical pictures will be demonstrated on the last lectures of the 2nd semester. Those who fail the minimum entry test, are not allowed to take the oral exam and they have to repeat the minimum entry test part as well. Those who fail the oral exam only, do not have to take the written test on the B or C chance. There is no written entry test on C chance.
Requirements for examinations: The examination (written and oral) is based on the whole lecture and practical material (Practicals in Laboratory Medicine, eds.: János Kappelmayer and László Muszbek 2010.) as well as the textbook of Marshall and S.K. Bangert: Clinical Chemistry (6th edition, 2008.). Suggested reading: Hoffbrand A.V., Pettit J.E.: Essential Haematology, 3rd edition, 1999.

Department of Medical Microbiology

Subject: **MEDICAL MICROBIOLOGY I.**
Year, Semester: 3rd year/1st semester
Number of teaching hours:
Lecture: **30**
Practical: **30**

1st week:
Lecture: 1. The microbial world. The major groups of bacteria
2. Prokaryotic cell structure
Practical: Rules of collecting clinical specimens

2nd week:
Lecture: 3. The physiology of bacteria
4. Bacterial genetics
Practical: Visualizing bacteria. Examination of unstained and stained specimens

3rd week:
Lecture: 5. Sterilization and disinfection
6. Principles of antimicrobial chemotherapy
Practical: Culture techniques. Anaerobic culture

4th week:
Lecture: 7. Antimicrobial drugs for systemic administration
8. Bacterial pathogenesis I
Practical: Biochemical activities of bacteria. Sterilization and disinfection

5th week:
Lecture: 9. Bacterial pathogenesis II
10. Antibacterial immunity. Hypersensitivity
Practical: Determining the sensitivity of bacteria to antibiotics

6th week:
Lecture: 11. Active and passive immunization
12. The Staphylococci
Practical: Serological reactions

7th week:
Lecture: 13. The Streptococci
14. Mycobacterium genus
Practical: 1st WRITTEN EXAMINATION (General Bacteriology)
Self Control Test

8th week:
Lecture: 15. Causative agents of respiratory tract infections
16. Enterobacteriaceae I
Practical: Overview of human pathogenic bacteria

9th week:
Lecture: 17. Enterobacteriaceae II
18. Vibrio, Campylobacter, Helicobacter
Practical: Wound, skin and soft tissue infections caused by bacteria

10th week:
Lecture: 19. Pseudomonas and other non-fermentative Gram negative bacilli
20. Neisseria, Legionella, Brucella
Practical: Bacterial respiratory tract diseases

11th week:
Lecture: 21. The Clostridia
22. Non-Clostridial anaerobic infections
Practical: Agents of bacterial intestinal infections and food poisoning

12th week:
Lecture: 23. Treponema
24. Borrelia, Leptospira
Practical: 2nd WRITTEN EXAMINATION (Bacteriology with the exception of Spirochaetaceae, Chlamydiae, Rickettsiae and Mycoplasms)
Self Control Test

13th week:
Lecture: 25. Chlamydia and Mycoplasma
26. Rickettsiae
Practical: Urinary tract infections. Bacterial sexually transmitted diseases (STD)

14th week:
Lecture: 27. Antibiotic policy
28. Mycology I
Practical: Central nervous system diseases caused by bacteria

15th week:
Lecture: 29. Mycology II
30. Normal microbial flora of the human body. Nosocomial infections
Practical: Consultation

Requirements

The student is required to attend the practices. The Department may refuse to sign the students' Lecture book if they are absent from more than two practices in a semester. Missed practice may be made up in the practice with another group only in the same week. During the 1st semester, two mid-semester tests are written. Students are offered an ESE grade based on the cumulative score of the two mid-semester tests. Those who are below the passing level or who are not satisfied with the offered grade, must sit for an oral end of semester examination (ESE) (A-chance) during the examination period. The ESE consists of a written entry test and an oral examination (there is no practical part). In the 2nd semester, two additional tests are to be written by the student. At the end of the 2nd semester, the student is required to take the final examination (FE), based on the whole material taught in Medical Microbiology. The student's performance will be assessed on a five-grade scale. The FE consists of a written entry test and an oral examination, consisting of three theoretical and one practical questions. A list of questions and the examination rules will be announced in the Department at the beginning of the 2nd semester.

Department of Pathology

Subject: **PATHOLOGY I.**
Year, Semester: 3rd year/1st semester
Number of teaching hours:
Lecture: **30**
Practical: **45**

1st week:
Lecture: -Introduction to anatomical pathology. Macropsy, autopsy-Surgical pathology: Methods and reporting
Practical: Introduction

2nd week:
Lecture: -Adaptation on cellular level-

Morphology of the reversible cell injury and cell death (swelling, fatty change and necrosis)
Practical: 1. Acute myocardial infarction (coagulation necrosis) 2. Gangrene in the lower leg 3. Fat necrosis in the pancreas 4. Caseous necrosis (lymphadenitis tuberculosa)

3rd week:
Lecture: - Abnormal glycogen and protein accumulation. Storage diseases. Amyloidosis. Pigments.- Oedema. Hyperemia. Congestio. Shock.
Practical: 5. Fatty change in the liver 6. Fatty change in the liver (lipid staining) 7. Atheromatous plaque 8. Cholesterolosis in the gallbladder 9. Atrophia brunea cordis

4th week:
Lecture: - Haemorrhage. Thrombosis. Embolism. DIC.- Tissue regeneration. Reparation and wound healing. Calcification.
Practical: 10. Simple endometrial hyperplasia 11. Atrophia endometrii et myometrii 12. Nodular hyperplasia in the prostate 13. Bile stasis in the liver due to extrahepatic bile duct obstruction

5th week:
Lecture: - Morphological patterns of the acute inflammatory response.- The role of macrophages in inflammation. Granulomatous inflammation.
Practical: 14. Amyloidosis (Kongó staining) 15. Arterias thrombus16. Necrosis of the small bowel due to incarceration 17. Hemorrhagic infarct in the lung

6th week:
Lecture: - Dysplasia, preneoplastic conditions.- Tumor dignity. Proliferation. Grading and staging.
Practical: 18. Pulmonary edema19. Nutmeg liver 20. Appendicitis acuta suppurativa 21. Meningitis purulenta

7th week:
Lecture: - Charasterictics of tumor cell populations (clonality, heterogenity and progression).- Characteristics of benign and malignant tumors. Differentiation and anaplasia.
Practical: 22. Bronchopneumonia with lung abscess 23. Septic abscesses in the myocrdiumban due to systemic fungal infection (PAS staining) 24. Chronic non-specific salpingitis 25. Foreign body granuloma

8th week:
Lecture: - Diagnostic immunohistochemistry. markers of differentiation.- Prognostic and predictive tumor markers.
Practical: 26. Keratoachantoma 27. Condyloma 28. Bowen’s disease29. Invasive cervical cancer

9th week:
Lecture: - Mechanisms of local and distant tumor spread. Angiogenesis.- The biology of tumor growth. Heredity in cancer.
Practical: 30. Signet ring cell carcinoma in the stomach (PAS) 31. Krukenberg type ovarian metastasis (PAS) 32. Liver metastasis 33. Teratoma adultum (cysticum) ovarii 34. Leiomyoma

10th week:
Lecture: - Opportunistic infections. Systemic effects of neoplasia (cachexia, immunosupression, paraneoplastic syndromes).- Humoral and cellular immunopathological mechanisms.
Practical: 35. Allergic vasculitis 36. Polyarteritis nodosa 37. End stage lesion in Burger’s disease 38. Gouty tophus

11th week:
Lecture: - Immunodeficiencies. Tuberculosis.- The pathology of transplantation. Autoimmunity.
Practical: 39. Polymiositis 40. SLE lymphadenopathy 41. Chronic synovitis (Rheumatoid arthritis) 42. Rheumatoid nodule (Rheumatoid arthritis)

12th week:
Lecture: - Systemic autoimmune diseases (SLE, Sjögren, RA, SS).- Vasculitis.
Practical: 43. Gaucher’s disease 44. Toxoplasma lymphadenitis 45. Chronic lyphocytic leukemia (CLL)46. Follicular lymphoma (FL)

13th week:
Lecture: - Mono-, and polygenic disorders.- Pathology of the lymphatic system.
Practical: 47. Diffuse large B-cell lymphoma (DLBCL) 48. Gastric lymphoma (MALT type) 49. Hodgkin's disease (HL) 50. Myelofibrosis

14th week:
Lecture: - Malignant lymphomas.- Leukemias.
Practical: Repeating practice

15th week:
Lecture: - AML. Chronic myeloproliferative disorders.- Myelodysplasia. Anaemias.
Practical: Repeating practice

Requirements

Validation of Semester in Pathology:

Missing two practicals (histopathology and gross pathology together) is tolerable. Intracurricular replacement of histopathological and/or gross pathological classes is possible on the same week.

Examination:

On the 14th week (computerized) written exam, 15th week practical exams on both semester (these exams are parts of the ESE and FE - the student is released from the written and/or practical part of ESE or FE if her/his evaluation is: pass). In case of failure student can repeat these parts of the exam during the exam period.
At the end of the 1st semester the student is required to take **End of Semester Examination** (ESE) based on the material taught in the semester.

The Exam consists of: written, practical exam and theoretical parts.

The written exam: the students get questions (can be found on the Department's website) and has to reach 70% to pass this part of the exam. In the 2nd semester the questions comes from the 1st and the 2nd semester.
The practical exam takes place in the autopsy room. An acceptable result in the practical exam is mandatory to apply for the oral part.
During the theoretical exam 3 titles are to be worked out and presented orally and one photo about a slide (with different magnifications) has to be described and diagnosed also orally. The knowledge of students is assessed on a five-grade evaluation scale.

At the end of the 2nd semester the student is required to the take **Final Exam** (FE).

The Exam consists of: written, practical and theoretical parts. The written and practical exams are the same as above. During the theoretical exam 3 titles are to be worked out (one from the material of the 1st semester, and two from the material of the 2nd semester). One photo about a slide (with different magnifications) has to be described and diagnosed (from the whole year). At least a (2) level of gross pathological examination and recognition of the histopathological alteration achieved in the course of a previous unsuccessful examination is acceptable without repeating for the next (B or C chance) examination.

For further information: http://pathol.med.unideb.hu

Department of Preventive Medicine, Faculty of Public Health

Subject: **BASIC ONCOLOGY**
Year, Semester: 3rd year/1st semester
Number of teaching hours:
Lecture: **13**

1st week:
Lecture: Tumor initiation and progression

2nd week:
Lecture: The effect of lifestyle and social factors on tumorigenesis and tumor progression

3rd week:
Lecture: Role of the radioactive and UV radiations in the malignant transformation

4th week:
Lecture: The effect of nutrition on tumorigenesis

5th week:
Lecture: Role of viruses in the malignant transformation. I. Carcinogenic DNA viruses.

6th week:
Lecture: Role of viruses in the malignant transformation. II. Carcinogenic RNA viruses.

7th week:
Lecture: Chemical carcinogenesis. Carcinogenic chemicals in the environment

8th week:
Lecture: Tumor immunology in clinical practice

9th week:
Lecture: Molecular biological techniques in cancer diagnosis and to search for alterations in the cancer genome

10th week:
Lecture: Cancer stem cells

11th week:
Lecture: Epidemiology of malignant diseases

12th week:
Lecture: Cancer screening. Cancer registries

13th week:
Lecture: Prevention strategies in cancer

Requirements

Conditions of signing the Lecture book at the end of the semester.
Although attendance at lectures is not compulsory, it is highly recommended, since the material covered in the lectures will be examined. The department will refuse to sign the Lecture book if the student fails the test. If the student fails the written test, they can retake it on the date prearranged with the department.

One of the main objective is to provide sufficient theoretical background to the basic principles of carcinogenesis, cellular and molecular biology of cancer, the effect of lifestyle, social factors and nutrition on tumorigenesis. In order to highlight the importance of the various environmental factors in the development and progression of cancer, detailed information is given in the following areas: the health effect of various chemicals and occupational exposures, health hazard of ionizing and nonionizing radiation and the role of viruses in malignant transformation. The genetic background of various cancers will be discussed based on molecular epidemiological data. The course provides sufficient background to pathobiochemical alterations associated with tumor growth and tumor metastasis, characteristics of benign and malignant tumors and malignant cell populations. The course also aims to give up-to-date information on cancer epidemiology, the major issues in screening programs and the benefit and role of screening tests and prevention strategies.

Division of Operative Techniques and Surgical Research

Subject: **BASIC SURGICAL TECHNIQUES**
Year, Semester: 3rd year/1st semester**,** 3rd year/2nd semester
Number of teaching hours:
Lecture: **15**
Seminar: **18**
Practical: **12**

1st week:
Lecture: Surgical deontology. Administration, ethical and legal aspects. Terminology for surgery. Surgical indications/contraindications.
Seminar: Administration of operations (operation report, list of interventions). Ethical issues.

2nd week:
Lecture: Surgical armamentarium.
Seminar: Cutting, hemostatic, grasping-retracting, special and suturing instruments. Clips and staplers. Order of the instrumental trays and tables.

3rd week:
Lecture: Surgical suture materials, sutures, knotting techniques.
Seminar: Knotting techniques on different knotting pads. Conventional hand suturing techniques (interrupted, continuous sutures on gauze model). Special knotting and suturing techniques on surgical training model.

4th week:
Lecture: Surgical hemostasis. Punction of vessels. Dissection and cannulation of blood vessels.
Seminar: Demonstration of steps of the venous cutdown technique.
Practical: Ligation of vessels on gauze model. Vein preparation, cannulation on phantom model, preparation of infusion set. Wound closure with different suture techniques on surgical training model.

5th week:
Lecture: Asepsis, antisepsis. Operating room environment. Preparation for operation personnel. Hand and arm disinfection (Scrubbing). Gowning. Gloving. Isolation. Sterilization techniques.
Seminar: Instrumental order on the big instrumental table and on the Sonnenburg table. Isolation of the operative field.
Practical: Scrubbing, gowning and gloving. Wound closure with different suturing techniques on biopreparate model.

6th week:
Lecture: Injection techniques for diagnostic and therapeutical purpose. Infusions.
Seminar: Blood sampling, intramuscular and intravenous injection, infusion set - video-demonstration on models.
Practical: Blood sampling, intramuscular and intravenous injection on phantom models.
Repeat: Vein preparation, cannulation on phantom model, preparation of infusion set.
Self Control Test

7th week:
Lecture: Tracheostomy, conicotomy.
Seminar: Conicotomy and tracheostomy - video-demonstration.
Practical: Conicotomy on phantom model. Scrubbing. Wound closure with different suturing techniques on biopreparate model. Vein preparation, cannulation on phantom model, preparation of infusion set.

8th week:
Lecture: Laparotomies.
Seminar: Paramedian laparotomy - video-demonstration
Practical: Laparotomy on surgical training models. Repeat: Blood sampling, injection techniques on phantom models. Vein preparation, cannulation on phantom model, preparation of infusion set.

9th week:
Lecture: Basic techniques of the intestinal anastomosis.
Seminar: End-to-end one-layer small bowel anastomosis - video-demonstration.
Practical: Scrubbing. End-to-end one-layer intestinal anastomosis on small bowel biopreparate model.

10th week:
Lecture: Basic principles of vascular surgery.
Seminar: Vascular suture lines (arteriotomy and suturing) - video-demonstration.
Practical: Scrubbing. Vascular suturing techniques on aorta biopreparate model.

11th week:
Lecture: Basic principles in surgery of the parenchymal organs. Organ saving methods.
Seminar: Video-demonstration of spleen resection and spleen autotransplantation.
Practical: Scrubbing. Wound closure with different suturing techniques on biopreparate model. Parenchymal stitches on spleen biopreparate model.

12th week:
Lecture: Bioplasts and tissue adhesives.
Seminar: Application of surgical tissue adhesives and bioplasts.
Practical: Repeat: Vein preparation, cannulation on phantom models, preparation of infusion set. Blood sampling, injection techniques on phantom models. Wound closure with different suture techniques on surgical training model.

13th week:
Lecture: Types of wounds. Principles of wound care. Drains and catheters. Basic principles of catheterization.
Seminar: Different types of catheters and wound dressings. Catheterization of the urinary bladder on phantom model - video-demonstration.
Practical: Catheterization of the urinary bladder on phantom model. Repeat: Blood sampling, injection techniques on phantom models. Vein preparation, cannulation on phantom models, preparation of infusion set.
Self Control Test

14th week:
Lecture: New surgical techniques, procedures: laparoscopy, NOTES, da Vinci. Basic principles in microsurgery.
Seminar: Basic surgical procedures - videodemonstration.
Practical: Scrubbing. Wound closure with different suture techniques on biomodels.

15th week:
Lecture: Overviewing of basic surgical knowledge.
Seminar: Repeating of all practices by video-demonstration.
Practical: Practical exam

Requirements

Prerequisite: Anatomy, histology and embryology II., Medical Physiology I.

The lectures and seminars/practices are built on each other. Consequently, it is difficult to make-up missed classes. The make-up of the 2nd-3rd-4th-5th seminars/practices is obligatory. Compensation for missed seminars should be paid according to the Rules and Regulation of the Faculty of Medicine, University of Debrecen. If the student is absent from more than 2 seminars/practices in a semester (without any acceptable reason), the Department may refuse to sign the Lecture Book.

There will be two written tests during the semester (6th and 13th weeks).
Attending the 2nd, 3rd, 4th 5thand 7th lectures is obligatory.
A list of topics will be announced at least two weeks before the ESE. The curriculum also contains the hand-outs based on the lectures, given during the seminars.
At the end of the semester the student is required to take the end of semester exam (ESE), which consists of a practical and an oral part.

(The subject includes course material equivalent to 2 credits according to the electronic, Module-based teaching program entitled "Surgical skills".)

Institute of Behavioural Sciences, Faculty of Public Health

Subject: **MEDICAL ANTHROPOLOGY**
Year, Semester: 3rd year/1st semester
Number of teaching hours:
Seminar: **15**

1st week:
Seminar: "Roots" and "shoots" of medical anthropology: the web of basic concepts.

2nd week:
Seminar: Historical - cultural determination of medical concept of man.

3rd week:
Seminar: Medical knowledge: cultural and epistemological background of its legitimacy.

4th week:
Seminar: Post-modern knowledge and concept of man in medicine: a critical-interpretive approach to medical anthropology.

5th week:
Seminar: Doctor-patient interaction: a cultural anthropological aspect.

6th week:
Seminar: Explanatory models and illness narratives explaining doctor-patient bonds.

7th week:
Seminar: Cultural definition of anatomical and physiological concepts.

8th week:
Seminar: Medical treatments vs. alternative treatments: the concepts of alternative medicine.

9th week:
Seminar: Death and dying: anthropology of loss and bereavement.

10th week:
Seminar: Biological and social death in Western societies.

11th week:
Seminar: Rituals and their relation to health.

12th week:
Seminar: Ethnomedicine and its European school.

13th week:
Seminar: The concept of man in medicine: a text analysis.

14th week:
Seminar: The nature of the scientific basis in medical knowledge: a test analysis.

15th week:
Seminar: Concluding discussion.

Requirements

Participating in seminars, giving a presentation on a given topic.

Evaluation: Based on the activity at seminars and on a 14th week test.
Course Objectives and Course Outline: The object of medical anthropology is the human being, as he/she appears in the context of health and disease, in the healing processes and in the health-care system. The basic method of medical anthropology is historic-hermeneutical in the sense that man is investigated by this discipline in historical and cross-cultural relations; it is an integrative study and in this role it uses the contributions of different forms of knowledge (philosophical anthropology, social philosophy, cultural anthropology, psychoanalysis, sociology, etc.); the problems of health-illness is discussed in socio-economic dynamics; it deals with biomedical approach as a cultural product and in this way it draws the attention to the relation between individual experience, cultural meaning and social structure. The medical anthropology semester consists of 15 hours seminar; these are organised in two-hour seminars in every second week. Method: Every student should actively participate by presenting a short lecture on a chosen topic (possibly in group-work). One hour from the 15 hour course will be reserved for tutorial discussion with the instructor during the preparation period. Every student should read a given paper for every seminar and is expected to put the presenters questions concerning the topic a few days before the seminar. The seminars can only be successful, if students participate actively in the discussions. Requirement for the AW5 evaluation: Passing the last week test/essay, which is based on the course textbook, the compilation of readings and seminar discussions.

Subject: **MEDICAL SOCIOLOGY**
Year, Semester: 3rd year/2nd semester
Number of teaching hours:
Lecture: **8**
Seminar: **7**

1st week:
Lecture: Introduction to Medical Sociology

2nd week:
Seminar: Social Aspects of Health and Illness.

3rd week:
Seminar: Social Aspects of Health and Illness.

4th week:
Lecture: Social Inequalities and Health

5th week:
Seminar: Social Aspects of Doctor-Patient Relationship

6th week:
Seminar: Social Aspects of Doctor-Patient Relationship

7th week:
Lecture: Sociology of Medical Knowledge

8th week:
Seminar: Medicalization

9th week:
Seminar: Medicalization

10th week:
Lecture: Quality of Life. Sociology of Dying.

11th week:
Seminar: End of Course Test

12th week:
Seminar: End of Course Test
Self Control Test

Requirements

Requirements. Making a presentation is prerequisite for the end of course test.

Department of Foreign Languages

Subject: **HUNGARIAN LANGUAGE III/2.**
Year, Semester: 3rd year/2nd semester
Number of teaching hours:
Practical: **30**

1st week:
Practical: Áttekintés, ismétlés. A mellkas vizsgálata

2nd week:
Practical: Légzőszervi betegségek

3rd week:
Practical: A tüdő vizsgálata

4th week:
Practical: Szív- és érrendszeri betegségek

5th week:
Practical: A has vizsgálata

6th week:
Practical: Emésztőszervi betegségek

7th week:
Practical: A vizeletkiválasztó szervek betegségei

8th week:
Practical: Oral mid-term exam

9th week:
Practical: Anyagcsere- és endokrin betegségek

10th week:
Practical: A mozgásszervek vizsgálata, mozgásszervi betegségek

11th week:
Practical: Autoimmun betegségek

12th week:
Practical: Az idegrendszer vizsgálata. Idegrendszeri problémák

13th week:
Practical: Laboratóriumi és műszeres vizsgálatok

14th week:
Practical: Áttekintés, gyakorlás

15th week:
Practical: Szóbeli záróvizsga

Requirements

Attendance

Language class attendance is compulsory. The maximum percentage of allowable absences is 10% which is a total of 2 out of the 15 weekly classes. Students arriving late for the classes are not allowed to enter the class. Being late is counted as an absence. If the number of absences is more than two, the signature is refused and the student has to repeat the course. Students are required to bring the textbook or other study material given out for the course with them to each language class. Active participation is evaluated by the teacher in every class. If students' behaviour or conduct does not meet the requirements of active participation, the teacher may evaluate their participation with a "minus" (-). If a student has 5 minuses, the signature may be refused due to the lack of active participation in classes.

Students are not allowed to take Medical Hungarian course before entering 3rd year. Students in the 4th, 5th, or 6th year have to pay an additional tuition fee of 500 USD per semester for taking mandatory Hungarian language courses. These students are organized into a separate group from the 3rd year students.

Testing, evaluation

In Medical Hungarian course, students have to sit for a mid-term and an end-term written and oral language tests and at the end of the 2nd semester a final exam. Further minimum requirement is the knowledge of 200 words in each semester announced on the first week. Every week there is an or oral) word quiz from 20 words in the first 5-10 minutes of the class. If a student has 5 or more failed or missed word quizzes he/she has to take a vocabulary exam from all the 200 words along with the oral minimum exam. The results of word quizzes can modify the evaluation at the end of the semester. The oral minimum exam consists of a role-play randomly chosen from a list of situations announced in the beginning of the course. Failing the oral minimum results in failing the whole course. The result of the oral minimum exam is added to the average of the mid-term and end-term tests. The minimum requirement for the mid-term and the end-term tests is 50 % each. If a student does not reach this score he/she has to repeat the test. Based on the final score the grades are given according to the following table:

Final score	Grade
0 - 59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

If the final score is below 60 the student once can take an oral remedial exam covering the material of the whole semester.

Consultation classes

In each language course once a week students may attend a consultation class with one of the teachers of that subject in which they can ask their questions and ask for further explanations of the material covered in that week. These classes are optional for the students.

Coursebook: Lampé, Judit, Ph.D.: Jobbulást kívánok I., II.

Website: Vocabulary minimum lists and further details are available on the website of the Department of Foreign Languages: ilekt.med.unideb.hu.

Department of Internal Medicine

Subject: **INTERNAL MEDICINE II. (IMMUNOLOGY AND RHEUMATOLOGY)**

Year, Semester: 3rd year/2nd semester

Number of teaching hours:

Lecture: **27**

Practical: **18**

1st week:

Lecture: 1. Immunopathogenic mechanisms of systemic of autoimmune diseases. UCTD. 2. Systemic lupus erythematosus. (SLE) 3. Antiphospholipid syndrome. Immunity and pregnancy.

Practical: UCTD.

2nd week:

Lecture: 4. Systemic sclerosis. 5. Raynaud's syndrome. 6. Mixed Connecitve tissue disease (MCTD).

Practical: SLE, APS.

3rd week:
Lecture: 7. Sjögren's disease. 8. Organspecific autoimmune diseases. 9. Adult immunodeficiencies.
Practical: PSS and Raynaud's syndrome. MCTD.

4th week:
Lecture: 10. Demato/polymyositis. 11. Systemic vasculitides I. 12. Systemic vasculitides II.
Practical: Sjögren's syndrome and vasculitis.

5th week:
Lecture: 13. Laboratory diagnostics of autoimmune, allergic diseases and immunodeficiencies. 14. Respiratory allergic diseases. 15. Tumor immunology.
Practical: Polymyositis and dermatomyositis.

6th week:
Lecture: 16. Immunomodulation in the treatment of autoimmune diseases. 17. Introduction to rheumatology: history taking, physical exam, diagnostics and therapy. 18. Rheumatoid arthritis.
Practical: Physical examination. Presentation of case with RA and other types of arthritis.

7th week:
Lecture: 19. Early arthritis and special forms of RA. 20. Spondyloarthritides. 21. Differential diagnosis of arthritides and autoimmune diseases.
Practical: Presentation of a case with RA and spondyloarthritides.

8th week:
Lecture: 22. Soft tissue rheumatism, compression syndromes. 23. Reactive and septic arthritides. 24. Oseoarthritis, spondylosis. Low back pain.
Practical: Presentation of a case with gout, osteoporosis and other arthritides.

9th week:
Lecture: 25. Crystal deposition diseases. 26. Osteoarthritis, spondylosis. Low back pain. 27. Physiotherapy, balneotherapy.
Practical: Presentation of physiotherapy and exercise.

Requirements

Conditions of signing the Lecture book:

The student is required to attend the practices. Should they miss a practice, however, they will be obliged to provide a well-documented reason for it. Missed practices should be made up for at a later date, to be discussed with the tutor. The student is expected to be able to communicate with the patient in Hungarian, including history taking. At the end of the semester the student is required to sit for the end of semester examination (ESE). 1st part is written (minimum test, ≥85%), 2nd part is practical exam; 3rd part is oral exam (two topics).

Department of Laboratory Medicine

Subject: **CLINICAL BIOCHEMISTRY II.**
Year, Semester: 3rd year/2nd semester
Number of teaching hours:
Lecture: **45**
Practical: **30**

1st week:
Lecture: 1. Coagulopathies, (general introduction), haemophilias. 2. von Willebrand disease 3. Other coagulopathies, platelet function

disorders
Practical: Laboratory informatics

2nd week:
Lecture: 4. Inherited thrombophilias 5. Acquired thrombophilias 6. Prethrombotic state, thromboembolias, consumption coagulopathies
Practical: Laboratory diagnostics of coagulopathias

3rd week:
Lecture: 7. Disorders of sodium and water metabolism I 8. Disorders of sodium and water metabolism II 9. Disorders of sodium and water metabolism III.
Practical: Laboratory diagnostics of Thrombophilia. Laboratory monitoring of anticoagulant therapy

4th week:
Lecture: 10. Disorders of potassium metabolism 11. Pathobiochemistry of the renal function I. 12. Pathobiochemistry of the renal function II.
Practical: Laboratory diagnostics of platelet function disorders. Laboratory monitoring of antiplatelet therapy

5th week:
Lecture: 13. Disturbances of the acid-base balance 14. Laboratory diagnostics of renal disorders 15. Pathogenesis and pathomechanism of diabetes mellitus
Practical: Laboratory diagnostics of renal disorders

6th week:
Lecture: 16. Laboratory diagnostics of diabetes mellitus 17. Pathobiochemistry and clinical biochemistry of the acute complications of diabetes mellitus 18. Hypoglycaemias
Practical: Examination of urine sediment
Self Control Test

7th week:
Lecture: 19. Disorders of lipid metabolism20. Laboratory diagnostics of hyperlipidemia21. Laboratory diagnostics of acute coronary syndrome I.
Practical: Basic laboratory methods in metabolic diseases

8th week:
Lecture: 22. Laboratory diagnostics of acute coronary syndrome II. 23. Risk factors of atherosclerosis 24. Laboratory diagnostics of hyperuricaemia and gout
Practical: Case presentation

9th week:
Lecture: 25. Pathobiochemistry of liver disorders I. 26. Pathobiochemistry of liver disorders II. 27. Laboratory diagnostics of liver disorders. Pathobiochemsitry of acute hepatic disorders
Practical: Serum lipid measurements

10th week:
Lecture: 28. Pathobiochemistry and laboratory diagnostics of cholestasis and cirrhosis 29. Pathobiochemistry and laboratory diagnostics of the gastrointestinal tract I. 30. Pathobiochemsitry and laboratory diagnostics of the gastorintestinal tract II.
Practical: Chromatography, respiratory test
Self Control Test

11th week:
Lecture: 31. Laboratory diagnostics of acute pancreatitis 32. Clinical biochemistry of hypothalamus and hypophysis 33. Pathobiochemistry of thyroid disorders
Practical: Laboratory diagnostics of myocardial infarction

12th week:
Lecture: 34. Laboratory diagnostics of thyroid functions 35. Clinical chemistry of parathyroid disorders 36. Disorders of calcium, phosphate and magnesium metabolism
Practical: POCT

13th week:
Lecture: 37. Pathobiochemistry and laboratory diagnostics of adrenal cortex disorders 38. Pathobiochemistry and laboratory diagnostics of adrenal medulla disorders 39. Clinical biochemistry of gonadal functions
Practical: Laboratory evaluation of liver and

pancreas function

14th week:
Lecture: 40. Laboratory diagnostics of muscle disorders 41. Laboratory diagnostics of bone disorders 42. Demonstration of practical pictures
Practical: Laboratory evaluation of liver and pancreas function - case presentation

Self Control Test

15th week:
Lecture: 43. Summary of laboratory methods
Practical: Immunoassay

Requirements

Participation at practices: Participation at practices is obligatory. One absence during the first semester and two absences during the second semester are allowed. In case of further absences practices should be repeated by attending practices of another group on the same week.
Requirements for signing the Lecture book: The Department may refuse to sign the Lecture book if the student is absent from practices more than allowed in a semester.
Assessment: In the whole year 5 written examinations are held, based on the material taught in the lectures and practicals. At the end of the first semester the written examinations are summarized and assessed by a five grade evaluation. If the student failed - based on the results of written exams - he must sit for an oral examination during the examination period. At the end of the year the written examinations are summarized and assessed. The student is exempt from written minimum entry test if her/his evaluation based on the 1st and 2nd semester points average is equal to or above 70% of the whole year total points. The final exam at the end of the second semester consists of two parts: a written minimum entry test and an oral exam (1 theoretical, 1 practical topic and 1 practical picture). The practical pictures will be demonstrated on the last lectures of the 2nd semester. Those who fail the minimum entry test, are not allowed to take the oral exam and they have to repeat the minimum entry test part as well. Those who fail the oral exam only, do not have to take the written test on the B or C chance. There is no written entry test on C chance.
Requirements for examinations: The examination (written and oral) is based on the whole lecture and practical material (Practicals in Laboratory Medicine, eds.: János Kappelmayer and László Muszbek 2010.) as well as the textbook of Marshall and S.K. Bangert: Clinical Chemistry (6th edition, 2008.). Suggested reading: Hoffbrand A.V., Pettit J.E.: Essential Haematology, 3rd edition, 1999.

Department of Medical Microbiology

Subject: **MEDICAL MICROBIOLOGY II.**
Year, Semester: 3rd year/2nd semester
Number of teaching hours:
Lecture: **20**
Practical: **30**

1st week:
Lecture: 1. The protozoal diseases
2. The cestodes
Practical: Bacterial zoonotic infections

2nd week:
Lecture: 3. The nematodes I.
4. The nematodes II.
Practical: Anaerobic infections

3rd week:
Lecture: 5. The structure and classification of viruses
6. The replication of viruses

Practical: Infections of sterile body sites (sepsis, bacteriemia, endocarditis, osteomyelitis)

4th week:
Lecture: 7. The pathogenesis of viral diseases. Host defenses in viral infections
8. Prevention and treatment of viral diseases
Practical: Diagnosis of mycotic infections

5th week:
Lecture: 9. Orthomyxoviruses
10. Paramyxoviruses, Coronaviruses, Rubellavirus
Practical: 3rd WRITTEN EXAMINATION (Clinical Bacteriology and Mycology)
Self Control Test

6th week:
Lecture: 11. Hepatitis viruses
Practical: The protozoal diseases

7th week:
Lecture: 12. Herpesviruses I
Practical: Cestodes, Nematodes

8th week:
Lecture: 13. Herpesviruses II
Practical: Laboratory diagnosis of viral infections

9th week:
Lecture: 14. Adenoviridae, Parvoviridae
Practical: Respiratory tract infections caused by viruses

10th week:
Lecture: 15. Picornaviridae, Reoviridae
Practical: Agents of viral skin rash. Congenital virus infections

11th week:
Lecture: 16. Rabies, slow virus infections
Practical: Agents of viral gastroenteritis. Hepatitis viruses

12th week:
Lecture: 17. Arbo- and Roboviruses
Practical: 4th WRITTEN EXAMINATION (Parasitology, Virology)
Self Control Test

13th week:
Lecture: 18. AIDS viruses
Practical: Epidemics in human history

14th week:
Lecture: 19. Human tumor viruses
Practical: Review of procedures of microbiological sample collection

15th week:
Lecture: 20. Consultation
Practical: Consultation

Requirements

The student is required to attend the practices. The Department may refuse to sign the students' Lecture book if they are absent from more than two practices in a semester. Missed practice may be made up in the practice with another group only in the same week. During the 1st semester, two mid-semester tests are written. Students are offered an ESE grade based on the cumulative score of the two mid-semester tests. Those who are below the passing level or who are not satisfied with the offered grade, must sit for an oral end of semester examination (ESE) (A-chance) during the examination period. The ESE consists of a written entry test and an oral examination (there is no practical part). In the 2nd semester, two additional tests are to be written by the student. At the end of the 2nd semester the student is required to take the final examination (FE), based on the whole material taught in Medical Microbiology. The student's performance will be assessed on a five-grade scale. The FE consists of a written entry test and an oral examination, consisting of three theoretical and one practical question. A list of questions and the examination rules will be announced in the Department at the beginning of the 2nd semester.

Department of Pathology

Subject: **PATHOLOGY II.**
Year, Semester: 3rd year/2nd semester
Number of teaching hours:
Lecture: **45**
Practical: **45**

1st week:
Lecture: - Ophthalmic pathology. Cerebrovascular diseases. - Infective diseases of the CNS. - Tumors of the CNS.
Practical: Introduction

2nd week:
Lecture: - Neurodegenerative diseases I.- Dementias.- Neurodegenerative diseases II.- Movement disorders.- Diseases of the peripherial nerves and skeletal muscles.
Practical: 51. Meningeoma 52. Schwannoma 53. Glioblastoma 54. Retinoblastoma

3rd week:
Lecture: - Soft tissue tumors.- Melanocytic and epithelial skin tumors.- Diseases affecting tubuli and interstitium. Kidney stones. Hydronephrosis.
Practical: 55 a és b Alzheimer's disease (a; HE + b;tau) 56 a és b Parkinson's disease (a; HE + b; alpha-synuclein) 57. Lipoma 58. Embryonal rhabdomyosarcoma

4th week:
Lecture: - Glomerular diseases.- Cystic diseases and tumors of the kidney.- Pathology of the urinary tract.
Practical: 59. Carcinoma basocellulare 60. Compound naevus 61. Superficial spreading malignant melanoma 62. Malignant melanoma in the eye

5th week:
Lecture: - Hyperplasia and carcinoma of the prostate.- Diabetes mellitus.- Arteriosclerosis. Hypertension and hypertensive vascular disease.
Practical: 63. Nephropathia diabetica 64. Crescentic glomerulonephriti s65. Acute pyelonephritis 66. Clear cell kidney carcinoma

6th week:
Lecture: - Cardiomyopathies. Myocarditis.- Ischemic heart disease. Coronary heart disease.- Disease of the endocardium and the cardiac valves.
Practical: 67. Carcinoma transitiocellulare vesicae urinariae 68. Prostatic adenocarcinoma 69. IRDS 70. Bronchial asthma

7th week:
Lecture: - Congenital heart diseases. venous and lymphatic vessel disorders.- Interstitial lung disease.- Chronic obstructive pulmonary diseases.
Practical: 71. Boeck's sarcoidosis 72. Bronchial squamous carcinoma 73. Intrabronchial carcinoid tumor 74. Small cell carcinoma

8th week:
Lecture: - Tumors of the lung and pleura.- ARDS. Pneumonia. Pulmonary embolisms.- Benign, preneoplastic and neoplastic lesions in the oral cavity. Diseases of salivary glands.
Practical: 75 a és b Barrett's esophagus (a; HE + b; PAS-AB) 76. Ulcus pepticum ventriculi 77. Crohn's disease 78. Ulcerative colitis

9th week:
Lecture: - Esophageal diseases. Gastritis. Gastroduodenal ulcers.- Gastric tumors.- Maldevelopment of the intestine. Megacolon. Circulatory intestinal lesions.
Practical: 79. High grade adenoma in the colon80. Malignant transformation of adenoma 81. Mucinous adenocarcinoma 82. Liver cirrhosis with HCC

10th week:
Lecture: - Enteritis. Enterocolitis. malabsorption. Inflammatory bowel diseases.- Colorectal cancer.- Intra-, and extrahepatic

biliary tract diseases.
Practical: 83. Hashimoto's thyreoiditis 84. Graves disease85. Papillary carcinoma of the thyroid86. Follicular carcinoma of the thyroid

11th week:
Lecture: - Viral hepatitis. Drug induced liver diseases. Acute and chronic hepatic failure.- Liver cirrhosis.- Tumors and circulatory disorders of the liver. Inherited metabolic liver diseases.
Practical: 87. Pure seminoma 88. Embryonal carcinoma with choriocarcinoma 89. Tubal abortion 90. Fibroadenoma

12th week:
Lecture: - Cholestatic liver diseases. Disorders of the gallbladder and the extrahepatic biliary tract.- Pathology of the thyroid and parathyroid.- Pathology of the adrenals.
Practical: 91. Invasive ductal carcinoma with DCIS 92. Invasive lobular carcinoma 93. Adenocarcinoma of the endometrium 94. Perineal endometriosis

13th week:
Lecture: - The pathology of the pancreas and the appendix.- Testicular tumors.- Non-neoplastic and preneoplastic conditions of the breast.
Practical: 95. Cystadenocarcinoma papillare serosum ovarii 96. Acute osteomyelitis 97. Chondroma 98. Osteosarcoma

14th week:
Lecture: - Breast cancer.- Uterine tumors.- Tumors of the ovarium.
Practical: Repeating practice

15th week:
Lecture: - Pathology of the pregnancy. Pathomorphological aspects of most frequent diseases of the newborn.- Non-neoplastic lesions of the bone. Pathology of the joints.- Bone tumors.
Practical: Repeating practice

Requirements

Validation of Semester in Pathology:

Missing two practicals (histopathology and gross pathology together) is tolerable. Intracurricular replacement of histopathological and/or gross pathological classes is possible on the same week.

Examination:
On the 14th week (computerized) written exam, 15th week practical exams on both semester (these exams are parts of the ESE and FE - the student is released from the written and/or practical part of ESE or FE if her/his evaluation is: pass). In case of failure student can repeat these parts of the exam during the exam period.
At the end of the 1st semester the student is required to take **End of Semester Examination** (ESE) based on the material taught in the semester.

The Exam consists of: written, practical exam and theoretical parts.

The written: exam the students get questions (can be found on the Department's website) and has to reach 70% to pass this part of the exam. In the 2nd semester the questions comes from the 1st and the 2nd semester.
The practical exam takes place in the autopsy room. An acceptable result in the practical exam is mandatory to apply for the oral part.
During the theoretical exam 3 titles are to be worked out and presented orally and one photo about a slide (with different magnifications) has to be described and diagnosed also orally. The knowledge of students is assessed on a five-grade evaluation scale.

At the end of the 2nd semester the student is required to the take **Final Exam** (FE).

The Exam consists of: written, practical and theoretical parts. The written and practical exams are the same as above. During the theoretical exam 3 titles are to be worked out (one from the material of the 1st semester, and two from the material of the 2nd semester). One photo about a slide (with different magnifications) has to be described and diagnosed (from the whole year). At least a (2) level of gross pathological examination and recognition of the histopathological alteration achieved in the course of a previous unsuccessful examination is acceptable without repeating for the next (B or C chance) examination.

For further information: http.//pathol.med.unideb.hu

Division of Clinical Physiology

Subject: **CLINICAL PHYSIOLOGY**
Year, Semester: 3rd year/2nd semester
Number of teaching hours:
Lecture: **15**
Seminar: **30**

1st week:
Lecture: Introduction, cellular and molecular factors of pathologic cardiac excitability.
Seminar: The basics of ECG.

2nd week:
Lecture: Pathologic contractile function of the heart (contractile proteins, intracellular Ca2+-homeostasis and cardiac pumping).
Seminar: ECG diagnosis of arrhythmias I.

3rd week:
Lecture: Myocardial ischemia, myocardial infarction and new ischemic syndromes (hibernation, preconditioning, stunning).
Seminar: ECG diagnosis of arrhythmias II.

4th week:
Lecture: Cardiac hypertrophy and failure.
Seminar: Differential diagnostics or arrhytmias, evaluation of ECG recordings.

5th week:
Lecture: Heart failure (molecular pathophysiology).
Seminar: Conduction disorders, ECG sings of volume and pressure overload.

6th week:
Lecture: Endothelium, smooth muscle, vessels.
Seminar: Angina pectoris, myocardial infarction.

7th week:
Lecture: Hypertension.
Seminar: Exercise stress test ECG, Holter ECG.

8th week:
Lecture: Cellular and molecular background of cardiovascular drugs.
Seminar: Electronic pacemakers, mechanisms of arrhythmias.

9th week:
Lecture: Stem cells in cardiovascular medicine.
Seminar: ECG signs of electrolyte disorders, differential diagnostics, practicing.
Self Control Test (Bonus points for the exam can be collected during the written mid-semester clinical physiology test during the 9th week.)

10th week:
Lecture: Cellular and molecular elements of the

respiratory system with clinical significance.
Seminar: Evaluation of ECG recordings.

11th week:
Lecture: Clinical physiology of the respiratory system.
Seminar: Echocardiography I., standard views, normal values.

12th week:
Lecture: Clinical physiology of nutrition and metabolism I.
Seminar: Echocardiography II., consequences of myocardial infarction, stress echocardiography, TEE.

13th week:
Lecture: Clinical physiology of nutrition and metabolism II.
Seminar: Respiratory function tests.

14th week:
Lecture: Clinical physiology of the nervous system I.
Seminar: Cardiac catheterisation.

15th week:
Lecture: Clinical physiology of the nervous system II.
Seminar: Consultation
Self Control Test (Result of the 9th and 15th weeks tests will form the basis for a recommended final mark.)

Requirements

Students are expected to attend lectures and obliged to attend seminars. The Department may refuse to sign the students' Lecture Book if a student is absent for more than two seminars. The successful oral mid-semester ECG test (during the 10th week of the second semester) is also a requirement for the signature of the students' Lecture Book. Third year students are invited to participate in two written mid-semester tests ("Assessment of the work" (AW)) during the 9th and 15th weeks organized by the Division of Clinical Physiology. Results of these tests will form the basis for a recommended final mark. Single choice test questions (single right or single false answer should be chosen from five possibilities) will address students' proficiency from the material of all lectures and seminars. If a final grade cannot be recommended, written exams will be performed during the examination period. Failed exams are repeated in a written test (B chance) and in an oral test (C chance). Students may also improve their mark in an oral exam. Lecture Books are signed by the head of the Division of Clinical Physiology. More information: en.klinfiz.debkard.hu

Institute of Behavioural Sciences, Faculty of Public Health

Subject: **MEDICAL PSYCHOLOGY**
Year, Semester: 3rd year/2nd semester
Number of teaching hours:
Lecture: **20**
Practical: **10**

1st week:
Lecture: Seeking professional help (first encounter, medical history, diagnostic procedure). Doctor-patient interaction, compliance, the "difficult patient".

2nd week:
Lecture: Health psychology: definition, models, the bio-psycho-social model.

3rd week:
Lecture: Health beliefs, theories about health, models of health, health behaviours.

4th week:
Lecture: Illness cognition. Models of the illness. Health risk behaviours.

5th week:
Lecture: Pain, theories, psychological and sociocultural factors in pain perception.

6th week:
Lecture: Chronic diseases, premise, surgical intervention, intensive care unit, hospitalization.

7th week:
Lecture: Stress and coping. Stress and illness (vulnerabiliy, protective factors).

8th week:
Lecture: Crisis, presuicidal syndrome, suicide, burnout.

9th week:
Lecture: Death and dying. Psychological support of patient and family. Bereavement.

10th week:
Lecture: Placebos and the interrelationship among beliefs, behaviour and health.

Requirements

Requirements for signing the lecture book:

By signing the Lecture Book the Department confirms that the student has met the academic requirements of the course and this enables him/her to take the examination. The Head of the Department may refuse to sign the Lecture Book if a student: is absent more than twice from practices even if he/she has an acceptable reason.

Evaluation: third year students should pass "End of Semester Examination" (ESE) at the end of the semester. The Department of Behavioural Sciences will adhere to the requirements of the General Academic Regulations and Rules of Examinations. The student must be present on the examination at the designated time. (He/she must explain the reason for any absence from the examination to the Departmental Adviser within 1 days of the day of examination.)

CHAPTER 17
ACADEMIC PROGRAM FOR THE 4TH YEAR

Department of Cardiology

Subject: **INTERNAL MEDICINE III. (CARDIOLOGY, ANGIOLOGY)**
Year, Semester: 4th year/1st semester
Number of teaching hours:
Lecture: **20**
Practical: **10**

1st week:
Lecture: 1. Epidemiology of cardiovascular diseases. Risk factors. 2. Pathomechanism of atherosclerosis. Disorders of lipid metabolism and therapy.
Practical: Case presentation: differential diagnosis of chest pain. ECG, Stress ECG, Holter monitoring. Methods of blood pressure measurement and monitoring, principles of ABMP and CardioTens. Interpretation of derived parameters of blood pressure measurements. Risk factors and classification and diagnosis of ischemic heart diseases.

2nd week:
Lecture: 3. Differential diagnosis of chest pain.4. Clinical aspects of chronic ischemic heart disease.
Practical: Case presentation: Heart failure. Examination of patients with heart failure, symptoms, physical deviations. Every day practice of therapy in heart failure. Practical and theoretical aspects of blood pressure measurement. Discussion of ad hoc measurement and monitoring of blood pressure. Relevance of hypertension screening, classification of hypertension. Diagnostic algorithm of hypertension. Antihypertensive treatment with a special attention to the associated diseases.

3rd week:
Lecture: 5. Unstable angina pectoris, non ST elevation myocardial infarction. 6. Diagnosis, therapy and complications of acute myocardial infarction.
Practical: Clinical manifestations of acute coronary syndrome. Therapeutic strategy in different types of the disease. Risk stratification after myocardial infarction, secondary prevention. Introduction of the hemodynamic laboratory.

4th week:
Lecture: 7. Percutaneous coronary intervention in the treatment of acute coronary syndrome. 8. Hypertension; symptoms, classification and therapy.
Practical: Classification of cardiomyopathies. Diagnosis of valvular heart diseases. Introduction of echocardiography. Invasive treatment of arrhythmias and conduction abnormalities.

5th week:
Lecture: 9. Molecular mechanisms, symptoms and therapy of heart failure. 10. Diagnosis and treatment of arrhythmias. Syncope, sudden cardiac death.
Practical: Physical examination and ultrasound techniques in peripheral arterial diseases and deep venous thrombosis. Functional stages in obliterative atherosclerosis. Doppler ultrasound. Non invasive examinations of endothelial dysfunction. Examination of microcirculation. Laser Doppler and scanning techniques. Capillary microscopy. Possibilities of antithrombotic treatment, monitoring, complications.

6th week:
Lecture: 11. Pacemaker and catheter ablation therapy in arrhytmias.12. Diagnosis and therapy of myocarditis and infective endocarditis.

7th week:
Lecture: 13. Classification of cardiomyopathies, symptoms and diagnosis. 14. Congenital and acquired valvular heart diseases.

8th week:
Lecture: 15. Surgical treatment in cardiology.16. Clinical aspects, diagnosis and pharmacological treatment of peripheral vascular diseases.

9th week:
Lecture: 17. Intervention therapy in vascular diseases.18. Surgical therapy in vascular diseases.

10th week:
Lecture: 19. Cerebrovascular diseases. Cardiac embolism. 20. Venous thromboembolism. Anticoagulant and antithrombotic therapy.

11th week:
Lecture: Scientific competition
Practical: Block practice

12th week:
Practical: Block practice

13th week:
Practical: Block practice

14th week:
Practical: Block practice

15th week:
Practical: Block practice

Requirements

Requirements of subject: Type of exam: minimum test, practical exam, oral exam. Signature of lecture book: take a part in all practices. Uptake of subject.

Department of Obstetrics and Gynecology

Subject: **OBSTETRICS AND GYNECOLOGY BLOCK PRACTICE - 4TH YEAR**
Year, Semester: 4th year/1st semester
Number of teaching hours:
Practical: **30**

Requirements

Block practice is an integral part of the curriculum in obstetrics and gynecology, details are shown there.

Subject: **OBSTETRICS AND GYNECOLOGY I.**
Year, Semester: 4th year/1st semester
Number of teaching hours:
Lecture: **10**
Practical: **20**

1st week:
Lecture: Obstetric history and examination
Practical: Introduction of the Department. Case presentations

2nd week:
Lecture: Physiological pregnancy
Practical: Case presentations

3rd week:
Lecture: Antenatal care
Practical: Case presentations

4th week:
Lecture: Labour
Practical: Case presentations

5th week:
Lecture: Fetal assessment
Practical: Case presentations

6th week:
Lecture: Preterm labour
Practical: Case presentations

7th week:
Lecture: Preeclampsia
Practical: Case presentations

8th week:
Lecture: Haemorrhagic complications
Practical: Case presentations

9th week:
Lecture: Interventional obstetrics
Practical: Case presentations

10th week:
Lecture: Miscarriage, abortion, ectopic pregnancy
Practical: Case presentations

11th week:
Practical: Block practice

12th week:
Practical: Block practice

13th week:
Practical: Block practice

14th week:
Practical: Block practice

15th week:
Practical: Block practice
Self Control Test (Oral exam exemption test)

Requirements

Attending practices is mandatory. Absences must be made up even if resulting from medically documented illness or similar, by joining other group, but not more than twice in a semester. These occasions must be arrange with the responsible tutors in advance, as it is possible only with them and only at the missed location within their ordinary rotation schedule.
Signature in the lecture book will be declined if arrears exist at the end of semester.
Block practicals (5×6 hours) are organized according to the curriculum. Similarly to the weekly practicals, each student is allocated to a specified team of tutors, rotating between wards with them daily.
White lab coat in clean, neat condition should be brought and worn when visiting wards or outpatient clinics. If forgotten, a limited number of spare lab coats is available against student cards. It must be arranged with the storekeeper well before (10 min) the starting time to prevent delays.
Attendance at lectures is also highly recommended as certain aspects may be covered only there, and will be asked either in the written or in the oral exam.
End of semester exams (ESE) (oral) are taken in the exam period of both 1st and 2nd semester, covering two titles. List of titles are in accordance with the current textbook, and are shown on the noticeboard in front of the lecture hall.
The Department offers oral exam exemption tests in both semesters. If passed, and the lecture book has been signed, the mark will be offered as a final ESE grade. If the student decides not to accept the offered grade, the above described oral exam can be taken as exam “A”. The final grade can be better or worse than the offered grade. Information on the practical part of the exam will be spread out during the semester.

Department of Pharmacology and Pharmacotherapy

Subject: **PHARMACOLOGY I.**
Year, Semester: 4th year/1st semester
Number of teaching hours:
Lecture: **30**
Seminar: **20**

1st week:
Lecture: Introduction to autonomic pharmacology. Cholinoceptor-activating and cholinesterase-inhibiting drugs. Cholinoceptor-blocking drugs.
Seminar: Basic principles 1.

2nd week:
Lecture: Adrenoceptor-activating and other sympathomimetic drugs I. Adrenoceptor-activating and other sympathomimetic drugs II. Adrenoceptor-blocking drugs.
Seminar: Basic principles 2.Autonomic nervous system 1.

3rd week:
Lecture: Diuretics and antidiuretics 1.Diuretics and antidiuretics 2. Calcium antagonists.
Seminar: Basic principles 3.Autonomic nervous system 2.

4th week:
Lecture: Antihypertensive agents 1. Antihypertensive agents 2. Agents used in hyperlipidemia, insulin resistance.
Seminar: Basic principles 4.Cardiovascular system 1.

5th week:
Lecture: Agents used in cardiac arrhythmias 1.Agents used in cardiac arrhythmias 2.Myocardial ischemia, antianginal drugs.
Seminar: Basic principles 5.Cardiovascular system 2.

6th week:
Lecture: Positive inotropic drugs 1.Positive inotropic drugs 2.NO donors and inhibitors.
Seminar: Basic principles 6.Cardiovascular system 3.

7th week:
Lecture: Vasodilators Bronchodilators and other agents used in asthma. Drugs used in disorders of coagulation.
Seminar: Basic principles 7.Cardiovascular system 4.

8th week:
Lecture: Agents used in anemias, hemopoietic growth factors. Regulation of the appetite. Pharmacotherapy of obesity. Drugs used in acid-peptic disease.
Seminar: Basic principles 8.Drug formulae and prescription writing 1.

9th week:
Lecture: Drugs promoting gastrointestinal motility. Antiemetic drugs. Laxatives. Antidiarrheal drugs. Drugs used in the treatment of chronic inflammatory bowel disease.
Seminar: Basic principles 9. Drug formulae and prescription writing 2.

10th week:
Lecture: Pancreatic enzyme replacement products. Pharmacology of the liver. Botanical (herbal) remedies.
Seminar: Respiratory system. Gastrointestinal system.

Requirements

Prerequisites: Biochemistry, Physiology Attendance at lectures is highly recommended, since the topics in examination cover the lectured topics. Attendance register will be performed regularly. Attendance at seminars is compulsory. The Department will refuse to sign the student's Lecture Book if he/she is absent from more than 2 seminars/semester. Please, ensure that your lecture book has been submitted to the Department for signing within 1 week after finishing the semester. Please use the lecture book dropbox installed in front of the departmental door on the second floor of the Pharmacology Building. Two control tests during the semester will be performed, which is obligatory. At the end of the 1st semester the students are required to take the End of Semester Examination (written and oral), based on the material taught in the semester. Three titles in the question set should be answered in detail. To know the groups of drugs with examples in all of the chapters in pharmacology is compulsory. If one question is remained properly unanswered from the three titles the student is not allowed to pass. If lethal dose, not proper or ineffective treatment is discussed the student have to be failed. Dress code for exams: Informal (www.dresscodeguide.com; www.dresscode.hu). Display religious affiliation is allowed (cross, abaya, burqa (niqab), chador, hijab, sartorial hijab, turban, yarmulke etc.). Wedding ring, sindoor, snoods are allowed as well. For more details visit our website: pharmacology.med.unideb.hu

Department of Preventive Medicine, Faculty of Public Health

Subject: **PREVENTIVE MEDICINE AND PUBLIC HEALTH I.**
Year, Semester: 4th year/1st semester
Number of teaching hours:
Lecture: **30**
Seminar: **40**

1st week:
Lecture: 1. The history, scope and methods of public health and preventive medicine 2. Introduction to human ecology 3-4. Global environmental pollution
Seminar: 1. Effects of environmental pollution – POPs (case study) 2. Health effects of foodborne exposures (case study)

2nd week:
Lecture: 5. Air pollution and health 6. Water pollution and health 7-8. Toxicology of persistent organic pollutants, pesticides and organic solvents
Seminar: 3. Health effects of exposures of drinking water sources (case study) 4. Effects of workplace-related exposures (case study)

3rd week:
Lecture: 9. Nutritional deficiency diseases 10. Food borne diseases 11-12. Diet related diseases. The role of diet in the pathogenesis of cardiovascular diseases and malignant neoplasm
Seminar: 5. Physical and chemical examination of drinking water and food (lab practice for small group) 6. Bacteriological and mycological examination of water and food (lab practice for small group)

4th week:
Lecture: 13. Introduction to occupational toxicology 14. Scope of occupational health
Seminar: 7. Diet and risk of chronic diseases 8. Diagnosing occupational diseases (case studies)

5th week:
Lecture: 17. Genetic susceptibility to chronic diseases at individual and population levels18. Health effects of noise 19. Heavy metals in the human environment 20. Bioterrorism
Seminar: 9. Water quality control laboratory (visit) 10. Environmental radiation controlling laboratory (visit)

6th week:
Lecture: 21. The history, definition and scope of epidemiology 22. Epidemiological investigations
Seminar: 11. Basic biostatistics 12. Using research results in clinical practice I

7th week:
Lecture: 23. Frequency measures in epidemiology 24. Study design
Seminar: 13. Using research results in clinical practice II 14. Types of epidemiological studies

8th week:
Lecture: 25. Analysis based on aggregate statistics 26. Preventive strategies
Seminar: 15. Validity of epidemiological studies 16. Using epidemiological measures in practice (DEALE method)

9th week:
Lecture: 27. Screening 28. Randomized controlled trials
Seminar: 17. Preventive strategies 18. Screening programs

10th week:
Lecture: 29. Conclusions of the epidemiological studies 30. Interventional studies
Seminar: 19. Clinical trials 20. Critical evaluation of the epidemiological literature

Requirements

Requirements for signing the lecture book:
Attendance of lectures and class seminars is highly recommended. Attendance of the laboratory practices, visits and group seminars is obligatory. The head of the department may refuse to sign the Lecture Book if a student is absent more than twice from practices or seminars in a semester even if he/she has an acceptable excuse. The absences at seminars should be made up with another group only during the same week.

Requirements for the exam:
During the last week of the first semester (on week 10, *the exact date will be announced later*) students are required to take a written test which will cover the topics of all lectures and seminars of the first semester. Evaluation of the written test is assessed on a five-grade scale; successful pass of the exam is a prerequisite of the commencement of the second semester.

The slides of lectures and class seminars can be downloaded from our website.

Department of Surgery

Subject: **SURGERY BLOCK PRACTICE - 4TH YEAR**
Year, Semester: 4th year/1st semester
Number of teaching hours:
Practical: **60**

Requirements

Mid-year practice block: Students complete two weeks of practice in the Institute under the supervision of an assigned tutor. Following the daily schedule of their tutor, students are encouraged to participate in the ward activities and the outpatient care. Tutorial consultations and evaluation

meetings are organized.
Practice hours are between 7.30 AM and 1.30 PM (weekdays only).
The students are required to deposit their yellow practice book with the secretary at the beginning of the practice which they are given back signed upon completion of the requirements. Moreover, to monitor the attendance every student has to leave his/her university card with the secretary every morning and pick it up at the end of the day.

Subject: **SURGERY I.**
Year, Semester: 4th year/1st semester
Number of teaching hours:
Lecture: **12**
Practical: **10**

1st week:
Lecture: The history of surgery
Practical: Vascular surgery practice week

2nd week:
Lecture: Patient counseling, informed consent. Ethical and legal aspects.
Practical: Breast-endocrine surgery practice week

3rd week:
Lecture: Wound healing, surgical infections. Tetanus, gas gangrene
Practical: General surgery, TRP practice week

4th week:
Lecture: Lecture1: Diseases of the esophagus
Lecture 2: Plastic surgery operations of the trunk and extremities (Zoltán Péter, M.D.)
Practical: Thoracic surgery practice week

5th week:
Lecture: Lecture 1: Benign gastric lesions. Gastric cancer
Lecture 2: Plastic surgery operations in the head and neck region. (Attila Szűcs M.D., PhD)
Practical: Gastroenterologic surgery practice week

6th week:
Lecture: Hernia surgery

7th week:
Lecture: Diseases of the biliary tract and gall bladder

8th week:
Lecture: Hepatic surgery

9th week:
Lecture: Pancreatitis, pancreas malignancies

10th week:
Lecture: Diseases of the spleen. Laparoscopy in surgery

Requirements

There are 10 surgery lectures during the semester and 2 extra lectures on plastic surgery (organized by the Department of Dermatology)
During the first semester the first half of the year has to complete 5×2 hours of practice.
If missing a practice, you have to make it up with another group during the same week. The Head of the Department may refuse to sign the Lecture Book if a student was absent from more than one practice during the semester without an acceptable reason.
Examination: written test covering the topics of the first semester.

Department of Traumatology and Hand Surgery

Subject: **TRAUMATOLOGY I.**
Year, Semester: 4th year/1st semester
Number of teaching hours:
Lecture: **15**
Practical: **10**

1st week:
Lecture: 1. The role of traumatology in medicine. Process of fracture healing (biology, biomechanics). The diagnosis and treatment of fractures. Classifications of closed fractures. The basic principles of fractures treatment. 2. Classification and treatment of open fractures. Prevention and treatment of post-traumatic and post operative infections. 3. Process of wound healing. Closed and open soft tissue injuries, wound treatment. Types of bleeding. Diagnosis and treatment of closed and open vessel injuries.

2nd week:
Lecture: 1.Diagnosis and treatment tactics of dislocations. Recognition and treatment of posttraumatic pathological states. Compartment syndrome. Sudeck dystrophy. Disturbances of bone healing: delayed union and non-union. Posttraumatic arthritis. 2. Injuries in childhood. Injuries specific to growing bone and their treatment principles. Characteristic childhood injuries. 3. Injuries of thoracic cage. Pneumathorax, hemothorax. Cardiac injuries. Closed and open injuries of the abdomen. Diagnosis and operative treatment of abdominal organ injuries. Diaphragmatic rupture. Injuries to retroperitoneal organs.

3rd week:
Lecture: 1. Treatment protocol of severely injured patients, ATLS. Intensive care. Traumatic hemorrhagic shock. Fluid and electrolyte replacement. 2. Craniocerebral injuries. Fractures of the skull and calvaria. Brain edema. Recognition and treatment of intracranial hemorrhage. 3. Diagnosis and treatment of vertebral fractures with and without nervous system injuries. Physiology of nerve regeneration. Diagnosis and basic treatment principles of peripheral nerve injuries.

4th week:
Lecture: 1. Injuries of the pelvic ring and acetabulum. 2. Occurrence of femur neck fractures, characteristics of fractures in elderly patients. Garden classification. Minimal invasive therapy: osteosynthesis using cannulated screws. Indication for the use of hip replacement. 3. Diagnosis, classification and treatment of per- and subtrochanteric femur fractures. Treatment of femur diaphysis fractures.

5th week:
Lecture: 1. Treatment of mass injuries. Injury severity scales. Treatment of polytrauma. 2. Common fractures of the upper limb - treatment of fractures of the proximal humerus and wrist. 3. Diagnosis, classification and basic principles of treatment of crural and ankle fractures.

6th week:
Practical: Physical examination of the trauma patient. Anamnesis. General physical examination. Functional examination of the extremities (neutral 0 method). Examination of circulation and inveration. Imageing in the trauma treatment. Basic principle of x-ray examinations. Special investigations (CT, MRI, DSA, Color-Doppler, ultrasound). How to ask for imaging. Evaluation of X-rays.

7th week:
Practical: The basic principle of wound treatment. Sutures, knot tying, suture removal. Bandage. Tetanus and Lyssa profilaxis.

8th week:
Practical: Types of conservative fracture treatment. Roles of application of plasters. Soft bandages, braces, orthesises. Traction treatment.

9th week:
Practical: Operative fracture treatment. Implantations. Metallosis, corrosion, metal allergy. Types of osteosynthesises. Diagnostic and operative arthroscopy. Basic principles of osteosynthesises.

10th week:
Practical: Treatment of seriously injured patients. ATLS (Advanved Trauma Life Support). Resuscitation.

Requirements

The lectures will take place in the Auguszta big lecture hall. We strongly advise to participate on the lectures, because the official textbook include not all the diagnostic and therapeutic knowledge. The practices will take place two hours a week at the Department of Trauma and Hand Surgery (4031 Debrecen, Bartók B. u. 2-26). Participation on the practices is obligatory. In one semester one absent is acceptable, but the student has to come to the trauma duty to compensate it (confirmed and signed by the chief of the trauma duty). In case of not justified absent the lecture book will not signed, and the student can not go to the exam. Sign of the lecture book will take place the week before the exam period, at the secretariat of the Department of Trauma and Hand Surgery.

After finishing Traumatology I. course and practices, during the educational period there will be written test with 30 questions. The students, who have good results of the test, will receive discount on the oral exam.

Type of the exam:
emphasized mode oral exam (Kollokvium). Registration to the exam should be done the day before the exam till 12.00 hour on the internet Neptun program.

The oral exam consists of three questions.

Division of Radiology and Imaging Science

Subject: **RADIOLOGY AND NUCLEAR MEDICINE I.**
Year, Semester: 4th year/1st semester
Number of teaching hours:
Lecture: **20**
Practical: **30**

1st week:
Lecture: Principles of Radiological Techniques. Contrast media in Radiology.
Practical: Contrast media in Radiology. Chest Radiology.

2nd week:
Lecture: Chest Radiology. Cardiovascular Radiology.
Practical: Cardiovascular Radiology.

3rd week:
Lecture: Gastrointestinal and abdominal radiology.
Practical: Gastrointestinal radiology I. (esophagus, stomach)

4th week:
Lecture: Urogenital Radiology. Gynecological and Obstetric Radiology.
Practical: Gastrointestinal Radiology II. (liver, spleen, gall, pancreas)

5th week:
Lecture: Breast imaging. Interventional radiology.
Practical: Urogenital Radiology. Breast imaging. Gynecological and Obstetric Radiology.

6th week:
Lecture: Neuroradiology - brain, spine.
Practical: Neuroradiology - brain.

7th week:
Lecture: Head and neck imaging.
Practical: Neuroradiology - spine.

8th week:
Lecture: Musculosceletal radiology.
Practical: Musculosceletal radiology.

9th week:
Lecture: Paediatric imaging.
Practical: Paediatric imaging.

10th week:
Lecture: Emergency radiology.
Practical: Emergency radiology.

Requirements

The aim of the course is to teach students the basis of how the different medical imaging modalities work with respect to clinical application.
Two absences is allowed.
Final test: written.
At least 30 % of the end of semester test questions will be given to the students prior to the test to help them prepare.
Petitions, e.g: to change groups, will be accepted until the second week.
Must to reach 60 % to pass the exam.
70%-satisfactory
80%- good
90%- excellent

Faculty of Dentistry

Subject: **STOMATOLOGY**
Year, Semester: 4th year/1st semester**,** 4th year/2nd semester
Number of teaching hours:
Lecture: **10**
Practical: **16**

6th week:
Lecture: Dental caries and diseases of the dental pulp. Focal infections. Development of the teeth and the face. Developmental anomalies.
Practical: Anatomy of teeth and identification of teeth in the oral cavity.

7th week:
Lecture: Disorders of the TMJ. Facial pain. Oral Medicine.
Practical: Recognizing and treatment of orthodontic disorders. Anomalies of the occlusion and dental arches.

8th week:
Lecture: Diseases of the salivary glands. Periodontal diseases. Inflammatory diseases of the maxillo-facial region.

Practical: Oral symptoms of organs' diseases. Picture of healthy and pathologic oral mucosa. Treatment and prevention of periodontal diseases.

9th week:
Lecture: Stomato-oncology. Pediatric Dentistry. Preventive Dentistry.
Practical: Dental and maxillo-facial traumatology. Treatment and prevention of stomato-oncological diseases.

10th week:
Lecture: Traumatic injuries of the teeth and surrounding soft tissues. Fractures of the jaws, injuries of the face. Prosthetic dentistry. Implantology.
Practical: Local anaesthesia in the dentistry. Simple tooth extraction and possible complications. Instruments of the tooth extraction.

Requirements

Students who are absent from the practice lessons will not have their lecture-books signed.
Compensation of absence: The student has to attend the missed topic with the other group with the agreement of the chief educational officer. The number of compensated or uncompensated practical occasion cannot exceed one (3 hours).
Topic of exam: textbook + lectures + topic of practice lessons Exam-days will be announced 4 weeks before the exam-period. Students are required to register for the exam through the NEPTUN system.
Information: Mon.- Thurs. 1.30-3 pm., Fri. 1.30-2 pm in the Educational Office of the Faculty of Dentistry
Minimum number of students for an exam day is 5, the maximum is 10.

Institute of Behavioural Sciences, Faculty of Public Health

Subject: **BIOETHICS**
Year, Semester: 4th year/2nd semester
Number of teaching hours:
Lecture: **10**
Seminar: **10**

1st week:
Lecture: Introduction to bioethics. The development of bioethics. Ethics and morality. Morality and ethical theory, types of ethical theory: deontological (utilitarianism). Kant's supreme moral law. Universal and applied ethics. Moral and legal regulation of the medical practice. The Hippocratic Oath. International Code of Medical Ethics.

2nd week:
Lecture: What is bioethics? Medical ethics and the four Principles: beneficence, nonmaleficence, respect for autonomy, justice. The ethics of medical decision making. Case analysis.

3rd week:
Lecture: The doctor-patient relationship. Paternalism and the new ethos of patient autonomy. Inform consent and proxy consent. The therapeutic privilege. Truth-telling. Rules of Privacy and confidentiality. Patients' Rights.

4th week:
Lecture: Abortion and ethics. A critical analysis of the main arguments. The human reproductive technologies and ethics. Reproduction and genetic technology. Embryo experimentation.

Case analysis.

5th week:
Lecture: What is death? Death and dying. Euthanasia and suicide. Ethics of the terminal care. Justice in the health care system (macro- and micro allocation).

6th week:
Lecture: Issues in organ transplantation. Research ethics. Ethical problems in human and animal research.

7th week:
Lecture: Ethical question of genetic technology. Genetic screening and counseling. Written ethical workup.

Requirements

Requirements for signing the lecture book: regular attendance at the seminars.

Evaluation: AW5. Marks will be given to the ethical workup. The students will prepare ethical analysis, and written answers to questions.

Course leader: Péter Kakuk, M.A., Ph.D.

Course objectives: 1. This discipline involves a complex approach of development and problems in ethical aspects of medicine. Its goals are giving basic knowledge on issues of the most important fields of medical ethics, and to introduce students to the central concepts and decision making procedures in medical ethics. 2. The course aims to draw attention to and increase the moral sensitivity of students with regards to a critical reflection own values and future medical duties.

Course outline: Samuel Gorovitz defined bioethics as the "critical examination of the moral dimensions of decision - making in health - related contexts and in contexts involving the biological sciences". This definition highlights the interdisciplinary and social dimensions of bioethics. It points us in the right direction of bioethics. The course will present and overview the issues in the major problem areas of bioethics.
Professional codes and statutes.

Department of Internal Medicine

Subject: **INTERNAL MEDICINE IV. (ENDOCRINOLOGY, NEPHROLOGY)**
Year, Semester: 4th year/2nd semester
Number of teaching hours:
Lecture: **20**
Practical: **10**

1st week:
Lecture: 1. Diagnostic approach to thyroid diseases. Iodine metabolism. Iodine deficiency. 2. Hyperthyroidism, signs and symptoms. Graves'disease. Graves' ophthalmopathy. Toxic adenoma. Thyroid storm.
Practical: Endocrinology I.

2nd week:
Lecture: 3. Hypothyroidism. Thyroiditis. 4. The

thyroid nodule. Thyroid cancer. Multiple endocrine neoplasia. The carcinoid syndrome. Hypoglycemic disorders.
Practical: Endocrinology II.

3rd week:
Lecture: 5. Adrenal insufficiency. Hypadrenic crisis. Cushing's disease and syndrome. 6. Case presentation
Practical: Nephrology I.

4th week:
Lecture: 7. Mineralocorticoid excess. Congentianl adrenal hyperplasia. Pheochromocytoma 8. Diseases of the anterior pituitary. Hypo and hyperfunction. Posterior pituitary, diabetes insipidus, SIADH.
Practical: Nephrology II.

5th week:
Lecture: 9. Hyper and hypoparathyroidism. Hypercalcemic states. 10. Case presentation
Practical: Renal replacement therapy /Department of Nephrology

6th week:
Lecture: 11. Clinical examination of renal patients. History talking. Symptoms and syndromes. 12. Chronic glomerulonephritis

7th week:
Lecture: 13. Acute and rapidly progressive glomerulonephritis 14. Tubulointerstitial nephritis.

8th week:
Lecture: 15. Acute renal insufficiency 16. Case presentation

9th week:
Lecture: 17. Pregnancy and the kidney 18. Chronic renal insufficiency

10th week:
Lecture: 19. Diabetes nephropathy. Vascular nephropathy. 20. Renal replacement therapy

11th week:
Lecture: Scientific competition.
Practical: Block practice

12th week:
Practical: Block practice

13th week:
Practical: Block practice

14th week:
Practical: Block practice

15th week:
Practical: Block practice

Requirements

Requirements for signing the lecture book: Nobody should be absent from any practice unless due to well-documented reasons. All missed practices should be repeated some other time, discussed by the tutor. Everyone must be able to communicate with patients including history taken in Hungarian. The official material of examinations may include materials of all lectures and recommended books.

Department of Obstetrics and Gynecology

Subject: **OBSTETRICS AND GYNECOLOGY II.**
Year, Semester: 4th year/2nd semester
Number of teaching hours:
Lecture: **5**
Practical: **20**

1st week:
Lecture: Gynaecological history and examination
Practical: Case presentations

2nd week:
Lecture: Infertility and contraception
Practical: Case presentations

3rd week:
Lecture: Benign gynaecological conditions
Practical: Case presentations

4th week:
Lecture: Gynaecological malignancies
Practical: Case presentations

5th week:
Lecture: Operative gynaecology
Practical: Case presentations

6th week:
Practical: Case presentations

7th week:
Practical: Case presentations

8th week:
Practical: Case presentations

9th week:
Practical: Case presentations

10th week:
Practical: Case presentations
Self Control Test (Oral exam exemption test)

11th week:
Practical: Block practice

12th week:
Practical: Block practice

13th week:
Practical: Block practice

14th week:
Practical: Block practice

15th week:
Practical: Block practice
Self Control Test (Oral exam exemption test)

Requirements

Attending practices is mandatory. Absences must be made up even if resulting from medically documented illness or similar, by joining other group, but not more than twice in a semester. These occasions must be arrange with the responsible tutors in advance, as it is possible only with them and only at the missed location within their ordinary rotation schedule.
Signature in the lecture book will be declined if arrears exist at the end of semester.
Block practicals (5×6 hours) are organized according to the curriculum. Similarly to the weekly practicals, each student is allocated to a specified team of tutors, rotating between wards with them daily.
White lab coat in clean, neat condition should be brought and worn when visiting wards or outpatient clinics. If forgotten, a limited number of spare lab coats is available against student cards. It must be arranged with the storekeeper well before (10 min) the starting time to prevent delays.
Attendance at lectures is also highly recommended as certain aspects may be covered only there, and will be asked either in the written or in the oral exam.
End of semester exams (ESE) (oral) are taken in the exam period of both 1st and 2nd semester, covering two titles. List of titles are in accordance with the current textbook, and are shown on the noticeboard in front of the lecture hall.
The Department offers oral exam exemption tests in both semesters. If passed, and the lecture book has been signed, the mark will be offered as a final ESE grade. If the student decides not to accept

the offered grade, the above described oral exam can be taken as exam "A". The final grade can be better or worse than the offered grade. Information on the practical part of the exam will be spread out during the semester.

Department of Orthopedic Surgery

Subject: **ORTHOPAEDIC SURGERY**
Year, Semester: 4th year/2nd semester**,** 4th year/2nd semester
Number of teaching hours:
Lecture: **10**
Practical: **16**

1st week:
Lecture: Frequency, pathology and diagnosis, conservative and operative treatment of congenital/developmental dysplasia, dislocation of the hip (DDH, CDH).
Practical: Basic principles of examination methods in orthopaedic surgery. Part.I. Patient history. Methods of physical examinations of different joints (hip, knee, ankle, foot).

2nd week:
Lecture: Perthes' disease. Transient synovitis of the hip joint. Slipped capital femoral epiphysis. Coxa vara.
Practical: Basic principles of examination methods in orthopaedic surgery. Part II. X-ray pictures evaluation. Methods of physical examinations of different joints (shoulder, elbow, wrist, hand, spine, chest).

3rd week:
Lecture: Osteoarthritis of the hip. Aseptic necrosis of the femoral head. Replacement of the hip joint..
Practical: Introduction of the orthopaedic implants to the students. X-ray pictures evaluation. The use of hip ultrasonography in pediatric patients. Examination of patients by students and discussion.

4th week:
Lecture: Functional anatomy of the foot. Congenital deformities and diseases of the foot.
Practical: Introduction of the orthopaedic implants to the students. X-ray pictures evaluation. The use of hip ultrasonography in pediatric patients. Examination of patients by students and discussion.

5th week:
Lecture: Postural kyphosis. Scoliosis and its treatment.
Practical: Introduction of the orthopaedic implants to the students. X-ray pictures evaluation. Basic physiotherapy and rehabilitation. The use of hip ultrasonography in pediatric patients. Examination of patients by students and discussion.

6th week:
Lecture: Spondylolysis and spondylolisthesis. Congenital anomalies of the spine. Scheuermann's disease and its treatment. Degenerative changes of the spine. Spinal stenosis. Disc degeneration and prolapse. Sciatica. Ankylosing spondylitis.

7th week:
Lecture: Diseases of the neck and upper extremities.

8th week:
Lecture: Knee disorders. Knock knee and bow legs. Congenital, habitual and recurrent dislocation of the patella. Chondromalacia patellae. Osteoarthritis of the knee. Replacement of the knee joint.

9th week:
Lecture: Bone tumours and tumour - like lesions

10th week:
Lecture: Bone infection. Acute and chronic osteomyelitis. Suppurative arthritis.

Requirements

Participation at practicals and compensation for absences from practicals and the requirements of signatures in lecture-books in orthopaedic surgery are not different from the general rules. Besides the textbook and the recommended book the material of lectures is included in the questions of the final examination. Order of verbal exams: The students have to register for the exam on the NEPTUN system. The students pick two titles, from the title list available at the beginning of the Semester. This list can be found on the web site of the Orthopaedic Department. Students who attended at least 70 % of the lectures have to answer one title only. In case of a B or C exam the student is not entitled to the above advantage.

Department of Pharmacology and Pharmacotherapy

Subject: **PHARMACOLOGY II.**
Year, Semester: 4th year/2nd semester
Number of teaching hours:
Lecture: **50**
Seminar: **20**

1st week:
Lecture: Introduction to CNS pharmacology. Neurotransmission and the CNS. Antiepileptics. Sedatohypnotics. Alcohols. Antipsychotics and lithium.
Seminar: Repetition of the pharmacology of the autonomic drugs and the prescription writing.

2nd week:
Lecture: Antidepressants. Antiparkinsonian agents. Pharmacotherapy of Alzheimer's disease. Drugs of abuse 1.Drugs of abuse 2.
Seminar: Pharmacology of the cardiovascular drugs. Antiepileptics and sedatohypnotics.

3rd week:
Lecture: Centrally and peripherally acting skeletal muscle relaxants. Local anesthetics. General anesthetics. Opioid analgesics and antagonists-I. Opioid analgesics and antagonists-II.
Seminar: Pharmacology of the gastrointestinal drugs. Antidepressants. Antiparkinsonian agents.

4th week:
Lecture: Serotonin, agonits and antagonists, the ergot alkaloids and the therapy of migraine. Histamine and antihistamine drugs. Non-steroidal anti inflammatory drugs 1.Non-steroidal anti inflammatory drugs 2. Pharmacotherapy of rheumatoid arthritis.
Seminar: Muscle relaxants and the pharmacology of anesthesia.

5th week:
Lecture: Pharmacotherapy of gout. Uterotonics, tocolytics, smooth muscle relaxants. Pharmacology of vasoactive peptides. Principles of antimicrobial drug action. Beta-lactam antibiotics.
Seminar: Serotonin, histamine, NSAIDs and RA.

6th week:
Lecture: Chloramphenicol, tetracyclines, aminoglycosides. Macrolides. (Fluor)quinolones. Antifungal agents. Antiviral chemotherapy and prophylaxis 1.
Seminar: Gout. Uterotonics, tocolytics, smooth muscle relaxants. Pharmacology of vasoactive peptides.

7th week:
Lecture: Antiviral chemotherapy and prophylaxis 2. Antiparasitic chemotherapy: Basic principles. Antiprotozoal drugs. Antiparasitic chemotherpay: Antihelmintic drugs. Introduction to endocrine pharmacology. Thyroid and antithyroid drugs. Parathyroid hormone.
Seminar: Antibacterial chemotherapy.

8th week:
Lecture: Adrenocorticosteroids and adrenocortical antagonists 1.Adrenocorticosteroids and adrenocortical antagonists 2.Pancreatic hormones and antidiabetic drugs 1.Pancreatic hormones and antidiabetic drugs 2.Pancreatic hormones and antidiabetic drugs 3.
Seminar: Antibacterial chemotherapy. Antihelmintic and antiprotozoal agents.

9th week:
Lecture: The gonadal hormones and inhibitors 1.The gonadal hormones and inhibitors 2. Agents that affect bone mineral homeostasis. Cancer chemotherapy 1.Cancer chemotherapy 2.
Seminar: Antifungal and antiviral agents. Pharmacotherapeutic approach to diabetes mellitus.

10th week:
Lecture: Cancer chemotherapy 3.Immunopharmacology 1.Immunopharmacology 2.Toxicology 1.Toxicology 2.
Seminar: Cancer chemotherapy. Immunopharmacology. Toxicology.

Requirements

Prerequisites: Pharmacology I Attendance at lectures is highly recommended, since the topics in examination cover the lectured topics. Attendance register will be performed regularly. Attendance at seminars is compulsory. The Department will refuse to sign the student's Lecture Book if he/she is absent from more than 2 seminars/semester. Please, ensure that your lecture book has been submitted to the Department for signing within 1 week after finishing the semester. Please use the lecture book dropbox installed in front of the departmental door on the second floor of the Pharmacology Building. Two control tests during the semester will be performed, which is obligatory. At the end of the 2nd semester the students are required to take the Final Examination (written and oral), based on the material taught in the two semesters. Three titles in the question set should be answered in detail. To know the groups of drugs with examples in all of the chapters in pharmacology is compulsory. If one question is remained properly unanswered from the three titles the student is not allowed to pass. If lethal dose, not proper or ineffective treatment is discussed the student have to be failed. For further details visit our website: pharmacology.med.unideb.hu

Department of Preventive Medicine, Faculty of Public Health

Subject: **PREVENTIVE MEDICINE AND PUBLIC HEALTH II.**
Year, Semester: 4th year/2nd semester
Number of teaching hours:
Lecture: **30**
Seminar: **20**
Practical: **15**

1st week:
Lecture: 1. Introduction to the epidemiology and surveillance of communicable diseases2. Characteristics of infectious diseases, steps of outbreak investigation 3. Epidemiology of sexually transmitted diseases
Seminar: 1. Dynamics of infection 2. Using Epiinfo in outbreak investigation

2nd week:
Lecture: 4. Epidemiology and control of zoonoses 5. Epidemiology of gastrointestinal infections 6. Epidemiology of hepatitis
Seminar: 3. Outbreak investigation of hepatitis B virus infection in clinical setting 4. Community emergency care

3rd week:
Lecture: 7. Epidemiology of nosocomial infections 8. Vaccines and immunization9. Re-emerging infections
Seminar: 5. Concept and methods of health monitoring 6. Control of nosocomial infections (visit)

4th week:
Lecture: 10. Epidemiology of HIV/AIDS 11. Prion diseases: facts and theories in preventive medicine 12. Epidemiology and control of airborne infections.
Seminar: 7. Vaccine preventable diseases 8. Public health databases

5th week:
Lecture: 13. Epidemiology of chronic respiratory diseases 14. Introduction to the epidemiology of non-communicable diseases 15. Epidemiology and control of metabolic, gastrointestinal and liver diseases Dr. János Sándor
Seminar: 9. Priority setting in health care10. Public health databases 2

6th week:
Lecture: 16. Epidemiology of mental disorders and behavioral problems 17. Epidemiology and control of cardiovascular diseases 18. Epidemiology of cancers
Seminar: 11. Health education in primary care12. Health education techniques

7th week:
Lecture: 19. Health status in developing and developed countries 20. Lifestyle and health: the effects of personal factors on health 21. Lifestyle and health: the effects of alcohol and drug use on health
Seminar: 13. Concept and practice of health promotion14. Prioritizing using public health database

8th week:
Lecture: 22. Environment and health: the effects of socio-economical factors on health 23. Domestic violence 24. Health policy principles in developed countries
Seminar: 15. Introduction to health policy16. Health systems financing

9th week:
Lecture: 25. Needs, demand and use of health service, Methods of financing health services 26. Methods of financing health services 27. Organization of public health services
Seminar: 17. Assessing and improving quality of health services 18. Interpretation of public health databases (exam) all seminar teachers are preparig the exam sheets

10th week:
Lecture: 28. Quality assurance in health systems. Quality measurement and development in health care 29. Improvement of clinical effectiveness 30. Major challenges of preventive medicine and public health

Requirements

Requirements for signing the Lecture book:
Attendance of *Lecture*s is highly recommended. The slides of lectures can be downloaded from our website () Attendance of group seminars, visits and laboratory practices is obligatory. The head of the department may refuse to sign the Lecture Book if a student is absent more than two times from practices or seminars in a semester even if he/she has an acceptable excuse. The absences at seminars should be made up for with another group, at another time.

Requirements for the final exam:
The final exam (at the end of the second semester) consists of a written part and an oral exam (practical exam). The oral exam will cover the topics of all laboratory practices and seminars of the full academic year. The final mark of the practical exam is the average of the mark given for the interpretation of public health databases (week 9) and the mark obtained for the oral exam.
The written exam will be accomplished by computer based test that covers the topics of all *Lecture*s and group seminars of the full academic year. It is composed of three parts: environmental health, epidemiology and health policy (the three parts will be evaluated separately). The mark of the final exam will be calculated on the basis of the average of the mark given for the practical exam and for the written exam.
The final exam will be failed if either the practical or any part of the written exam is graded unsatisfactory. The student is obliged to repeat only the failed part of the final exam. The mark of the final exam will be calculated on the basis of the average of the repeated part and the previous parts of the exam.

Department of Pulmonology

Subject: **PULMONOLOGY**
Year, Semester: 4th year/2nd semester**,** 4th year/1st semester
Number of teaching hours:
Lecture: **15**
Practical: **10**

1st week:
Lecture: Respiratory symptoms and signs. Commonly used therapy in pulmonology.
Practical: History taking of pulmonary patients. Physical examination. The cardinal respiratory symptoms, signs and complaints.

2nd week:
Lecture: Lung function tests, blood gas analysis. Laboratory examinations in pulmonary disease.
Practical: Bronchoscopy.

3rd week:
Lecture: Chest X-ray, CT scan, tomography, CT.
Practical: Lung function test, blood gas analysis.

4th week:
Lecture: COPD I.
Practical: Allergology, skin test. Asthma bronchiale.

5th week:
Lecture: COPD II.
Practical: Chronic obstructive lung disease, emphyseama, chronic bronchitis.

6th week:
Lecture: Pleural disorders
Practical: Pneumonia.

7th week:
Lecture: Lung cancer, symptoms, signs, diagnosis
Practical: Demonstration of patients with lung cancer. Differential diagnosis, treatment, prevention.

8th week:
Lecture: Tuberculosis
Practical: Tuberculosis/Control test.

9th week:
Lecture: Pleural disorders
Practical: Respiratory failure.

10th week:
Lecture: Lung cancer therapy
Practical: Collection of chest X-ray for the

exam.

11th week:
Lecture: Occupational lung disease and immunpathogenetic based pulmonary disease. Interstitional lung disease, sarcoidosis
Practical: Collection of chest X-ray for the exam.

12th week:
Lecture: Pulmonary embolism, cor pulmonale, pulmonary hypertension

13th week:
Lecture: Asthma bronchiale.

14th week:
Lecture: Chronic respiratory failure.

15th week:
Lecture: Collection of chest X-ray for the exam.

Requirements

The rules written in the statue of the Organization and Operation of Medical University of Debrecen will be applied. The student is obliged to attend the practices.

In case of absence the student must compensate on the same week with another student's group or should ask the tutor. The Head of the Department may refuse to sign the Lecture Book if a student is absent more than twice from practices in a semester.

The final examination will consist of a practical (X-ray examination) and oral part, two questions from the topics. The topics will be given in the first lecture of the semester.

Lectures are the guidelines for the examination.

Department of Surgery

Subject: **SURGERY II.**
Year, Semester: 4th year/2nd semester
Number of teaching hours:
Lecture: **10**

1st week:
Lecture: Inflammatory Bowel Diseases
Practical: Vascular surgery practice week

2nd week:
Lecture: Acute abdomen, surgical emergencies
Practical: Breast-endocrine surgery practice week

3rd week:
Lecture: Surgery for morbid obesity
Practical: General surgery, TRP practice week

4th week:
Lecture: Bowel obstruction. Proctology
Practical: Thoracic surgery practice week

5th week:
Lecture: Surgical treatment of colorectal cancer
Practical: Gastroenterologic surgery practice week

6th week:
Lecture: Endocrine surgery

7th week:
Lecture: Benign breast lesions. Breast cancer

8th week:
Lecture: Vascular surgery (arterial and venous

diseases)

9th week:
Lecture: Thoracic surgery

10th week:
Lecture: Transplantation surgery

Requirements

There are 10 surgery lectures during the semester.
During the second semester the second half of the year has to complete 5×2 hours of practice. If missing a practice, you have to make it up with another group during the same week. The Head of the Department may refuse to sign the Lecture Book if a student was absent from more than one practice during the semester without an acceptable reason.
Examination: written test covering the topics of both semesters.

Department of Urology

Subject: **UROLOGY**
Year, Semester: 4th year/2nd semester**,** 4th year/1st semester
Number of teaching hours:
Lecture: **10**
Practical: **16**

1st week:
Lecture: Tumors of the urinary bladder.
Practical: Introduction to urological clinical practice, describing the place of urology among all fields of medicine. Visiting the wards and operating theaters.

2nd week:
Lecture: Disorders of the testis, scrotum and spermatic cord. Penile cancer.
Practical: Clinical investigation of genitourinary tract, urological laboratory and imaging examinations. Uro-radiological case presentations.

3rd week:
Lecture: Tumors of the prostate.
Practical: Differential diagnosis and treatment of the obstruction of the urine collecting system: transurethral and suprepubic bladder catheter, uretercatheter, DJ stent, nephrostomy tube. Video demonstration of catheter insertion.

4th week:
Lecture: Female urology. Urodynamic study.
Practical: Endoscopy and laparoscopy in urology: indications, methods, benefits, disadvantages, complications. Demonstration of the special instruments.

5th week:
Lecture: Injuries to the genitourinary tract, emergency diagnosis. Male infertility. Male sexual problems.
Practical: BPH and prostate cancer: diagnosis, treatment and follow up. Defining differences between the two diseases. Touching prostate on probe.

6th week:
Lecture: Tumors of the kidney.
Practical: Differential diagnosis of scrotal disorders: varicocele, hydrocele, retention of the testicle, tescticular atrophy, epididymitis, orchitis, trauma, torsion, testicular cancer, inguinal hernia, oedema. Case presentations at the ward.

7th week:
Lecture: Tumors of the testis.
Practical: Urological infections, prevention. When to treat bacteruria. Nosocomical

infections. Urine analysis at our laboratory.

8th week:
Lecture: BPH. Retention urine. Clinical assessment and treatment.
Practical: Urinary stone disease: etiology, diagnosis, treatment. Discussing the problematic titles of urology.

9th week:
Lecture: Nonspecific infections. Specific infection. Pediatric urology. Congential anomalies.

10th week:
Lecture: Urinary tract stones. Surgical and non surgical treatment. Radiomorphologic investigation in urology.

Requirements

Exam: oral type, the student has to pull 2 topics (1 cancer and 1 general).
Students have to attend all (8) urological practices during the semester. In case of absence the student must compensate for the missing practice (either with joining another group or asking the supervisor about his duty).
Visiting the lectures is strongly advisable.
The official textbook is Nyirády/Romics: Textbook of Urology. The list of topics is based on this book. It is recommended to know the following reading material Paragh/Hajnal: Tessék mondani, since during practice students have to have the ability to communicate with patients.
According to the statement of the University no pre-final is allowed in urology.

Division of Clinical Genetics

Subject: **CLINICAL GENETICS**
Year, Semester: 4th year/2nd semester
Number of teaching hours:
Lecture: **20**

1st week:
Lecture: Fundamentals of classical genetics. History and concepts of genetics, classification of congenital disorders. Genetic tests in clinical laboratory practice.

2nd week:
Lecture: Molecular genetics of severe inherited disorders I.-II.

3rd week:
Lecture: Fundamentals of genomic medicine. Personalized medicine.

4th week:
Lecture: Biochemical genetics. Quality management in genetic testing, risk assessment in monogenic diseases.

5th week:
Lecture: Clinical cytogenetics I-II.

6th week:
Lecture: Genetics of multifactorial disorders. Syndromology.

7th week:
Lecture: Genetic counseling I-II.

8th week:
Lecture: Prenatal diagnostics. Cytogenetic testing methods.

9th week:
Lecture: Cancer genetics I-II.

10th week:
Lecture: Mental retardation in clinical genetics.
Practice in clinical genetics: case reports, interpretation of medical/laboratory reports.

Requirements

Attendance on the 30% of lectures is mandatory for getting signature at the end of semester.
Evaluation: Students take the oral examination (two titles) during the examination period.

Division of Radiology and Imaging Science

Subject: **RADIOLOGY AND NUCLEAR MEDICINE II.**
Year, Semester: 4th year/2nd semester
Number of teaching hours:
Lecture: **10**
Practical: **10**

1st week:
Lecture: Principles of radionuclide imaging. Radiobiology and radioprotection.
Practical: Nuclear Medical investigations procedures, demonstrated on bone scintigraphy. Visit to Nuclear Medicine Department. Tools for radiation protection.

2nd week:
Lecture: Isotope diagnostics inendocrinology. Radioiodine therapy of hypertherosis. Radionuclide imaging of the heart and lung.
Practical: Thyroid and other endocrine studies. Radioisotope imaging of the heart.

3rd week:
Lecture: Radionuclide imaging of the kidney function and the gastrointestinal tract.
Practical: Dynamic studies: kidney, hepatobiliary, esophageal, gastric.

4th week:
Lecture: Nuclear medicine in oncology; cell labeling. Radioisotope therapy.
Practical: Nuclear oncology. Inflammation & infection.

5th week:
Lecture: Basics of radiation therapy.
Practical: Brain SPECT and PET. Lung function.

9th week:
Lecture: The spine and the spinal cord
Practical: The diseases of the spine and the spinal cord

Requirements

Chance "A" is a written exam with offered term mark. if not accepted, the term mark will be the average of the written and oral parts. Chance "B" and "C" are oral.
One absence is allowed. Electronic materials:
http://elearning.med.unideb.hu/ ingroup "Izotópdiagnosztika/Nuclear Medicine" see " Nuclear Medicine

Institute of Behavioural Sciences, Faculty of Public Health

Subject: **BEHAVIOURAL MEDICINE**
Year, Semester: 4th year/2nd semester
Number of teaching hours:
Practical: **20**

1st week:
Lecture: Introduction to behavioural medicine: Lifestyle and health

2nd week:
Lecture: The stages of change (The Prochaska-DiClemente model)

3rd week:
Lecture: Psychological aspects of somatic disorders: Asthma and cardiovascular diseases

4th week:
Lecture: Aging: psychosomatic and health psychological aspects

5th week:
Lecture: Death and dying. Facing with terminal illness

6th week:
Lecture: Effect of childhood aversive experiences on the adult health (ACE study) 1.

7th week:
Lecture: Effect of childhood aversive experiences on the adult health (ACE study) 2.

8th week:
Lecture: Basic of psychotherapy.

9th week:
Lecture: Methods of cognitive-behaviour therapy.

10th week:
Lecture: Relaxation

Requirements

Fourth year students should pass the exam at the end of the first semester (AW5). This examination includes the materials of the lectures. Materials of all lecture will be given to students before the examination. The Department of Behavioural Sciences will adhere to the requirements of the Rules and Regulations for English Program Students. The student must be present and take the examination at the designated time. (He/she must explain the reason for any absence from the examination to the Departmental Adviser within 1 days of the day of examination.)

CHAPTER 18
ACADEMIC PROGRAM FOR THE 5TH YEAR

Department of Dermatology

Subject: **DERMATOLOGY**
Year, Semester: 5th year/1st semester**,** 5th year/2nd semester
Number of teaching hours:
Lecture: **15**
Seminar: **10**
Practical: **20**

1st week:
Lecture: Anatomy, physiology and pathology of the skin. Introduction to dermatology
Seminar: Cutaneous autoimmune disorders
Practical: Introduction to dermatology: dermatological anamnesis. Primary and secondary lesions, dermatological status, moulages

2nd week:
Lecture: Primary and secondary lesions
Seminar: Urticaria, cutaneous vasculitis
Practical: Practicing primary and secondary lesions, dermatological status, patient examination

3rd week:
Lecture: Hair and nail diseases
Seminar: Thermal injuries (Burn and frostbite)
Practical: Oral test: primary and secondary lesions, patient examination

4th week:
Lecture: Papulosquamous disorders
Seminar: Dermatosurgery, histology
Practical: Patient examination, allergological skin tests, phototherapy

5th week:
Lecture: Drug allergy
Seminar: Bacterial infections
Practical: Patient examination. Local treatments, dermatological prescriptions

6th week:
Lecture: Mycotic infections Systemic therapy in dermatology
Seminar: Seborrhoea, acne, rosacea, perioral dermatitis
Practical: Patient examination, burn

7th week:
Lecture: Syphilis, gonorrhoea, other sexually transmitted diseases Topical therapy in dermatology
Seminar: Chronic vein insufficiency Leg ulcer
Practical: Patient examination (oral test), cosmetology, dermatoscopy

8th week:
Lecture: Common benign tumors, Kaposi-sarcoma, cutaneous lymphomas Skin tumors originating from non-pigment cells
Seminar: Ekzema
Practical: Patient examination. Local treatments II (written test)

9th week:
Lecture: Photo(chemo) therapy Viral and parasitic dermatoses
Seminar: The skin and internal diseases
Practical: Patient examination (written test). Mycological examination. STD laboratory testing

10th week:
Lecture: Photodermatoses AIDS
Seminar: Naevuses. Malignant melanoma.
Practical: Consultation. Test - compensations

11th week:
Practical: Block of practice I. (practice at the

inpatient clinic and block of practice):visit at the inpatient clinic (general dermatology department, burn department outpatient clinic (in a rotational system: general dermatology, mycology-STD, allergology-immunology, psoriasis, cosmetology, naevus-melanoma) practice at the inpatient clinic

12th week:
Practical: Block of Parctice I. (practice at the inpatient clinic and block of practice)visit at the inpatient clinic (general dermatology department, burn department outpatient clinic (in a rotational system: general dermatology, mycology-STD, allergology-immunology, psoriasis, cosmetology, naevus-melanoma)practice at the inpatient clinic

13th week:
Practical: Block of practice II. (practice at the inpatient clinic and block of practice) visit at the inpatient clinic (general dermatology department, burn department)outpatient clinic (in a rotational system: general dermatology, mycology-STD, allergology-immunology, psoriasis, cosmetology, naevus-melanoma)practice at the inpatient clinic

14th week:
Practical: Block of practice II. (practice at the inpatient clinic and block of practice)visit at the inpatient clinic (general dermatology department, burn department outpatient clinic (in a rotational system: general dermatology, mycology-STD, allergology-immunology, psoriasis, cosmetology, naevus-melanoma)practice at the inpatient clinic

15th week:
Lecture: Examination week
Seminar: Examination week
Practical: Examination week

Requirements

Requirements for signing the lecture book:
Presence of the students is recorded at all practices and compulsory lectures assigned.
Attendance is obligatory at all practicals and compulsory lectures. Presence can be checked up during as well as at the end of the occasions. If the student is not present at the control, it is considered as an absence.
The number of missed practicals can not exceed 1 occasions (2 practical hours). Absences superior to this number are subjects to compensation. A maximum of 2 practicals (4 practical hours) can be compensated during one semester. Compensations performed beyond the semester will be charged for each occasion.
No signature will be given in lecture book with more than 1 uncompensated practice and 2 unattended compulsory lectures..
The written tests (prescription test, patient admission test) have to be completed, otherwise no signature will be given in lecture book.
Lectures are very important sources of information. No regard will be taken to anyone's absence, with other words: at any test during the semester, including the final exam, questions concerning topics that were discussed only at a lecture, where the student was absent, may and will be asked from any student.

Department of Family and Occupational Medicine, Faculty of Public Health

Subject: **FAMILY MEDICINE**
Year, Semester: 5th year/1st semester
Number of teaching hours:
Seminar: **10**

1st week:
Seminar: 1. Primary health care. General practice/family medicine.

2nd week:
Seminar: 2. Doctor-patient consultation in general practice/family medicine. Diagnosis and treatment in primary care.

3rd week:
Seminar: 3. Working with families in primary health care.

4th week:
Seminar: 4. Prevention in primary care.

5th week:
Seminar: 5. Quality in general practice: Medical audit, practice guidelines in general practice.

Requirements

Requirements for signing the lecture book: The grade is calculated according to the result of the written exam and activity during the seminars.

Department of Forensic Medicine

Subject: **FORENSIC MEDICINE I.**
Year, Semester: 5th year/1st semester
Number of teaching hours:
Lecture: **10**
Practical: **10**

1st week:
Lecture: Introduction to Forensic Medicine.
Practical: Getting to know the Department of Forensic Medicine.
Practices between 1st - 11th week: Usual and special autopsy techniques, external examination of dead person autopsy cases and case studies on the above mentioned topics.

2nd week:
Lecture: Forensic autopsies.

3rd week:
Lecture: Time of death. Postmortem changes after death I.

4th week:
Lecture: Postmortem changes after death II.

5th week:
Lecture: Types of injuries and wounds I.

6th week:
Lecture: Types of injuries and wounds II. Vital injuries.

7th week:
Lecture: Traffic accident victims.

8th week:
Lecture: Craniocerebral trauma. Electrical injuries.

9th week:
Lecture: Firearm injuries. Effects of heat and cold. Fire deaths.

10th week:
Lecture: Death due to asphyxia I-II.

11th week:
Lecture: Physical and biological trace evidences.

Department of Internal Medicine

Subject: **INTERNAL MEDICINE V. (GASTROENTEROLOGY)**
Year, Semester: 5th year/1st semester
Number of teaching hours:
Lecture: **20**
Practical: **10**

1st week:
Lecture: 1. Gastrooesophageal reflux disease 2. Gastritis, H. pylori infection, Peptic ulcer disease

2nd week:
Lecture: 3. Neoplasms of the esophagus, stomach and small intestine. 4. Malabsorption, Celiac disease, Lactose intolerance.

3rd week:
Lecture: 5. Inflammatory bowel disease (Crohn's disease. Ulcerative colitis) 6. Irritable bowel syndrome. Diverticulosis

4th week:
Lecture: 7. Colorectal cancer. (etiology, premalignant lesions, diagnosis, screening, treatment) 8. Alcoholic liver disease. Non-alcoholic fatty liver disease

5th week:
Lecture: 9. Autoimmune liver diseases. 10. Virus hepatitis

6th week:
Lecture: 11. Diseases of the biliary tract. Liver neoplasms. 12. Hepatic cirrhosis. Liver transplantation
Practical: Diagnosis of the oesophagus and the stomach

7th week:
Lecture: 13. Acute pancreatitis. 14. Chronic pancreatitis. Pancreatic cancer
Practical: Disorders of the small and large intestines

8th week:
Lecture: 15. Diabetes mellitus: patomechanism, types, clinical symptoms and complications 16. Management of type 2 diabetes mellitus
Practical: Gastrointestinal bleeding. Video presentation

9th week:
Lecture: 17. Type 1 diabetes mellitus, insulin therapy 18. Obesity: causes, diagnosis and treatment. Gout
Practical: Disorders of the liver and the pancreas

10th week:
Lecture: 19. Primary and secondary hyperlipoproteinemias: types, symptoms and treatment. Porphyrias 20. Electrolite disorders. Metabolic bone disorders
Practical: Diabetes mellitus. Disorders of lipid metabolism

Requirements

Presence at practical lessons and seminars is compulsory!
Theoretical exam:
1st part is written (minimum test, >80%)
2nd part is patient examination
3rd part is oral (2 titles)
Minimum test questions: http://2bel.med.unideb.hu

Titles for Gastroenterology and Metabolic Disorders

1. Gastroesophageal reflux disease: symptoms, staging, treatment
2. Motility disorders of the esophagus: achalasia, esophageal spasm
3. Barrett esophagus
4. Esophageal tumors
5. Diagnostics and treatment of gastrointestinal bleeding
6. Peptic ulcer: etiology, symptoms, diagnostics
7. Peptic ulcer: treatment, complications
8. Zollinger-Ellison's syndrome
9. Gastritis: classification, special entities
10. The importance of H. pylori infection and its treatment
11. Motility disorders of the stomach, dyspepsia
12. Gastric cancer: epidemiology, etiology and classification
13. Gastric cancer: diagnostics and treatment
14. Tumors of the small intestine
15. Malabsorption: classification, symptoms
16. Malabsorption: diagnostics and treatment. Maldigestion.
17. Irritable bowel syndrome. Diverticulosis.
18. Diagnostics and treatment of ulcerative colitis
19. Diagnostics and treatment of Crohn's disease
20. Colorectal polyposis
21. Symptoms and diagnostics of colorectal cancer
22. Colorectal cancer: therapy, prevention and screening
23. Diagnostics of acute pancreatitis
24. Treatment of acute pancreatitis
25. Chronic pancreatitis
26. Pancreas cancer
27. Acute viral hepatitis
28. Classification and diagnostics of chronic viral hepatitis
29. Therapy of chronic viral hepatitis
30. Autoimmune hepatitis
31. Alcoholic liver disease
32. Clinical features and diagnostics of liver cirrhosis
33. Portal hypertension: etiology, treatment, complications
34. Primary biliary cirrhosis
35. Wilson's disease. Hemochromatosis
36. Liver transplantation
37. Drug-induced and toxic liver diseases. Etiology and symptoms of acute liver failure
38. Hepatocellular cancer
39. Acute and chronic cholecystitis
40. Gallstones
41. Tumors of the biliary tract
42. Metabolic syndrome
43. Classification and epidemiology of diabetes mellitus
44. Diabetes mellitus: symptoms
45. Diabetes mellitus: late complications
46. Diet in diabetes mellitus

47. Insulin treatment
48. Oral antidiabetics
49. Hyperglycaemic ketoacidosis. Non-ketoacidotic coma in diabetes
50. Hypoglycaemia
51. Gout
52. Porphyrias
53. Hyperlipoproteinaemias
54. Disorders of the acid-base balance. Dehydration. Hypo- and hypernatraemia

Department of Neurology

Subject: **NEUROLOGY BLOCK PRACTICE - 5TH YEAR**
Year, Semester: 5th year/2nd semester
Number of teaching hours:
Practical: **60**

Requirements

The block practice lasts 1 week. Participation at all the theoretical lectures and the practical parts of the block practice is mandatory.
Lecture books for signatures can be brought to Secretary of Department of Neurology only in Student time. Signed lecture books can be taken at the Secretary only in Student time; the earliest possibility is on Wednesday of the following week after the week of block practice.
Absence from the block practice is not possible. In case of one day absence written medical or other official certificate is necessary. In case of one day absence with written certificate participation on a round visit with the Head of the department is mandatory. In case of more than one day absence, the block practice must be repeated.

Subject: **NEUROLOGY I.**
Year, Semester: 5th year/1st semester
Number of teaching hours:
Lecture: **15**
Practical: **10**

1st week:
Lecture: 1. Epidemiology and characteristics of neurological disorders
2. Neurological examination, neurodiagnostic procedures I.

2nd week:
Lecture: 3. Headache4. Headache

3rd week:
Lecture: 5. Neurological examinations, neurodiagnostic procedures6. Diff. diagnosis of consciousness

4th week:
Lecture: 7. Stroke 8. Stroke

5th week:
Lecture: 9. Vertigo 10. Vertigo

6th week:
Lecture: 11. Epilepsy I

7th week:
Lecture: 12. Epilepsy II.

8th week:
Lecture: 13. Multiple sclerosis

9th week:
Lecture: 14. Movement disorders I.

10th week:
Lecture: 15. Movement disorders II.

Requirements

Consulting hours for Manager of educational matters:
Monday 11:00 - 14:00 and Friday 11:00 - 14:00. If it is necessary, Managers of educational matters for Hungarian and English speaking students are substitutes for each other.
Student time at Secretary: Monday 11:00 - 12:00, Wednesday 11:00 - 12:00 and Friday 11:00 - 12:00
Material for students: neurologia.deoec.hu 'Education' menu. ID: neurostudent; password: student1112
1. Neurology I. may be admitted only with successfully finished Internal Medicine III. and Neurobiology.
2. There are 15 lectures in the 1st semester (2 hours lectures/week 5 times , 1 hour lectures/week 5 times). Attending lectures is highly recommended.
3. There are five one and a half hour long practices in the first semester (1 practice/week/group). The purpuse of these practices are to learn the neurological examination. Please arrive at the practices on time. Participation at the practices is obligatory. Only one excused absence out of the 5 occasions is accepted. The students must provide a written medical (in case of any illness) or official certificate (in case of an unexpected serious event) about the reason of the absence. If no written certificate is available the student must participate at the practice of an other class at the same week to make up the material. At the same time maximum 3 foreign students are allowed to participate at the practice of an other group. The student needs to provide a written form about this supplement. All the students must attend the practice of their own group, making up at a different group is allowed only once, if a certified absence is present. If a student has more than one excused practice in a semester, his or her lecture book will not be signed, he or she must repeat the semester regardless of the reason. Participation in the practice is verified by the group tutor. It is not possible to change group for the practices.
4. 1st semester will end with a written exam (test exam, four possible answers, one correct). Places for exam are opened every week during exam period. Students have to register on Neptun for the exam. Without registration the exam cannot be taken. The first exam is the 'A' chance, the second exam is the 'B' chance, both are written (test) exams. If somebody failed 'A' and 'B' chance the third possibility is the 'C' chance, which is oral exam at the respective group tutor. In this case the student has to agree an appointment with the group tutor. Material covered in the lectures are asked at exams.
Grade improvement is possible once, in this case registration in the Neptun is necessary for an unoccupied exam place. Grade improvement will not be considered as 'B' chance.
Students spending any block practice are not allowed to take exam during block practice period.
6. Those students who are allowed to complete the block practice abroad after the end of the semester can start their exams earlier, including even block practice period (depending on decision of Registrars Department).
7. Lecture book will be signed after successful written exam by the head of the department or by the group tutor. In the 5th academic year the 'Neurology II' may not be started without passing the I. semester ('Neurology I') exam and getting signature for first semester.

8. Lecture books must be brought to the Secretary and they can be taken from the Secretary only in Student time (Monday, Wednesday, Friday 11:00-12:00). Please ensure that your lecture book has been submitted to the department for signing within 3 weeks after finishing each semester. If you fail to comply with this requirement, special personal written permission from your tutor must be obtained then the lecture book may be signed only by the head of the department.
9. The 6th academic year may not be started without signatures for both the first and second semesters of the 5th year.
10. Please be considerate of the dignity of the patients when visiting the wards, laboratories and outpatient units. Inappropriate behavior (laughing, expressing boredom, etc.) during patient demonstration or examination is embarrassing for the patients and should be avoided. All patient data must be treated confidentially. The patient's chart is a legal document. It may be used only on the ward. The patient's chart may not be photographed, copied or removed. If you make notes for yourself, please use only the patients' initials.

Department of Pediatrics

Subject: **PEDIATRICS I.**
Year, Semester: 5th year/1st semester
Number of teaching hours:
Lecture: **20**
Practical: **10**

1st week:
Lecture: 1. The field of pediatrics. Pediatric epidemiology. The healthy newborn infant. Anatomical and physiological features. 2. Cardiopulmonary adaptation. Pediatric emergencies in the delivery room. Lecturer: György Balla M.D., Ph.D., D.Sc.

2nd week:
Lecture: 3. Principles and practice of mechanical ventilation. Birth injuries, intracranial bleeding. Lecturer: Tamás Kovács M.D. 4. Respiratory distress syndrome (IRDS, BPD). Lecturer: Andrea Nagy M.D.

3rd week:
Lecture: 5. Special problems of perinaturity (ROP, NEC, DAP). Lecturer: György Balla M.D., Ph.D., D.Sc. 6. Techniques of natural and artificial feeding. Special formulas. Vomiting in Neonates and infants. Lecturer: Judit Kovács M.A.

4th week:
Lecture: 7. Hemolytic disease of the newborn. Jaundice in the neonatal and infant period. Lecturer: Éva Oláh M.D., Ph.D., D.Sc. 8. The Hemorrhagic Disease of the Newborn. Lecturer: Csongor Kiss M.D., Ph.D., D.Sc.

5th week:
Lecture: 9. Central nervous system in newborns. Peri- intraventricularis bleeding. Lecturer: Andrea Nagy M.D. 10. Seizures in infants and newborns. Hypoxic damage, Periventricular leukomalatia. Habilitation. Lecturer: Ilona György M.D., Ph.D.

6th week:
Lecture: 11. Birth injuries. Lecturer: Éva Oláh M.D., Ph.D., D.Sc. 12. Neonatal characteristics of renal function, urinary tract disorders. Lecturer: Tamás Szabó M.D., Ph.D.

7th week:
Lecture: 13. National Holiday - No Lecture. 14. Hypo- and hyperglycemina, metabolic diseases,

screening. Lecturer: Enikő Felszeghy M.D., Ph.D.

8th week:
Lecture: 15. Fluid and electrolyte balance. Acid-bace balance disorders: acidosis, alkalosis. Lecturer: Tamás Kovács M.D. 16. Neonatal immunological characteristics. Vaccinations. Lecturer: Rita Káposzta M.D., Ph.D.

9th week:
Lecture: 17. Intrauterine and neonatal infections. Lecturer: György Balla M.D., Ph.D., D.Sc. 18.Cardiac emergencies in newborns and infants. Lecturer: Gábor Mogyorósy M.D., Ph.D.

10th week:
Lecture: 19. Congential and aquired diseases of the gastrointestinal tract requiring surgical intervention in neonates ans young infacts. Lecturer: István Csízy M.D., Ph.D. 20. Disorders of the Ca metabolism. Rickets, tetany, hypercalcemia. Lecturer: István Ilyés M.D., M.Sc., Ph.D.

Requirements

Place: Lecture Hall of Institute of Pediatrics
Requirements for signing the lecture book: Attendance of practices is mandatory. In case of more than one absence, the signature of the lecture book will be refused except in case of documented serious disease or other reasonable cause to be discussed with the senior lecturer in charge for the 5th year English curriculum. Absences should be made up, compensation will be arranged individually by the senior tutors of the groups. Development of proper skills in pediatric patient's examination is expected as checked by the senior tutors on the last practice.
Requirements of examination: course evaluation through a 5 scale practical grade according to the last week test which is based on the practices and lectures.
The subject Pediatrics I. (AOGYE03T9) includes course material equivalent to 2 credits according to the electronic, Module-based teaching program entitled " Neonatology-Pediatrics module

Department of Psychiatry

Subject: **PSYCHIATRY I.**
Year, Semester: 5th year/1st semester
Number of teaching hours:
Lecture: **20**
Practical: **20**

1st week:
Lecture: Historical background of psychiatry. The psychiatric illness. The psychiatric interview, history. Signs and symptoms of mental disorders.
Practical: The doctor-patient relationship. Examination of the psychiatric patient.

2nd week:
Lecture: Liaison psychiatry. Overlap between psychiatry and other medical fields. Psychological tests. Clinical rating scales in psychiatry.
Practical: Anamnesis. Mental state examination I.

3rd week:
Lecture: Organic mental syndromes and disorders I. Delirium. Organic mental syndromes and disorders II. Dementia.
Practical: Mental state examination II. Psychological and clinical rating tests.

4th week:
Lecture: Substance-Related Disorders. General principles. Alcohol, Cannabis-, Caffeine-, Cocaine-, Opioid-Related Disorders. Impulse control disorders. Gambling.
Practical: Drug dependent states. Alcohol related disorders.

5th week:
Lecture: Mood disorders I. Major Depressive Disorders. Dysthymic Disorders. Mood disorders II. Bipolar and Cyclothymic Disorders.
Practical: Mood disorders.

6th week:
Lecture: Schizophrenia I. Schizophrenia II. Etiology. Treatment.
Practical: Examination of the schizophrenic patient.

7th week:
Lecture: Anxiety disorders. Generalised anxiety disorder. Posttraumatic stress disorder. Panic disorder and agoraphobia.
Practical: Examination of the anxious patient.

8th week:
Lecture: Neurochemical basis of normal and abnormal behavior. Laboratory tests in psychiatry. Delusional disorder and other psychotic disorders.
Practical: Examination of the anxious patient.

9th week:
Lecture: Normal and pathological sexual behavior. Sleep and disorders of sleeping. Eating disorders.
Practical: Examination of the neurotic patient.

10th week:
Lecture: Obsessive-compulsive disorder and phobias. Dissociative disorder. Somatoform disorders.
Practical: Psychiatric symptoms related to general medical conditions.

Requirements

Practical exam

Division of Emergency Medicine

Subject: **EMERGENCY MEDICINE**
Year, Semester: 5th year/1st semester**,** 5th year/2nd semester
Number of teaching hours:
Lecture: **20**
Practical: **20**

1st week:
Lecture: General approach of emergency care, urgency levels, transportation trauma, etc.
Practical: Initial assessment and treatment with the airway, breathing, circulation, disability, exposure, (ABCDE) approach in emergency medicine. Practical approach of emergency medicine. Prehospital Management. Airway management. Symptoms of airway obstruction.

2nd week:
Lecture: Cardiac arrest, levels of cardiopulmonary resuscitation, basic life support, professional basic life support, advanced life support, post resuscitation care.
Practical: BLS.

3rd week:
Lecture: Cardiac rhythm disturbances. Hypertensive emergencies. Syncope, endocrine, metabolic and acid-base emergencies.
Practical: Delivery in the field. Gastric lavage. Safe defibrillation. AEDs, manual defibrillators.

4th week:
Lecture: Chest pain, acute coronary syndromes, pulmonary embolism, aortic dissection.
Practical: Indications and limitations of peripheral vein maintaining. The vein puncture. The intraosseous access. Central vein catheterization

5th week:
Lecture: Shock. Acute severe allergic manifestations, anaphylaxis. Respiratory failure.
Practical: CPR practice.

6th week:
Lecture: Stroke, headache, subarachnoid hemorrhage, convulsions, acute confusional state, coma.
Practical: The position of emergency care. Pre-hospital specialties. Diagnostic and therapeutic specialties.

7th week:
Lecture: Poisoning Psychiatric emergencies.
Practical: Wound care. Care of different bleedings. Techniques of fixation. Laying positions.

8th week:
Lecture: Abdominal pain. Gastrointestinal tract bleeding. Vomiting and diarrhea. Obstetric and gynecologic emergencies.
Practical: Indications and limitations of peripheral vein maintaining. The vein puncture. The intraosseous way. Central vein catheterization Rautek maneuvers. Rapid trauma survey.

9th week:
Lecture: Pediatric emergencies -cardiac arrest in childhood, acute circulatory and respiratory failure, seizures, etc.
Practical: Consultation.

10th week:
Lecture: Abdominal pain. Gastrointestinal tract bleeding. Vomiting and diarrhea. Obstetric and gynecologic emergencies. Pediatric emergencies -cardiac arrest in childhood, acute circulatory and respiratory failure, seizures, etc.
Practical: CPR practice. Consultation.

Requirements

Requirements for signing the lecture book:

For obtaining the signature at the end of the semester you are required to attend all practices. In case of absence you have to do the practice at a chosen time, written excuse is not accepted. Concerning the supplementary practice you have to contact your physician responsible for the practices. Facilities for maximum 2 (two) complementary practices are available at the Ambulance station in Debrecen. If somebody will have more than 2 missed practices will get no signature. Evaluation: The students write a test every week about previous week lectures topic. The final examination consists of an oral and a practical part. Students can only go for the oral exam in case they pass the practical exam. You can register for the exam before the beginning of the examination period. In case you fail to register for the exam we consider it as a failed A chance and a B chance is required.

The subject Emergency medicine (AOOXY03T9) includes course material equivalent to 0.5 credits according to the electronic, Module-based teaching program entitled “Basic Life Support module (BLS)” and course material equivalent to 2.0 credits according to the electronic, Module-based teaching program entitled “Advanced Life Support module (ALS)”

Institute of Behavioural Sciences, Faculty of Public Health

Subject: **BEHAVIOURAL SCIENCES FINAL EXAM**
Year, Semester: 5th year/1st semester
Number of teaching hours:

Requirements

The final examination of behavioural sciences covers all the materials of medical psychology, bioethics, medical anthropology, medical sociology and behavioural medicine.
In the written „A" exam 100 test questions should be solved. All of the students must solve the medical psychological and bioethical tests but only **two subjects**' tests should be chosen from medical anthropology, medical sociology and behavioural medicine.

Evaluation of the final examination grade:
0-50% – fail,
51%-60% – pass,
61%-70% – satisfactory,
71%-80% – good,
81%-100% – excellent.

In the case of „B" and „C" oral exams the students have to answer an item on the list of questions in front of a teachers' board.

Readings for Final Exam on Medical Psychology and Behaviour Medicine

Csabai, M. and Molnar, P.(2000)***:***. Springer, Budapest.
www.peditop.com Communication chapter

Readings for Final Exam on Medical Anthropology

Helman, Cecil, G.(2007): *Culture, Health and Illness. Hodder Arnold, London.* (different editions are available)
The body: cultural definitions of anatomy and physiology
Doctor-patient interaction
Gender and reproduction
Pain and culture
Culture and pharmacology: drugs, alcohol and tobacco
Cross-cultural psychiatry (Titles of chapters can slightly differ in different editions.)
+ HANDOUTS - http://www.mti.deoec.hu
Readings for Final Exam on Biothics

Handouts: *in Microsoft word and Pdf. format* -http://www.mti.deoec.hu
Jay E. Kantor(1989): *Medical Ethics ofr Physicians-in-Training.*Plenum, NY and London.

Readings for Final Exam on Medical Sociology

Armstron, D.(1994): *Sociology as applied to medicine*. Butterworth-Heinemann, Oxford.

Seniro, M. and Viveash, **B**. (1997): *Health and illness. Skills-based sociology.* Macmillan, London.
Bowling, A. (1998): *Measuring Health. Measuring disease*. Ballmoor, University Press.

Department of Anesthesiology and Intensive Care

Subject: **ANESTHESIOLOGY AND INTENSIVE CARE**
Year, Semester: 5th year/2nd semester
Number of teaching hours:
Lecture: **10**
Practical: **20**

1st week:
Lecture: General guidelines of anesthesiology and intensive care. Severity scoring systems.
Practical: Securing airways.

2nd week:
Lecture: Respiratory insufficiencies: definition, causes, types and basic guidelines of treatment
Practical: Monitoring ventilation

3rd week:
Lecture: Oxygen therapy and artificial ventilation
Practical: Practical demonstration of oxygen therapy and mechanical ventilation. Practical conduct of mechanical ventilation

4th week:
Lecture: Intensive treatment of the hemodynamically unstable critically ill
Practical: Possibilities of hemodynamic monitoring: CVP, pulmonary artery catheter, PiCCO, NICO, central venous oxygen saturation etc.

5th week:
Lecture: Life-threatening disturbances of fluid-electrolyte balance. Guidelines of volume therapy
Practical: Indications and practice guidelines of clinical nutrition

6th week:
Lecture: The treatment of the acid-base disturbances
Practical: The diagnostic steps and treatment of acid-base disturbances

7th week:
Lecture: Sepsis and multiple organ failure
Practical: Intrahospital transport of the critically ill

8th week:
Lecture: Brain death and donor conditioning
Practical: The daily anesthesiological and intensive care work at the place of your practicals

9th week:
Lecture: General (intravenous and inhalational) anesthesia
Practical: Anesthesiological risk. Premedication

10th week:
Lecture: Regional anesthesia
Practical: The anesthesia working place

Requirements

Conditions of signing the Lecture book: The student is required to attend the practicals, two absences are allowed in a semester. Any further absences are accepted if the student attends the practical of another group and certifies his/her absence. Exam: The exam consists of two parts. MCQ-s have to be filled first as minimal requirements. In order to continue the exam at least 60% of the answers must be correct. The oral part contains questions related to the lectures and practicals. Every student has to answer two oral questions. In case of uncertainty, the examiner might ask other questions related to other topics in order to make sure his decision on the mark given.

Department of Forensic Medicine

Subject: **FORENSIC MEDICINE II.**
Year, Semester: 5th year/2nd semester
Number of teaching hours:
Lecture: **10**
Practical: **10**

1st week:
Lecture: Sudden death I.
Practical: Practices between 1st - 11th week: Autopsy cases, case studies and consultation on the above mentioned topics.

2nd week:
Lecture: Sudden death II.

3rd week:
Lecture: Sudden infant death syndrome. Non-accidental injuries to children. Child abuse.

4th week:
Lecture: Abortion. Infanticide.

5th week:
Lecture: Sex crimes and problems.

6th week:
Lecture: Unidentified and missing persons. Forensic anthropology.

7th week:
Lecture: Legal aspects of medical practice.
Practical: Visiting the Toxicology lab.

8th week:
Lecture: Deaths due to medical treatment. Forensic toxicology.

9th week:
Lecture: Alcohol intoxication. Legal aspects. Forensic toxicology.

10th week:
Lecture: Drug related death. Forensic toxicology

11th week:
Lecture: Forensic psychiatry.

Department of Internal Medicine

Subject: **INTERNAL MEDICINE VI. (HAEMATOLOGY, HAEMOSTASEOLOGY)**
Year, Semester: 5th year/2nd semester
Number of teaching hours:
Lecture: **15**
Practical: **10**

1st week:
Lecture: 1. Haemopoiesis. Basic principles, normal values, aplastic anaemia, agranulocytosis. 2. Non-Hodgkin lymphomas I - classification, diagnostics
Practical: Bone marrow failure: aplasia, agranulocytosis, neutropenia, deficiency anaemias

2nd week:
Lecture: 1. Non-Hodgkin lymphomas II - treatment. 2. Hodgkin's lymphoma
Practical: Leukocytosis. Benignant and malignant haematologic disorders with special focus on AML, ALL, CLL and CML.

3rd week:
Lecture: 1. Acute leukaemias. 2. Chronic myeloproliferative disorders: PV, ET, MF
Practical: Lymphoma patients. Hodgkin-, and Non-Hodgkin Lymphomas.

4th week:
Lecture: 1. Hemolytic anaemias 2. Differential diagnosis of anaemia. Iron deficiency. Megaloblastic anaemia. Myelodysplastic syndrome
Practical: Thrombophilia, thromboembolism. Clinical signs, diagnosis, therapy.

5th week:
Lecture: 1. Chronic myelogenous leukaemia. 2. Chronic lymphocytic leukaemia. Multiple myeloma. Waldenström macroglobulinaemia.
Practical: Bleeding tendency (ITP, TTP, DIC, HIT, haemophilia, Willebrand-disease). A practical approach.Diagnosis, therapy

6th week:
Lecture: Hemopoietic stem cell transplantation

7th week:
Lecture: Inherited and acquired thrombophilias. Antithrombotic therapy induced bleeding

8th week:
Lecture: Inherited and acquired thrombophilias. Antithrombotic therapy induced bleeding.

9th week:
Lecture: Thrombocytopenias (ITP, DIC, TTP, HIT).

10th week:
Lecture: Coagulopathies (haemophilia, von Willebrand disease). Platelet disorders.

Requirements

Attending the lectures is not compulsory; however, it is highly recommended.
Participation at the practical lessons is compulsory. Since topics of the practices are very strict and only five haematological practices are available, no supplementary or „replacement” practices (e.g. weekends, other days, etc.) can be accepted! N.B. The importance of practical skill (physical and laboratory examination) will be in focus. The guide given above might be a matter of change according to the actually available patients.
Students are strongly recommended to prepare for the seminars since those will be interactive!
Examination:

A. Written test, the minimum questions can be downloaded from the following website:
, under the tag” *Education”*.
B. Oral examination: practical questions and 2 titles.
Exam entrance only with signed Lecture Book.

Leader of Block Practice: G. Pfliegler MD Deputy leader: P. Batár MD PROGRAM -Working hours: 7:45 am – 13:45 pm, from Monday to Friday -Each day 5 students from 4th year and 3 students from 5th year should attend Morning discussion at 8:15 am., Rak Library (2nd floor of the old wing of 2nd Dept. Med.) -Students participate in the everyday practice of their tutor's ward. Beside this they attend visits, outpatient services, laboratories (endoscopy, haemostasis, haematology). -They have to attend one shift (8 am – 2 pm – 8 pm) at the Emergency Outpatient Service (1st Department of Internal Medicine), as well as one afternoon duty at the 2nd Department of Internal Medicine (2-10 pm). -Names of Tutors see below! -Exact dates with the names for Emergency Ward see below, afternoon duties in the 2nd Department of Internal Medicine will be made ready by the students for the second day of block practice. -One day leave with good reasons is allowed but has to be replaced by an additional working shift. Detailed program Location: Rak Library (2nd floor) Working hours 7:45 am – 13:45 pm Consultations, case presentations: 12 o'clock 1st Day (Monday): opening discussion 9 o'clock. Hematology/hemostaseology/rare diseases consultations 3rd day, Wednesday: consultation (Dr. Pfliegler) 4th day, Thursday: consultation (Prof. Z. Boda) 9th day, Tuesday: consultation (Prof. A. Kiss.) 11th day, Thursday: consultation (Prof. M. Udvardy) Closing session: the last day of practice (Prof. Boda – Dr. Batár) THE PARTICIPATION ON CONSULTATIONS OF THE APPROPRIATE YEAR IS MANDATORY (i.e. HEMATOLOGY-HEMOSTASIS-RARE DISEASES FOR 5th YEAR, ENDOCRINOLOGY-NEPHROLOGY FOR 4th YEAR) but STUDENTS ARE ALSOENCOURAGED TO PARTICIPATE AT EACH CONSULTATION, i.e. 4th YEAR STUDENTS ON 5th YEAR CONSULTATIONS AND VICE VERSA. Each day's attendance must be signed by the tutor! At the end of the block practice the tutors handle the signed sheets to the Block Leader, who is entitled to present them to the Education Office! It is mandatory for students to bring -Labcoat -Stethoscope -Pencil or pen, notepad

Department of Neurology

Subject: **NEUROLOGY II.**
Year, Semester: 5th year/2nd semester
Number of teaching hours:
Lecture: **10**
Practical: **10**

1st week:
Lecture: 1. Emergency in neurology I

2nd week:
Lecture: 2. Emergency in neurology II

3rd week:
Lecture: 3. CNS compl. of internal med. diseases

4th week:
Lecture: 4. Lobar syndromes

5th week:
Lecture: 5. Neuromuscular diseases

6th week:
Lecture: 6. Dementia

7th week:
Lecture: 7. Mono- and polyneuropathies

8th week:
Lecture: 8. CNS: infectious diseases

9th week:
Lecture: 9. Sleep disturbances

10th week:
Lecture: 10. Medical self-defense

Requirements

Consulting hours for Manager of educational matters: Monday 11:00 - 14:00 and Friday 11:00 - 14:00. If it is necessary, Managers of educational matters for Hungarian and English speaking students are substitutes for each other.
Student time at Secretary: Monday 11:00 - 12:00, Wednesday 11:00 - 12:00 and Friday 11:00 - 12:00

1. Neurology I. may be admitted only with successfully finished
2. There are 10 lectures in the 2nd semester (1 hour lecture/week 10 times). Attending lectures is highly recommended.
3. There is a written competition before the beginning of exam period, if possible after the end of the lectures. Material covered in the lectures (both I. and II. semester) is asked at competition. The competition is not the 'A' exam.
The first three placed students get certificates, may request recommendation letter from the head of the Department, and if it is possible, prize will be given as well. If at least 50% of answers are correct grade for the end of the semester might be offered. Maximum 20% of participants receive offered grade, within this 20% students get 'excellent' (first half) and 'good' (second half) as an offered grade. Offered grades must be accepted in the Neptun until the end of the following week (after the date of competition). If it is not accepted the student will have to take the exam again.
Those students who got certificates, excellent grade will be offered for practical exam at final exam in the VI. year.
4. 2nd semester will end with a written exam (test exam, four possible answers, one correct). Places for exam are opened every week during exam period. Students have to register on Neptun for the exam. Without registration the exam cannot be taken. The first exam is the 'A' chance, the second exam is the 'B' chance, both are written (test) exams. If somebody failed 'A' and 'B' chance the third possibility is the 'C' chance, which is oral exam at the respective group tutor. In this case the student has to agree an appointment with the group tutor. Material covered in the lectures and practices (both I. and II. semester) are asked at exams.
Grade improvement is possible once, in this case registration in the Neptun is necessary for an unoccupied exam place. Grade improvement will not be considered as 'B' chance.
5. Students spending any block practice are not allowed to take exam during the block practice.
6.Those students who are allowed to complete the block practice abroad after the end of the semester can start their exams earlier, including even block practice period (depending on decision of Registrars Department).
7. There are five one and a half hour long practices in the second semester (1 practice/week/group). The purpose of these practices are to learn the neurological examination. Please arrive at the practices on time. Participation at the practices is obligatory. Only one excused absence out of the 5 occasions is accepted. The students must provide a written medical (in case of any illness) or official certificate (in case of an unexpected serious event) about the reason of the absence. If no written certificate is available the student must participate at the practice of an other class at the same week to make up the material. At the same time maximum 3 foreign students are allowed to

participate at the practice of an other group. The student needs to provide a written form about this supplement. All the students must attend the practice of their own group, making up at a different group is allowed only once, if a certified absence is present. If a student has more than one excused practice in a semester, his or her lecture book will not be signed, he or she must repeat the semester regardless of the reason. Participation in the practice is verified by the group tutor.
8. After the second semester a written final exam must be taken (test exam, four possible answers, one correct). Lecture book will be signed after successful written exam.
9. Lecture books must be brought to the Secretary and they can be taken from the Secretary only in Student time (Monday, Wednesday, Friday 11:00-12:00). Please ensure that your lecture book has been submitted to the department for signing within 3 weeks after finishing each semester. If you fail to comply with this requirement, special personal written permission from your tutor must be obtained, then the lecture book may be signed only by the head of the department.
10. The 6th academic year may not be started without signatures for both the first and second semesters of the 5th year.
11. Please be considerate of the dignity of the patients when visiting the wards, laboratories and outpatient units. Inappropriate behavior (laughing, expressing boredom, etc.) during patient demonstration or examination is embarrassing for the patients and should be avoided. All patient data must be treated confidentially. The patient's chart is a legal document. It may be used only on the ward. The patient's chart may not be photographed, copied or removed. If you make notes for yourself, please use only the patients' initials.

Department of Ophthalmology

Subject: **OPHTHALMOLOGY**
Year, Semester: 5th year/2nd semester**,** 5th year/1st semester
Number of teaching hours:
Lecture: **10**
Practical: **20**

1st week:
Lecture: 1. Diseases of the conjunctiva and the cornea. 2. Diseases of the lacrimal apparatus.
Practical: Admission. Anamnesis. External examination. Eyelid aversion.

2nd week:
Lecture: 3. Lens, Cataract. 4. Diseases of the retina
Practical: Visual acuity (definition, how to check). Refractive errors, trial lenses. Eyeglass prescription.

3rd week:
Lecture: 5. Tumors 6. Strabismus
Practical: Keratometry, topography, contact lenses. Low vision aids.

4th week:
Lecture: 7. Glaucoma 8. Diseases of the uvea and the vitreous
Practical: Visual field, perimetry. Color vision.

5th week:
Lecture: 9. Orbit and the Lids 10. Trauma
Practical: Examination of the anterior segment of the eye.

6th week:
Practical: Fundoscopy

7th week:
Practical: FLAG, LASER, OCT, UH

8th week:
Practical: Tonometry. Lacrimal system probing

and irrigation. Wound care, Bandages. Irrigation of the conjunctival sac.

9th week:
Practical: Drugs in ophthalmology, surgical videos

10th week:
Practical: Pictures of the practical exam.

Requirements

Conditions of signing the Lecture book
Participation at the practicals is compulsory. Missed practicals can be replaced by attending practical with another group in the same week. If this is not possible, replacement is also possible by spending two hours at the Clinic, when the student's practical teacher is on duty. The head of the Department may refuse signing of the Lecture book in cases of one or more missed practicals until replacement is done. Three out of the ten lectures are seminars (compulsory lectures). These are Retina, Glaucoma and Trauma. The list of lectures (subject, date, lecturer) is given in written form to the students at the first lecture. Those who miss one or more of the three seminars will get extra questions at the exam from the most important parts of the missed seminar(s). Attendance of lectures is recommended as pictures of the most important eye diseases are shown during lectures. To see these pictures not only helps to prepare for the exam, but have to be learned even if the student missed one or more of the lectures.

At the end of the semester the student is required to take the oral final examination (FE), which consists of a practical and a theoretical part. In the practical examination the student is required to make the diagnosis of 5 ophthalmological diseases shown in pictures. To help this there is a set of pictures shown on the Department's website www.szemklinika.deoec.hu. Five out of these pictures have to be recognized at the exam (practical exam) before the student gets theoretical titles. Both the pictures and the extra questions taken from seminars aim parts of Ophthalmology that are considered to be important for the medical practice of a non-ophthalmologist general practitioner. List of titles are also accessible on the website. The student has to register for the FE before the exam, choosing the requested date shown to be available on the Neptun system.

Department of Otolaryngology and Head and Neck Surgery

Subject: **OTOLARYNGOLOGY**
Year, Semester: 5th year/2nd semester**,** 5th year/1st semester
Number of teaching hours:
Lecture: **10**
Practical: **20**

1st week:
Lecture: 1. Anatomy and Physiology of the ear. Disorders of the Pinna, ExternaL Auditory Canal and Acute Otitis 2. Tests of the Auditory Apparatus
Practical: Exposition of general methods in otorhinolaryngology. Demonstration of instruments required at basic examinations: practicing of their use. (Use of the head mirror, otological examination with aural-speculum, examination with Otoscopy, rhinoscopy anterior, rhinoscopy posterior, laryngeal examination with mirror, pharyngeal examination). Physiology of hearing-practice in audiometry (whispering

speech, conversational speech, examination s with tuning-fork, treshold audiometry, objective audiometry and special tests). Audiometrical methods in practice.

2nd week:
Lecture: 1. Chronic Otitis Media 2. Complications of Otitis Media
Practical: Symptomatology of ear diseases, Investigation of functioning of auditory tube (Valsalva's experiment, Polizter's test, tympanometry). Vestibular examinations. Evaluation of spontaneus vestibular symptoms. Incuded examinations. (Rotatorical examination of electrical rotatory chair, electrony stagmography, analysis of optokinetic and positional nystagmus). Demonstration ofexamination methods.

3rd week:
Lecture: 1. Disorders of the Cochlea Rehabilitation of the sensorineural hearing loss. 2. Anatomy, Physiology and Disorders of the nose.
Practical: Exposition and demonstration of ear operations, Tympanoplastical operations. Antrotomy, mastoidectomy, the essence of radic, ear operation. (Operating theater, videoprogram). Nose and paranasal sinus operations, nasal endoscopy videoprogram). Demonstration of maxillary sinus punction Indications of tonsillectomy and adenotomy. Sight of the operation. Control method of epistaxis. Anterior nasal packing and Belloque-tamponade.

4th week:
Lecture: 1. Malignant tumor of the nose & paranasal sinuses. 2. The Pharynx (Anatomy, Physiology, Inflammatory Disorders, Neoplasm)
Practical: Diff. diagnosis of cervical masses. Cervical nodes, cervical trigones. Importance of cryosurgery in otorhinolaryngological practice. Examination of patientes. Malignant diseases of larynx. Presentation of larynx operations/video or Operating theater/. Examination of patients. Examinations with the endoscope in otorhynolaryngological practice.

5th week:
Lecture: 1. The Larynx (Anatomy, Physiology, Inflammatory diseases) 2. Benign and malignant tumor of hypopharynx and larynx.
Practical: Demonstration of microlaryngoscopy and oesophagoscopy. Laryngological connections of Laser surgery/video or operating theater. Use of laryngoscope. Examinations of patientes. Practice otorhinolaryngological examination methods. Demonstration of microlaryngoscopy and oesophagoscopy. Laryngological connections of Laser surgery/video or operating theater. Use of laryngoscope. Examinations of patients. Practice otorhinolaryngological examination methods.

Requirements

Attendance at seminars is compulsory. Missed seminars should be made up for by the student at the later date to be discussed their tutor. Lecture book will be signed if every missed seminars substituted.

Department of Pediatrics

Subject: **PEDIATRICS II.**
Year, Semester: 5th year/2nd semester
Number of teaching hours:
Lecture: **15**
Practical: **10**

1st week:
Lecture: Allergic respiratory diseases in childhood. Differential diagnosis in respiratory diseases in childhood.
Practical: Practices, related to the topics of lectures, are being held in the Lecture Room of the Department and at the Wards.

2nd week:
Lecture: Childhood leukemia in modern diagnosis and therapy. Bone marrow transplantation. Haemorrhagic diathesis (coagulopathy, platelet disorder).Differential diagnosis of anemia, deficiency and hemolytic anemia.

3rd week:
Lecture: Malignant solid tumors in childhood. Fainting states and epilepsy.

4th week:
Lecture: Pediatric gastroenterology diseases. Inflammatory bowel disease, gastroesophageal reflux. Endocrine problems in children.

5th week:
Lecture: Glomerulonephritis. Nephrotic syndrome. Acute and chronic renal failure. Of the kidney and urinary tract malformations and diagnostics.

6th week:
Lecture: Congenital heart diseases. Cyanotic and acyanotic heart lesions.

7th week:
Lecture: Exanthema in pediatric diseases.

8th week:
Lecture: Treatment for children with type 1 (insulin-dependent) diabetes mellitus.

9th week:
Lecture: Primary and secondary immune deficiencies in children. Autoimmune syndromes.

10th week:
Lecture: Emergency childcare poisoning.

11th week:
Lecture: Differential diagnosis and treatment of infants and children with dyspnea (upper and lower respiratory stenosis, pneumonia).

12th week:
Lecture: Contemporary evaluation of pediatric gastrointestinal diseases. Chronic non specific inflammatory bowel diseases.

13th week:
Lecture: Frequent cardiac symptomes in childhood. Pediatric cardiac arrhythmias.

14th week:
Lecture: Glomerular diseases. The nephrotic syndrome. Acute renal failure.

Requirements

Requirements for signing the lecture book: Attendance of practices is mandatory. In case of more than one absence the signature of the lecture book will be refused except in case of documented serious disease or other reasonable cause to be discussed with the senior lecturer in charge for the 5th year English curriculum. Absences should be made up, compensation will be arranged individually by the senior tutors of the groups.

Exam: Obtaining signature of the lecture book. Prearranged exam appointment strictly within the exam period as given by the Department of Education (to be obtained from the secretary of the Department, students are kindly requested to come to do the exam in a group of 5-15 students in an exam day; changes in the exam schedule should be made at least 24 hours -1 working day - prior to the scheduled exam). Type of examination: AW5 - oral exam, two titles.

Department of Psychiatry

Subject: **PSYCHIATRY II.**
Year, Semester: 5th year/2nd semester
Number of teaching hours:
Lecture: **10**
Practical: **20**

1st week:
Lecture: Psychosomatic disorders
Practical: Psychosomatic diseases

2nd week:
Lecture: Theories of Personality and Psychopathology. Psychoanalysis.
Practical: Examination of personality, personality tests

3rd week:
Lecture: Normal and pathological development of personality
Practical: Examination of personality, personality tests

4th week:
Lecture: Personality disorders
Practical: Examination of personality disorders

5th week:
Lecture: Psychoteherapies I.
Practical: Indication of psychotherapy

6th week:
Lecture: Psychoteherapies II.
Practical: Types of psychotherapies

7th week:
Lecture: Child psychiatry
Practical: Child psychiatry

8th week:
Lecture: Emergency cases in psychiatry(Crisis, suicide)
Practical: Crisis intervention

9th week:
Lecture: Emergency cases in psychiatry(Aggressivity and restraining measure)Legal regulations in psychiatry
Practical: Management and treatment of the aggressive patient

10th week:
Lecture: Rehabilitation of psychiatric patients
Practical: Rehabilitation in psychiatry

Requirements

Practical exam

Division of Clinical Oncology

Subject: **CLINICAL ONCOLOGY**
Year, Semester: 5th year/2nd semester
Number of teaching hours:
Lecture: **20**
Seminar: **7**

Requirements

The student is required to attend the lectures and seminars. Two absences are allowed regarding seminars. Visiting the lectures is strongly advisable. The final exam will be a written test, covering the topics of oncology.

Faculty of Medicine

Subject: **INFECTOLOGY**
Year, Semester: 5th year/2nd semester
Number of teaching hours:
Lecture: **15**
Practical: **20**

Detailed information about weekly thematic and requirements will be announced before the 2nd semester.

CHAPTER 19
ACADEMIC PROGRAM FOR THE 6TH YEAR

Internal Medicine	10 weeks
Pediatrics	7 weeks
Surgery	5 weeks
Neurology	4 weeks
Psychiatry	4 weeks
Obstetrics and Gynecology	5 weeks

Subject: **INTERNAL MEDICINE**
Requirements of the internship in Internal Medicine
Duration:**10 weeks**
Working hours**: 8 am. to 2 pm.**
Working regulations: Students are entitled to work under the supervision of their tutors. The time schedule enables them to spend app. - 2 weeks in each special ward (e.g. hematology, outpatient service, gastroenterology, general medical, etc.) where they have to participate in the everyday clinical work - similarly to the residents. They will also get opportunities to become familiar with the laboratories (hematology, gastroenterology, hemostasis, clinical chemistry).
Duties: each week one duty (2 pm. - 10 pm.) is required.
Organized consultations: on special topics are also available.
Examination: consists of a practical, and an oral (two titles) part.
Notice: only those with a successful written and practical examination have the right to enter the oral part. In case of a failed exam the student must spend an additional practical period (5 weeks) plus 1 week preparation period according to the rules.

Subject: **NEUROLOGY**
REQUIREMENTS OF THE NEUROLOGY INTERNSHIP
Duration of the rotation is **4 weeks**.
Working hours are from**8 am. to 2 pm.**
The students must work under the supervision of their tutor. They spend one week in each department including the outpatient department. They make daily rounds with the staff of the ward and take part in new patient work-ups.
The student must visit the laboratories: ultrasound laboratory, electrophysiology laboratories (EEG, EP, EMG), chemistry laboratory and neuropathology. A selected topic should be presented at a morning meeting. Consultation is available.
The final examination consists of three parts: minimum questions (computer-based test), practical and oral. If the student fails the written or practical exam, he or she may not proceed to the oral exam.
If the student fails the exam, he or she must spend an extra two weeks of practice at the department.

The minimum questions can be found at: http://www.neuropath.dote.hu/ideg/minimum.htm

Subject: **PSYCHIATRY**
REQUIREMENTS OF THE PSYCHIATRY INTERNSHIP

Duration: **4 weeks**
Working hours:**8 am. to 2 pm.**
The students must work under the supervision of their tutor. They spend 2 weeks in the man's ward and 2 weeks in the woman's ward. During this period they must spend 2 days in the outpatient's department. They make daily rounds with the staff of the ward, take part in the investigation of the new patients.
Students must visit the psychological laboratory, they must take part in group therapy and music therapy (weekly). Consultation is available.
The final examination consists of two parts:
Practical: They have to demonstrate how to make a case history, how to check the attention, etc.
Oral: three titles
If the student could not pass the examination, he/she must spend one more week with practice in our department.

Subject: **OBSTETRICS & GYNECOLOGY**
Requirements of the internship in OB&GYNE

Requirements for signing the lecture book: Participation in the clerkship program (Duration 5 weeks, to be accomplished in the Dept. of OB&GYNE or in one of the accredited Hungarian teaching Hospitals, or – based on the permission of the Educational Subcommittee – in the OB&GYN department of an acknowledged hospital. 2 weeks are requested to be accomplished in the Dept. of OB&GYN of University of Debrecen. Completion of 4th year block practice here also fulfills this requirement. Students should work under the supervision of the assigned tutors, from 8 am to 2 pm on every working day, following their daily rotation. In case of absence for more than two days the head of the Department may refuse the signature. One day-off is allowed except in case of documented serious disease or other reasonable cause to be discussed with the academic advisor in charge for the 6th year English curriculum. Absences should be made up, compensation will be arranged individually by the tutors. Participation in 1 night-shift per week duties is also requested: from 2 pm to 8 am. Consultation is available on demand.
Requirements of final examination: Obtaining signature of sections of individual practical skills in the practice book by the tutors, confirmed by the academic advisor of 6th year. Based on this, signature of the lecture book.
Registration for the final exam is exclusively through the Neptun system.
Final exam is oral (4 exam titles, in accordance with the current official textbooks, listed in separate chapter).
Repeating of an unsuccessful final exam is possible after 3 additional weeks of practice, completed exclusively in the Department of OB&GYN of University of Debrecen.

Subject: **PEDIATRICS**

Requirements of the internship in Pediatrics

Requirements for signing the lecture book: Participation in the clerkship program (Duration 7 weeks, to be accomplished in the Department of Pediatrics or in one of the accredited Hungarian teaching Hospitals, or – based on the permission of the Educational Subcommittee – in the pediatric department of an acknowledged hospital – maximum 5 weeks – 2 weeks are requested to be accomplished in the Department of Pediatrics of the Medical and Health Science Center of the University of Debrecen. Students should work as resident clerks under the supervision of the assigned tutor from 8 am to 2 pm on every working day. One day-off is allowed except in case of documented serious disease or other reasonable cause to be discussed with the senior lecturer in charge for the 6th year English curriculum. Absences should be made up, compensation will be arranged individually by the tutors. Participation in night-shift duties is also requested according to the pre-set schedule: 2 pm to 10 pm on workdays, 8 am to 10 pm on holidays. Consultation is available on demand.)

Requirements of examination: Obtaining signature of the lecture book.

Prearranged exam appointment strictly within the exam period as given by the Department of Education (to be obtained from the secretary of the Department, students are kindly requested to come to do the exam in a group of 3-8 students in an exam day; changes in the exam schedule should be made at least 24 hours - 1 working day - prior to the scheduled exam).

Type of examination: Final exam, consisting of three parts:

test (credits can be obtained by successful self-check tests to be filled out in the 5th years lectures)

practical exam (history taking, physical examination, building up diagnostic and therapeutic plans for the individual patient, evaluation of the results of the diagnostic procedures, bed-side laboratory skills)

theoretical exam (4 exam titles)

The student is requested to pass each three part of the exam for a successful final mark.

Repeating of the final exam is possible after 3 additional weeks of clerkship to be absolved exclusively in the Department of Pediatrics of the Medical School of the University of Debrecen.

Subject: **SURGERY**

Duration of the rotation is **5 weeks**. Students may spend 3 weeks in another (foreign) acknowledged institute; in this case a minimum of 2 weeks' practice must be spent in our Institute.

Practice hours are between **7.30AM and 1.30PM**(weekdays only).

Each student will be assigned to a tutor and a ward. Students should participate in the operational and ward activities, and also in the outpatient care. Students must work under the supervision of their tutor.

Every student should register for duty service (24-hour in-house call) once per week (weekend days included).

By the end of the rotation, students are expected to be familiar with the basics of surgical wound care, patient examination and history taking, the most common surgical interventions, postoperative management of the surgical patients and the basics of anesthesiology. Students will participate in the surgeries as second assistants.

Final examination consists of two parts: practical (physical examination and case presentation) and theoretical. Those who fail the final exam, should complete an additional 3 weeks of practice.

CHAPTER 20
REQUIRED ELECTIVE COURSES

Department of Biochemistry and Molecular Biology

Subject: **MOLECULAR MECHANISM OF DISEASES CONCERNING GREAT POPULATIONS**
Year, Semester: 3rd year/1st semester
Number of teaching hours:
Lecture: **25**

1st week:
Lecture: Introduction to molecular medicine

2nd week:
Lecture: Genomic medicine

3rd week:
Lecture: Diabetes

4th week:
Lecture: Obesity

5th week:
Lecture: Vitamin D and immundefects

6th week:
Lecture: Cancer I.

7th week:
Lecture: Cancer II.

8th week:
Lecture: Cancer II.

9th week:
Lecture: Osteoporosis

10th week:
Lecture: Immunodeficiencies

Requirements

Attendance on the lectures is compulsory.

Department of Biophysics and Cell Biology

Subject: **COMPUTER SCIENCE**
Year, Semester: 1st year/1st semester**,** 1st year/2nd semester
Number of teaching hours:
Practical: **30**

1st week:
Practical: Exemption Tests.

2nd week:
Practical: Word processor programs, MS Word I. 1. File: save, save as, print, new document, open 2. Editing text 1: input letters, cursor, copy, paste, paste special, cut, move, clipboard, undo, redo 3. Editing text 2: selecting text, mouse, keyboard, shift, control, home, end, pgup, pgdown 4. Home 1: formatting font, font size, font color, typeface, bold, italic, underline, highlighting, super/subscript, customize menu 5. Home 2: formatting paragraph, line spacing, indentation (left, right, first line, hanging), alignment (Tabs: left, center) 6. Home 3: bulleted, numbered list, searching text, find, replace, select all 7. Insert: tables, inserting

pictures, shapes, page numbers, header, footer, page break, symbols, (text box) 8. Page layout: margins, orientation, size, manual setting of margins, columns, line numbers, watermark, page color, page borders
9. References: table of contents
10. Review: Word count, Track changes
Extra Exemption test appointments ONLY for students with late registration!

3rd week:
Practical: Word processor programs, MS Word II.

4th week:
Practical: Word processor programs, MS Word III.

5th week:
Practical: Spreadsheets programs, MS Excel I. 1. Entering data (difference b/w text & numbers), autofill series (numbers, days, months, etc.), adjusting column width 2. Editing: copy, paste, move, inserting/deleting lines/rows, selecting non-adjacent rows/columns (Ctrl) 3. Entering formulas (=), symbols for mathematical operations (+-*/^EXP()), copying cells with formulas, relative/absolute reference 4. Using functions, statistical functions: average, stdev, count, sqrt, countif, if, calculating SEM, etc. 5. Creating charts: bar chart, scatter plot, error bars, labels 6. Formatting charts: colors, symbols, axis scaling, chart title, axis title 7. Data sorting by one or more criteria, filters 8. (Statistical tests (F-test (equal variance test), t-test assuming equal/unequal variances))

6th week:
Practical: Spreadsheets programs, MS Excel II.

7th week:
Practical: Spreadsheets programs, MS Excel III.

8th week:
Practical: Spreadsheets programs, MS Excel IV.

9th week:
Practical: Computerised presentation, MS PowerPoint. 1. Entering text, inserting figures / drawing objects 2. Editing: selecting multiple objects, resizing, rotating, copy, paste, move, undo, redo 3. Colors: background (templates), line, fill 4. Alignment, grouping, order (front/back), arranging objects (distribute horiz. / vert.) 5. Slide sorter, slide show 6. Slide transitions, animations

10th week:
Practical: Fundamentals and basic concepts of informatics.

11th week:
Practical: Logical and physical realization of networks.

12th week:
Practical: Internet.

13th week:
Practical: Summary.

14th week:
Practical: Test I.

15th week:
Practical: Test II.

Requirements

The acquisition of fundamental theoretical and practical knowledge from the function of the modern personal computers. Course description: PC architecture, operating systems, file management, network knowledge, internet and its opportunities of application, word processor, spreadsheet, the usage of presentational programs, the achievement of scientific databases and its use. Without registration, there is no way to do the course! First year students who missed/skipped the exemption test, but signed up for the course in the Neptun must attend the course and do the final test at the end. For students attending the informatics course a maximum of 4 absences are allowed during the semester to receive a signature (we recommend to use as few as possible, in case an emergency comes up). This is taken very seriously! Missing more than 4 classes automatically means losing the chance to pass the course. There will be a final test at the end of the semester. For students attending the informatics course a maximum of 4 absences are allowed during the semester (we recommend to use as few as possible, in case an emergency comes up). This is taken very seriously! Missing more than 4 classes automatically means refused signature therefore losing the chance to pass the course. Every student allowed to make up the missed practicals with another group but only on the given week, if there are enough free seats in the room. For students attending the informatics course a maximum of 4 absences are allowed during the semester to receive a signature (we recommend to use as few as possible, in case an emergency comes up). This is taken very seriously! Missing more than 4 classes automatically means losing the chance to pass the course. There will be a final test at the end of the semester. Every student is allowed to make up the missed practicals with another group but only on the given week, if there are enough free seats in the room. The course start with an exemption test. Only first year students allowed to write the exemption test at the first week of the given semester with their group (appointment should be checked in the given timetable). In any other cases (students older than first year/repeaters/students who are not exempted) has a final test at week 14 of the given semester. There is no other self control test during the semester. At the end of the course students will write a final test. The exemption and the final tests covers topics and skills in connection with Microsoft office Word, Excel, and PowerPoint (versions:2007/2010) programs, as written in the curriculum. Both of the tests (exemption and the final test) are written tests. The tests are practical tests, conducted in the computer room. Students passing the exemption test will automatically receive 5 (excellent) grade at the end of the semester. Final grades based on the final test score will be given according to the following table: 61% = grade 1 (fail) 61%-70% = grade 2 (pass) 71% - 80% = grade 3 (satisfactory) 81% - 90% = grade 4 (good) 91% = grade 5 (excellent) Students should download free Office guide books from the following link. (Email registration is required for downloading files). Students who did not get exemption/did not show up at the exemption test/repeaters/students older than first year MUST ATTEND on the course. They should join to one of the groups mentioned in the timetable. The number of the seats is limited in the classroom. Students who has informatics course in the given appointment (according to the timetable) have priority to attend the lesson. Others are allowed to join to the given group if there are more free seats. Older students have to do the whole course as well. Students passing the exemption test will automatically receive 5 (excellent) grade at the end of the semester. Students who failed the exemption test must attend the course and do the final test at the end. Students having ECDL (European Computer Driving License) are not required to write the exemption test, instead, they can submit exemption request to the Education Office. Until You are waiting for the decisions, You should also come to the course!!!

Subject: **MODERN BIOPHYSICAL METHODS IN BIOLOGY AND MEDICINE**
Year, Semester: 2nd year/2nd semester
Number of teaching hours:
Lecture: **24**

3rd week:
Lecture: Medical applications of NMR and MRI.

4th week:
Lecture: Luminescence spectroscopy. Theoretical background and principles of application of fluorescence spectroscopy to study the structure of proteins, nucleic acids and that of

the cell membrane. Fluorescence conjugation of biomolecules, techniques based on fluorescence polarization and fluorescence resonance energy transfer.

5th week:
Lecture: Modern microscopy methods for structural and functional characterization of cells. Theoretical background of fluorescence microscopy and image processing. Generation of scanning and wide-field images. Detectors, analog/digital conversion and digital storage of images. Digital image analysis: principles and biological applications. Principles of confocal microscopy. High resolution non-linear optical microscopy.

6th week:
Lecture: Principles and applications of flow cytometry. Structure of a flow cytometer and its application fields: immunogenetics, receptor and antigen research and diagnostics, DNA and cell cycle analysis, measurement of membrane potential, membrane permeability and determination of cytosolic pH and ion concentrations, application of fluorescence resonance energy transfer to determine protein associations. (FCET).

7th week:
Lecture: Structure of the cell membrane, functional consequences of the mobility (lateral and rotational movement) of proteins in the membrane. Novel models for the structure of the cell membrane, lipid domains. Time-dependent fluorescence and phosphorescence spectroscopy, fluorescence recovery after photobleaching (FRAP), fluorescence correlation spectroscopy.

8th week:
Lecture: Modern electrophysiological techniques. Passive and active electrical properties of the cell membrane, structure and function of ion channels. Principles and application of the patch clamp technique: recording ionic currents and membrane potential.

9th week:
Lecture: LSC - Laser-Scanning Cytometry (imaging cytometry, slide-based imaging cytometry). Limitations of flow cytometry and microscopy. Comparing flow cytometry, confocal microscopy and laser-scanning cytometry. How does laser-scanning cytometry work? Strength and limitations of the laser-scanning cytometry. Laser scanning-cytometry in cell biology and clinical research.

10th week:
Lecture: Closing test

Requirements

Aim of the course: Based on the principles covered in biophysics and cell biology discussion of problems with special relevance to medical biology from a modern molecular biophysical and quantitative biological aspect.
Short description of the course topics: 1. Application of nuclear magnetic resonance spectroscopy (NMR) and imaging (MRI) in biology and medicine 2.Luminescence spectroscopy. 3. Flow cytometry and its applications. 4. Structure of the cell membrane, mobility of lipids and proteins in the plasma membrane. 5. Advanced microscopy. 6. Modern electrophysiological techniques 7. Slide-based cytometry.

Compulsory literature: course material and lecture slides published on the website of the Department
Recommended reading: Medical biophysics (Damjanovich, Fidy, Szöllősi Eds.), Medicina, 2009;

Web address for the course material:
Type of examination: practical grade, 5 levels

Requirements:
Conditions for signing
The lecture book:: attending 5 lectures out of 7. Attention! Lecture books are handled exclusively by the study advisor during the dedicated office hours!
Type of examination: practical grade, 5 levels
Examination: Written test. The exam date is shown in the.

below 50%: fail
50%-59%: pass
60-69 % : satisfactory
70-79 %: good
>= 80% excellent
Repeated/improved exam: during the examination period, one occasion, written test.

Subject: **SELECTED TOPICS IN CELL BIOLOGY**
Year, Semester: 2nd year/2nd semester
Number of teaching hours:
Lecture: **24**

2nd week:
Lecture: Receptor tyrosine kinases: regulation by interactions and compartmentation of signaling components (2 lectures)

3rd week:
Lecture: From cell biology to preclinical models: CDKs as drug targets
GFP and friends - the molecule that drew a Nobel Prize in Chemistry (2 lectures)

4th week:
Lecture: Cancer immunotherapy

5th week:
Lecture: Molecular targets for cancer therapy in the signal transduction pathway of receptor tyrosine kinases

6th week:
Lecture: Ion channels: cellular physiology and disease

7th week:
Lecture: Something only your mother can give you: the mitochondrium

8th week:
Lecture: A strict rule in multicellular development: cells must behave, otherwise their fate is apoptosis or …

9th week:
Lecture: Newly discovered mechanisms in the regulation of cell division.

10th week:
Lecture: What goes up, must come down: Degrading proteins and lipids - and the consequences of aberrant pathways

11th week:
Lecture: Written test exam

Requirements

Neptun code: AOG157403-K1, ECTS: 2 credit points

PLEASE SIGN UP FOR THE COURSE IN NEPTUN!!!
Those who don't sign up, cannot get a signature.
Most classes are 100 min, but there will be lectures with two topics, consequently longer, so that the course could finish in time.
Do check regularly the website http://biophys.med.unideb.hu/en/node/1885 to see if there are any changes, news, etc!
DETAILS UNDER THE MENU ITEM:

Compulsory reading:

Lecture material posted on the website

Requirement for signature:

- maximum 3 recorded absences total (no make-up possible)

- signing up for the electronic course by the end of week 5

Exam dates: week 11 written exam for receiving the practical grade.
The exam can also be taken during the exam period, but this counts as a first exam after a practical grade of "fail". Check NEPTUN for dates.

Exam type: Electronic test (see below)

Grading:
>50% pass
>60% satisfactory
>70% good
>80% excellent

In order to take an exam of the course "Selected Topics in Cell Biology" you need to be registered for the electronic version of the course. Here is the procedure to follow:
Start your internet browser and type this address: https://exam.unideb.hu
NOTE: It only works from IP addresses of the university, so you need to be logged on to EDUROAM, use a PC from the library, or use a VPN connection from outside.

Select the English (en) language (top left)

At the Login, type your Username, which is: your network-id (the same as in the Neptun)

Type your Password: (the same as in the Neptun)

Click on the [Login] button

Attention: The authentication may take some time, it runs on a server related to the Neptun system.

If your data are not complete in Neptun, you will be asked to complete them. You cannot continue to the course until you have complemented your data in Neptun. You might be asked to verify your personality by logging into your email account and clicking on a link sent to you by the system. Even if your are not forced by the system to complement your data, you can edit your user profile by clicking the "You are logged in as [name] (Logout)" link. There you should fill in the required fields: give the country, city name and e-mail address.

Once finished, you can continue in the e-learning system:

Find your course category: Biofizika/Biophysics
Pick your course: Elective Courses - Selected topics in cell biology (Click on the course name)
Type the Enrollment key that will be provided in the first lecture
Click on the [Enroll me] button

Department of Foreign Languages

Subject: **LATIN LANGUAGE**
Year, Semester: 1st year/1st semester
Number of teaching hours:
Practical: **30**

1st week:
Practical: Organization of the course. The Latin alphabet and pronunciation. Introduction into medical terminology; Greek and Latin origins of nomenclature.

2nd week:
Practical: Planes and directions. Latin adjectives.

3rd week:
Practical: Parts of the human body.

4th week:
Practical: Nominative and Genitive suffixes. Plural forms and adjectives in Latin

5th week:
Practical: The skeleton

6th week:
Practical: Plural forms. Genitive phrases.

7th week:
Practical: Regions.

8th week:
Practical: Revision. Mid-term test.

9th week:
Practical: The joints. Complex adjectives.

10th week:
Practical: Word formation: nouns from verbs.

11th week:
Practical: Muscles.

12th week:
Practical: Latin prefixes.

13th week:
Practical: Latin and Greek numerals.

14th week:
Practical: Revision. End-term test

15th week:
Practical: Evaluation

Requirements

Requirements of the Latin language courses Attendance

Language class attendance is compulsory. The maximum percentage of allowable absences is 10 % which is a total of 2 out of the 15 weekly classes. Students arriving late for the classes are not allowed to enter the class. Being late is counted as an absence. If the number of absences is more than two, the final signature is refused and the student must repeat the course. Students are required to bring the textbook or other study material given out for the course with them to each language class. Active participation is evaluated by the teacher in every class. If students' behaviour or conduct does not meet the requirements of active participation, the teacher may evaluate their participation with a "minus" (-). If a student has 5 minuses, the signature may be refused due to the lack of active participation in classes.

Testing, evaluation

In each Latin language course, students must sit for 2 written language tests. A further minimum requirement is the knowledge of 300 words per semester announced on the first week. There is a (written or oral) word quiz in the first 5-10 minutes of the class, every week. If a student has 5 or more failed or missed word quizzes he/she has to take a vocabulary exam that includes all 300 words along with the oral exam. The results of word quizzes can modify the evaluation at the end of the semester.

Based on the final score the grades are given according to the following table:

Final score	Grade
0 - 59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

If the final score is below 60, the student once can take an oral remedial exam covering the whole semester's material.

Consultation classes

In each language course once a week students may attend a consultation class with one of the teachers of that subject in which they can ask their questions and ask for further explanations of the material covered in that week. These classes are optional.

Coursebook: Répás, László: Basics of Medical Terminology (Latin and Greek Origins)

Website: Minimum vocabulary lists and further details are available on the website of the Department of Foreign Languages: ilekt.med.unideb

Department of Human Genetics

Subject: **MEDICAL GENOMICS**
Year, Semester: 1st year/2nd semester
Number of teaching hours:
Lecture: **16**
Practical: **4**

11th week:
Lecture: 1. Medical genome biology: relevance and history.
2. Application of genome biology for pharmaceutical and biotechnological research.
3. Introduction into bioinformatics DNA sequence comparison, sequence data management and analysis.

12th week:
Lecture: 4. Gene expression pattern changes in disease. The use of DNA microarrays in medical diagnosis.
5. Practical and technical aspects of gene expression analysis.
6. Immuno-proteomics, methods and applications.

13th week:
Lecture: 7. Technologies for testing human genome sequence and proteome variability.
8. Systems biology and medical diagnostics. Biotechnology.
9. Bioinformatics II. Protein sequence comparison, motifs, prediction of 3D structure, multiple sequence alignments.

14th week:
Lecture: 10. Modern genetic maps.
11. Genome databases, gene ontology. Genome analysis, practical examples.
12. Evolutionary genome biology.
Practical: 1. Sequence alignment practical.
2. Browsing databases for human diseases genes.

15th week:
Lecture: 13-14. Genomescan technology, global genetic association and its relevance to multigenic diseases.
15. Nanotechnology and medicine.
Practical: 3. Association of DNA polymorphisms with complex diseases.
4. Using the public gene expression databases.

Requirements

Minimum requirements of the signature:

Electronic registration through Neptun.

Active participation on medical genomics seminars – proved with signed attendance-sheets.

Those, who do not meet these requirements, cannot take the examination.

It is very much recommended to attend the medical genomics lectures and to take notes. To encourage the attendance of the lectures we give 1 bonus point for 1 attendance, which is proved by a signed attendance-sheet. Since there are 10 occasions (5 double and 5 single lectures), you may earn 10 bonus points altogether. These are percentage points that will be added to the result of the examination.

Only those students are eligible to sign the attendance-sheet and get bonus points, who registered for the subject Medical genomics electronically.

Those students, who want to receive bonus points have to take at least a one page handwritten lecture note of the lecture in question. The note may be checked by teachers any time.

The bonus points can be used only during the end-of-semester examination period, cannot be transferred to the next school-year.

Students, who manipulate the attendance sheets will be denied signature in this semester.

Second year students may also register for medical genomics, they can even take the examination with their valid signature in their lecture book, even if they did not pass last year. Students not having a signature in the lecture book and/or in the Neptun, have to attend classes to earn a signature.

Students, who got signature can register for an examination through the Neptun. Without registration it is not possible to take the examination. Evaluation of the exam (AW5, assessment of work): fail (1), pass (2), satisfactory (3), good (4), excellent (5). Repeated examinations are possible according to general university rules.

Lectures will be held at times and locations given for medical genetics lectures, during week 11-15.

Practical: week 14-15, in a basement computer room of the Educational Center, according to the advertised timetable. (When possible, the seminars will be held the same time as the medical genetics seminars/practicals.)

For further details see www.genetics.dote.hu, username: medical_genomics, password: neurofibromatosis. Click on "Oktatás", Downloads/Information, Medical genomics.

Department of Internal Medicine

Subject: **BASIC HOSPITALISATION TECHNIQUES FOR MEDICAL STUDENTS**
Year, Semester:
Number of teaching hours:
Lecture: **5**
Practical: **5**

1st week:
Lecture: History - needs - health and diseases. Marslow hierarchy of needs. Assistance, duties of nurses: recreation, mobilisation, bedding.

2nd week:
Lecture: Assistance, duties of nurses: hygienic needs, defecation, catheters. Documentation. Inspection, observation, test results, public health laws concerning to nursing.

3rd week:
Lecture: Sterilisation, disinfection. Wound healing, decubitus, decubitus prevention. Medication.

4th week:
Lecture: Infusion techniques, transfusion.

Diagnostic examinations, getting up the patient. Drainage, bleeding, punctions.

5th week:
Lecture: Examination methods. Education of patients, mental hygiene. Psychology of nursing, dying patient, attendance of the dead.

Requirements

Course description: Place of lectures: 3rd Department of Internal Medicine (Augusta). Educational responsible: Dr. Katalin Dankó Number of practicals: 5 and summer practice.

Subject: **RARE DISEASES**
Year, Semester: 4th year/2nd semester
Number of teaching hours:
Lecture: **10**

1st week:
Lecture: Rare disorders: introduction. (G. Pfliegler) Rare diseases: organizations Hungarian and international approach (J. Sándor)

2nd week:
Lecture: Molecular genetics in rare diseases (I. Balogh)Rare bleeding disorders - genotype, phenotype, laboratory and molecular genetics (Zs. Bereczki)

3rd week:
Lecture: Genetic disorders (É. Oláh) Manifestations of rare diseases in the eye (V. Nagy)

4th week:
Lecture: The role of biochemical laboratory in the diagnosis of rare disorders. (J. Kappelmayer) Lysosomal diseases and immunodeficiency (L. Maródi)

5th week:
Lecture: Orphan drugs. (G. Blaskó) Case presentations (E. Kovács, K. Urbán) Closing remarks (G.Pfliegler) Conditions for acceptance: test

Subject: **TRAVEL MEDICINE FOR MEDICAL SCHOLARS**
Year, Semester: 4th year/2nd semester
Number of teaching hours:
Lecture: **30**

Requirements

1. Positioning travel medicine among the medical disciplines. Travel medicine in Hungary - first in Europe
2. Health status of the traveler. Risk factors of the traveler. Definition and analysis of the travel types. Prevention possibilities.
3. Classification of the travel related medical problems. Travel induced diseases: deep vein thrombosis, jet-lag, motion sickness, travel psychosis
4. Travel related medical problems: environmental hazards, traffic accidents, safety measurements,

crime prevention
5. Vaccination-preventable and non-preventable infectious diseases. Traveler's diarrhoea. Safe food and drink.
6. Technique of the vaccination, contraindications, side effects
7. Pretravel advices for the immunocompromised traveler. Treatment abroad
8. Sexually transmitted diseases, morbidity, prevention. Post exposure prorhylaxis of AIDS
9. Dermataological problems during the trip and after returning
10. Modalities and timing of the repatriation. Indication and contraindications of the repatriation. MEDIF. Fit-to-fly formula
11. Malariaprevention, different types of malaria, high risk areas, malaria as an emergency
12. Travelers with special needs: VFR. Migration problems
13. Diabetic traveler, patient with heart disease, preparing COPD patient for travel
14. Cabin environment, preparing patient for the air travel. Fear of flying.

Department of Laboratory Medicine

Subject: **EPIDEMIOLOGY, PATHOPHYSIOLOGY, DIAGNOSIS AND TREATMENT OF OSTEOPOROSIS.**
Year, Semester: 4th year/1st semester
Number of teaching hours:
Lecture: **11**
Seminar: **2**
Practical: **2**

1st week:
Lecture: Definition and epidemiology of osteoporosis

2nd week:
Lecture: Pathophysiology of osteoporosis I

3rd week:
Lecture: Pathophysiology of osteoporosis II

4th week:
Lecture: Diagnosis of osteoporosis

5th week:
Lecture: Treatment of osteoporosis

6th week:
Lecture: Case-study and literature reviews

7th week:
Lecture: BMD measurement and Bone turnover marker measurement
Practical: BMD measurement and Bone turnover marker measurement

8th week:
Lecture: Summary and MCQ test
Self Control Test

Requirements

To get the latest and updated information on the complex condition of osteoporosis

Subject: **PROBLEM BASED LEARNING IN COMPLEX PATHOLOGY**
Year, Semester: 4th year/2nd semester
Number of teaching hours:
Lecture: **30**

1st week:
Lecture: Introduction

2nd week:
Lecture: Problem based evaluation of myeloproliferative disorders.

3rd week:
Lecture: Problem based evaluation of anemias.

4th week:
Lecture: Clinical case

5th week:
Lecture: Problem based evaluation of malignancy and tumor immunology.

6th week:
Lecture: Problem based evaluation of kidney diseases.

7th week:
Lecture: Problem based evaluation of diabetes mellitus.

8th week:
Lecture: Problem based evaluation of acute coronary syndrome.

9th week:
Lecture: Problem based evaluation in gastrointestinal disorders

10th week:
Lecture: Problem based evaluation in autoimmunity and hypersensitivity reactions.

Requirements

Entrance conditions: at least 10 students.
Only in 2nd semester.

Department of Medical Chemistry

Subject: **ADVANCED STUDENTS' SCIENTIFIC ACTIVITY**
Year, Semester: 2nd year/2nd semester
Number of teaching hours:

Requirements

Introduction to students' scientific activities, formerly presented lecture(s) at the students' scientific conference(s) and/or accepted thesis.

Subject: **UNDERSTANDING MEDICAL PROBLEMS THROUGH EXPERIMENTS**
Year, Semester: 1st year/2nd semester
Number of teaching hours:
Practical: **30**

1st week:
Practical: How to make fat and how to get rid of it?(Adipocyte differentiation. Lipid and energy metabolism.)

2nd week:
Practical: What cells "inhale" and "exhale"? What a seahorse can teach us about mitochondrial function and dysfunction? (Measuring the effects of metabolic drugs on oxygen consumption and glycolytic rate.)

3rd week:
Practical: Let's make bones!(Phosphate-induced mineralization in osteoblast cultures. Role of Vitamin C.)

4th week:
Practical: How to kill tumor cells?(Cellular effects of different classes of anticancer drugs on cancer cell lines.)

5th week:
Practical: A smoking gun.(How cigarette smoking causes lung injury?)

6th week:
Practical: Beware of the Sun!(Effects of UV radiation on skin cells.)

7th week:
Practical: A radical idea.(Generating and eliminating free radicals by the cells.)

8th week:
Practical: About fruits and vegetables.(Testing the antioxidant effects of various fruits and vegetables.)

9th week:
Practical: Can the exhaust fumes of your car lower your blood pressure?(Cell biology of nitric oxide and peroxynitrite.)

10th week:
Practical: Show me your breath, I tell you who you are!(Measurements from exhaled breath concentrate.)

11th week:
Practical: Will your pain killer kill your liver? (Liver toxicity of acetaminophen.)

12th week:
Practical: Immunosuppression in action.(How does cyclosporine work?)

13th week:
Practical: You are what you eat!(Evaluation of the effects of lipid-rich diet by histology and biochemical essays.)

14th week:
Practical: Filling and emptying glycogen stores. (Determination of the glycogen stores in various alimentary conditions.)

15th week:
Practical: Watch your DNA!(Mutations/DNA damage and their detection.)

16th week:
Practical: Do your blood vessels leak? (Transendothelial permeability measurements by ECIS.)

17th week:
Practical: Interact with me!(How and why proteins "touch" each other? Methods used to study protein-protein interactions.)

18th week:
Practical: How to create green cells? (Transfection with GFP.)

19th week:
Practical: Heat shock(Induction of heat shock in cell lines: expression of Hsp-s. Protection from cytotoxic insults.)

20th week:
Practical: Where is my protein? (Subcellular localization of proteins by immunostaining+compartment-specific markers. Cell fractionation and Western blotting.)

21st week:
Practical: Inhibitors of protein phosphatases -

dangerous biological weapons?(Phosphatase inhibitory and cytotoxic effects of microcystin and other biotoxins.)

22nd week:
Practical: Green tea - enemy of cancer cells? (Effect of polyphenolic compounds on proliferation of cancer cell.)

Requirements

Min. 1, max. 10 students (Preference will be given to students who obtained good marks in Medical Chemistry.) Aim of the course: The course provides a unique opportunity to investigate important medical problems at the cellular and the molecular level or in animal experiments. Enrolled students choose a topic from the list. Students will work in small groups (2-3 students/group) and will be assigned a tutor who will supervise their activities and labwork. First, students make a thorough literature search to understand the medical problems in question, it's possible experimental approach and then discuss it in detail with their tutor. During the laboratory sessions, the students perform experiments related to the chosen problem and will learn how to collect data, interpret and evaluate results, how to analyze data statistically and how to draw conclusions. The students prepare essays (5 pages) on their achievements. In a closing session, the group and the tutor discuss the results and evaluate the project.

Department of Medical Microbiology

Subject: **ANTIMICROBIAL CHEMOTHERAPY**
Year, Semester: 4th year/1st semester
Number of teaching hours:
Lecture: **20**
Seminar: **10**

1st week:
Lecture: History of antimicrobial chemotherapy. Principles.

2nd week:
Lecture: Pharmacokinetics and pharmacodynamics.

3rd week:
Lecture: Antibacterial agents: β-lactam antibiotics.

4th week:
Lecture: Non-β-lactam antibiotics.

5th week:
Seminar: Measurement of antimicrobial activity.

6th week:
Lecture: History, mechanisms and spread of antibiotic resistance.

7th week:
Lecture: Antibiotic usage, antibiotic stewardship.

8th week:
Lecture: Risks caused by antibiotic use.

9th week:
Lecture: Antiviral agents.

10th week:
Lecture: Antifungal agents, antifungal resistance.

11th week:
Lecture: Chemotherapy against protozoal pathogens and helminths.

12th week:
Seminar: Presentation of project works

13th week:
Seminar: Presentation of project works.

14th week:
Seminar: Interactive case studies.

15th week:
Seminar: Consultation.

Requirements

To enhance the competence of students in chemotherapy of infectious diseases.

Department of Neurosurgery

Subject: **NEUROSURGERY**
Year, Semester: 5th year/2nd semester
Number of teaching hours:
Lecture: **6**
Practical: **8**

1st week:
Lecture: 1. Neurosurgery in general, the topic of the neurosurgery. Main symptoms of different localisations, diagnostic possibilities. Developmental anomalies of the central nervous system requiring neurosurgical intervention.

2nd week:
Lecture: 2. Intracranial tumours I. General review. Neuroepithelial tumors, meningioma, schwannoma, neurofibroma, haemangio-blastoma.

3rd week:
Lecture: 3. Intracranial tumors II. Pituitary adenoma, craniopharyngioma, epidermoid/dermoid cysts, colloid cyst, germinoma, teratoma, lipoma, primary malignant lymphoma, metastatic tumours. Causes and management of hydrocephalus (obstructive, communicating, congenital, acquired).

4th week:
Lecture: 4. Spinal space-occupying lesions (tumors, disc prolapse and spondylosis). Tumours of peripheral nervous system.

5th week:
Lecture: 5. Neurotraumatology. Head, spinal and peripheral nerve injuries.

6th week:
Lecture: 6. Cerebrovascular diseases requiring neurosurgical treatment. Inflammatory processes, brain abscess.

7th week:
Practical: 1. Diagnosis and treatment of intracranial space occupying lesions (except hematomas). Neurosurgical aspects of hydrocephalus and intracranial developmental anomalies. Shunt operations.

8th week:
Practical: 2. Neurosurgical aspects of vascular diseases. Causes and outcome of subarachnoid haemorrhage. Cerebral aneurysm, angioma and fistula, their surgical management.

9th week:
Practical: 3. Craniocerebral and spinal trauma, diagnosis and neurosurgical treatment. Management of unconscious neurosurgical patients. Brain herniations.

10th week:
Practical: 4. Degenerative and space occupying spinal lesions. Their diagnosis and surgical

treatment. Operability of spinal developmental anomalies.

Requirements

The fundamentals of neurological surgery can be found in the textbook. The convincing knowledge of this material and the active participation of each practical lesson are the condition of a successful examination. The six lectures will complete the textbook with new data and stress the importance of the symptomatology and diagnostic possibilities of the more frequent neurosurgical diseases, mainly from practical points of view. These will facilitate the understanding of the textbook and the theses of the examination as well. The task of the practicum is the collection of personal practical experience of the neurosurgical diseases at bedside.
The active participation in all practicum is obligatory. No more than two misses of lectures and one miss of seminars and accepted written test exams are needed to get the credit.

Department of Obstetrics and Gynecology

Subject: **RECENT ADVANCES OF INFERTILITY MANAGEMENT AND GYNAECOLOGICAL ONCOLOGY**
Year, Semester: 4th year/2nd semester
Number of teaching hours:
Lecture: **20**

Requirements

Aim: To provide supplemental knowledge of modern human reproductive technology in five lectures. Lectures 6-16 are devoted to transmitting structured knowledge of gynaecological cancer management in sequence of their localisation and public health importance. The course is primarily aimed at providing graduate level audiovisual information that could not be fitted into the restricted schedule of regular lectures of semester II. in year IV. Curriculum.
Topics:
Pathophysiology of reproductive failure
Infertility work-up, practical approach
Assisted reproduction. Homologous and heterologous insemination
In vitro fertilisation. Embryo transfer Legal and ethical issues of in vitro fertilisation
Ovarian cancer epidemiology and diagnostics
Ovarian cancer chemotherapy
Ovarian cancer surgical treatment
Endometrial cancer epidemiology and diagnostics
Endometrial cancer therapy
Cervical cancer prevention and screening
Cervical cancer diagnostics and therapy
Vaginal and vulval cancer epidemiology and diagnostics
Vaginal and vulval cancer treatment
Trophoblast tumours
Lecturer: Prof. Póka, Róbert, M.D., Dr. habil., Ph.D.

Subject: **REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY**
Year, Semester: 4th year/2nd semester**,** 5th year/2nd semester
Number of teaching hours:
Lecture: **15**

1st week:
Lecture: 1. Introduction (Jakab, Attila M.D., Ph.D.) Reproductive Physiology (Lecturer: Deli, Tamás M.D., Ph.D.): Molecular Biology and Biochemistry for Reproductive Endocrinology. Ovarian and Uterine Embryology, Developement and Reproductive Function. Neuroendocrinology. Regulation of the Menstrual Cycle. Sperm and Egg Transport, Fertilization, and Implantation.

2nd week:
Lecture: 2. Clinical Reproductive Endocrinology (Lecturer: Gődény, Sándor M.D., Ph.D.): Normal and abnormal sexual development, abnormal puberty. Normal and abnormal sexual development, normal and abnormal growth and pubertal development. Intersexuality. Pubertal obesity and hyperandrogenism.

3rd week:
Lecture: 3. Clinical Reproductive Endocrinology (Lecturer: Deli, Tamás M.D., Ph.D): Amenorrhoea, Galactorrhoea. Hyperprolactinemia. Premature Ovarian Failure (POF).

4th week:
Lecture: 4. Clinical Reproductive Endocrinology (Lecturer: Jakab, Attila M.D., Ph.D.): Chronic anovulation. Polycystic Ovarian Syndrome (PCOS). Menstrual disorders in reprodutive age. Hirsutism.

5th week:
Lecture: 5. Clinical Reproductive Endocrinology (Lecturer: Deli, Tamás M.D., Ph.D): Endocrinology of the pregnancy. Ectopic pregnancy. Repeated pregnancy loss (RPL). Pregnancy and endocrine disorders. Human parturition, onset of labor. Hormonal therapy in obstetrics.

6th week:
Lecture: 6. Contraception (Lecturer: Jakab, Attila M.D., Ph.D.) : Family planing. Oral contraception. Transdermal and vaginal contraception. Long acting methods. Intrauterine contraception (medicated and non-medicated intrauterine systems, IUD, IUS).

7th week:
Lecture: 7. Infertility: (Lecturer: Jakab, Attila M.D., Ph.D.) The infertile couple. Diagnostics test of female and male infertility. Anovulatory infertility. Infertility genetics. Reproduction and thyroid. Fertility preservation in cancer patients.

8th week:
Lecture: 8. Infertility: (Lecturer: Sápy, Tamás M.D., Ph.D.) Uterine and tubal infertility. Endometriosis. Minimally invasive procedures. Ovulation induction. Assisted reproductive tecthniques (ART).

9th week:
Lecture: 9. Menopause (Lecturer: Jakab, Attila M.D., Ph.D): Epidemiological issues of the menopuase. Physiology of the menopausal transition. Postmenopausal Hormone Replacement Therapy (HRT). Postmenpausal abnormal bleeding. Cardiovascular changes and osteoporosis in the menopause. HRT in reproductive cancer patients.

10th week:
Lecture: 10. Reproductive Andrology (Lecturer: Benyó, Mátyás M.D.): Regulation of testicular function. Aging male. Male infertility. Semen analysis. Sperm function tests. Sperm preparation methods for assisted reproduction. Surgical treatment for male infertility. Sperm cryopereservation. Closing test (Jakab, Attila M.D., Ph.D.)

Requirements

Reproductive Endocrinology covers the physiology and pathophysiology of the female reproductive system, from puberty through the reproductive ages, until and beyond the menopause. Over the decades, advances of genetics, molecular biology and clinical epidemiology resulted in rapidly growing information and therapeutical possibilities in the fields of gynecologic endocrinology, infertility and menopause. Along with the increasing expectation of the patients, these led to the recognition, that professional prevention and restoration of the female reproductive health requires wide knowledge, which goes beyond the basics of Obstetrics and Gynecology. Reproductive Sciences are among the most intensively developing field of Ob/Gyn. The aim of the course is to gain detailed knowledge on the physiological basics and clinical practice of wide spectrum of disorders in the field of gynecologic endocrinology, infertility and menopause. Throughout ten weeks, on each occasion, lectures are followed with interactive seminars, case presentations.

Department of Ophthalmology

Subject: **OPHTHALMOLOGICAL ASPECTS OF WOUND HEALING PROCESSES**
Year, Semester: 4th year/2nd semester**,** 5th year/2nd semester**,** 6th year/2nd semester
Number of teaching hours:
Lecture: **7**
Seminar: **4**
Practical: **4**

1st week:
Lecture: Basic ophthalmological anatomy. Basics of wound healing processes. (Dr. Csutak)
Seminar: Overview and application of instruments used for practical trainings, learning appropriate techniques.
Practical: Learning appropriate techniques of instruments used for practical trainings.

2nd week:
Lecture: Corneal lesions and refractive surgeries. What does the tear film affect in wound healing processes? (Dr. Csutak)
Seminar: Types and treatments of corneal lesions.
Practical: Creating corneal lesions and practicing their treatment on biomodels.

3rd week:
Lecture: Significance of mediators in tears in the wound healing processes following keratoplasty. (Dr. Fodor)
Seminar: Types and treatments of scleral lesions.
Practical: Creating Scleral lesions and practicing their treatment on biomodels.

4th week:
Lecture: Scleral surgeons. Significance of scleral wound healing processes in respect of glaucoma surgery treatments. (Dr. Csutak)
Seminar: Treatment of lesions on face/eyelids, how to gain “extra skin”.
Practical: Treating lesions made on face/eyelids; how to gain “extra skin” on biomodels.

5th week:
Lecture: Fundamentals in Ophthalmological Operations (Dr. Ujhelyi)

6th week:
Lecture: Practices in Ophthalmological Operations (Dr. Ujhelyi)

7th week:
Lecture: Wound healing processes on eyelids and in the eye area. How developed is ophthalmological plastic surgeon?

Requirements

In-depth knowledge of the mechanisms of wound healing processes on different tissues. Acquisition of basic operative techniques. Ensuring practice opportunities for the basics of operative professions.
Our long-term goal is to facilitate the specialization of students interested in operative professions.

Subject: **REFRACTION, REFRACTIVE ERRORS, CORRECTIONS, REFRACTIVE SURGERY**
Year, Semester: 3rd year/1st semester
Number of teaching hours:
Lecture: **5**

1st week:
Seminar: Refraction, refractive errors, corrections, refractive surgery.

2nd week:
Seminar: Refraction errors, keratometry, aberrometry, corneal topography

3rd week:
Seminar: Prescription of Eyeglasses.

4th week:
Seminar: Contact lenses.

5th week:
Seminar: Refractive Surgery

Requirements

The attendance on all the 5 seminars is compulsory. Missed seminars should be repeated by attending seminars on the next semester. The knowledge of students is assessed on a five-grade scale (test). Registration to the course should be done on the Neptun system.

Department of Otolaryngology and Head and Neck Surgery

Subject: **OTOLARYNGOLOGY ESSENTIALS**
Year, Semester: 5th year/1st semester
Number of teaching hours:
Lecture: **5**

Requirements

Pathology II
Clinical biochemistry II

Department of Pathology

Subject: **FUNDAMENTAL CLINICAL NEUROSCIENCE**
Year, Semester: 3rd year/2nd semester
Number of teaching hours:
Lecture: **10**
Seminar: **10**
Practical: **10**

Requirements

Requirements: Attendance of lectures, seminars, practical sessions is compulsory - absences and their 'make-up' are regulated by the Educational office of the Medical Faculty. The exam questions are primarily based on the material presented at the Lectures. The Seminars and Practical sessions are supporting the learning and understanding of the topics.

Aims of the course: To teach the molecular and morphological aspects of clinical neurosciences and to provide a solid basis for the clinical studies and medical practice. To refresh the relevant knowledge acquired at the pre-clinical studies (Anatomy, Physiology, Biochemistry) in a clinico-pathological context.

Curriculum: During the 6 weeks the topics will be covered in altogether 30 hours. Lectures will be supported by seminars & practicals with clinico-pathological discussions and demonstrations of neuropathological methods & techniques (including brain cut, microscopy).
week 1: Basic reactions in the nervous system; week 2: cerebrovascular diseases; Trauma; Infectious and inflammatory diseases; week 3: Dementias and movement disorders; week 4: Brain tumours; week 5: Metabolic and toxic disorders; Developmental disorders; week 6: Demyelinating diseases; Neuromuscular diseases; Other neuro-psychiatric diseases.

Textbook: Robbins: Basic pathology (9th edition); selected research papers (to be specified)
Suggested reading: selected research papers (to be specified)

Exam: Written (Multiple Choice Questions test paper)

Department of Pharmacology and Pharmacotherapy

Subject: **PHARMACOTHERAPY**
Year, Semester: 5th year/1st semester
Number of teaching hours:
Lecture: **30**

1st week:
Lecture: Metabolic diseases I: Diabetes mellitus

2nd week:
Lecture: Metabolic diseases II: Hyperlipidaemias

3rd week:
Lecture: Diseases of the biliary truct and the pancreas

4th week:
Lecture: Pharmacotherapy of cardiac arrhythmias

5th week:
Lecture: Pharmacotherapy of hypertension

6th week:
Lecture: Myocardial infarction and unstable angina

7th week:
Lecture: Pharmacotherapy of ischaemic heart disease Angina pectoris, AMI

8th week:
Lecture: Pharmacotherapy of rheumatic diseases

9th week:
Lecture: Chronic obstructive airway disease

10th week:
Lecture: Cancer therapy

11th week:
Lecture: Test writing

Department of Physical Medicine and Rehabilitation

Subject: **PRINCIPLES OF PHYSICAL MEDICINE AND REHABILITATION**
Year, Semester: 5th year/2nd semester
Number of teaching hours:
Lecture: **16**

1st week:
Lecture: Theory of medical rehabilitation. Functional assessments of people with disabilities. - Zoltán Jenei M.D., Ph.D
Basic principles of therapy approaches in medical rehabilitation, measuring the effects of rehabilitation. - Zoltán Jenei M.D., Ph.D

2nd week:
Lecture: Intervention, treatments and service delivery in rehabilitation (inpatient, outpatient and community-based services). - Zsuzsanna Vekerdy-Nagy M.D, Ph.D
Special features of pediatric rehabilitation - Zsuzsanna Vekerdy-Nagy M.D, Ph.D

3rd week:
Lecture: Autonomy and complience. Quality of Life - Adél Nagy M.D.
Living with disability: personal experiences - Betti Dézsi coordinator of komp.rehab. Msc, informatician, special translator

4th week:
Lecture: Cardiac rehabilitation - Zoltán Jenei M.D., Ph.D
Pulmonary rehabilitation - Anna Sárközi M.D.

5th week:
Lecture: Characteristics of neuro-rehabilitation.
I. Neuro-rehabilitation. - Rita Szepesi M.D.
II. Musculosceletal rehabilitation. - Rita Szepesi M.D.

6th week:
Lecture: The role of physical therapy in medical rehabilitation - Ilona Balajti Mrs. Veres, PT
Orthetics and prothetics in rehabilitation - Andrea Jánossy Győrfiné PT

7th week:
Lecture: Objective measurement in medical rehabilitation - Zsófia Hőgye PT, Rehabilitation Expert, Ergotherapist
Medical assistive devices - Zsófia Hőgye PT, Rehabilitation Expert, Ergotherapist

8th week:
Lecture: Occupational therapy in medical rehabilitation - Boglárka Boldogfalvi PT

Importance of nutrition and dietetics in rehabilitation - Krisztina Sáfrány dietician

Requirements

Course description: The aims of the course are understanding the basic principles of the rehabilitation medicine and a special approach to acute medicine with acknowledging the importance of rehabilitation. The main fields of medical rehabilitation. Methods of assessment and therapy.
Announced for 5th year students, Semester: 2nd, no. of lessons: 16 x 45 min.
Credit points: 2 points
Exam: AW5

Subject: **SOCIAL ACCEPTANCE OF PEOPLE WITH DISABILITIES**
Year, Semester: 3rd year/1st semester
Number of teaching hours:
Lecture: **20**
Practical: **2**

1st week:
Lecture: Problems of people with disabilities during their life Subtopics: a) Definitions (normality, abnormality, handicap, deficiency, disability, participation – the health concept in different cultures and societies). b) Different types of impairments, their characteristic features, possible treatments and rehabilitation (visual, auditive, movement, learning impairments, mental deficiencies, behavioural and communicational disturbances).- Zsuzsanna Vekerdy-Nagy M.D., Ph.D

2nd week:
Lecture: Social inclusion and its legal environment Subtopics: a) Politics of equal rights, equal treatment and antidiscrimination. b) Legal problems of limitations the rights of people with disabilities. - Angéla Molnár jurist
The world of people with disabilities from the point of view of parents and relatives Subtopics: a) Experiences and personal messages, advices to the experts. b) Short and long term life goals. c) Changes in life quality. - Betti Dézsi informatics, special translator, coordinator of rehab.exp.Msc.

3rd week:
Lecture: How to approach to people with disabilities? Psychological considerations. Bernadett Bodor psychologist
Dietary problem of people with disabilities - Krisztina Sáfrány nutrician

4th week:
Lecture: The world of people with disabilities from “inside” – own experiences (lecturers: persons with disabilities) - Subtopics: a) Expectations towards ourselves and towards the environment b) Successes and/or failures of adaptation c) Attitudes d) Short and long term life goals e) Expectations in communication - Betti Dézsi informatics, special translator, coordinator of rehab.exp.Msc.

5th week:
Lecture: Care nursing being with disabilities from the point of view of volunteers, therapist, caregivers and nurses Subtopics:
a) The most frequent problems arising during care and nursing, the “art of being there”, avoiding burnout. - Zsófia Hőgye PT, ergotherapist, rehabilitation expert and Gabriella Nagy PT, rehabilitation expert
b) Communicational problems. - Edina Szabó Ph.D. speech therapist
c) Characteristics of rehabilitation care. - Julianna Illyés Kavaleczné social worker

6th week:
Lecture: Parent of children with disabilities -

perspective of the PRM doctor. - Éva Szabó M.D.
Pedagogical aspects of disabilities, concepts of special needs, special educational requirements, deficiencies of partial abilities, questions of integration - inclusion. - Erzsébet Gortka-Rákó Ph.D.

7th week:
Lecture: Social aspects of disabilities, characteristic features of groups of people with disabilities, homes of people with disabilities, segregated institutes, stigmatization, discrimination, employment, psychology. - Betti Dézsi informatics, special translator, coordinator of rehab.exp.Msc

8th week:
Lecture: Ferryman's Service. - Judit Miholecz psychologist
UN, WHO perspectives - on overview the role international organizations in disability issue. - Zsuzsanna Vekerdy-Nagy M.D., Ph.D.

Requirements

Intended learning outcomes:
To promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities and to promote respect for their inherent dignity. Multidimensional introduction into the world of people with disabilities.
Target group: foreign and Hungarian students of medicine
Announced for students in year: 1st semester
no. of lessons: 20×45 min
no. of practices: 2×45 min
Credit points: 2
Practice: in small groups (min. 3, max. 6 students) during the academic year (summer included)

Department of Physiology

Subject: **MODERN TECHNIQUES ALLOWING THE INVESTIGATION OF PHYSIOLOGICAL PHENOMENA**
Year, Semester: 2nd year/2nd semester
Number of teaching hours:
Lecture: **24**

1st week:
Lecture: The lectures are listed at the web site of the Department of Physiology (http://phys.dote.hu)

Requirements

1. **Signature of Lecture Book**
Lecture attendance may be followed up by the Department. The lecture will not be delivered if 5 or fewer students show up. Nevertheless, the lecture material is going to be asked in the final assessment.
For continuous updates on all education-related matters, please check the departmental web-site (http://phys.dote.hu)
2. **Evaluation during the semester**
None.
3. **Examination**

At the end of the course a written final assessment will be organised in the form of multiple choice questions. The result of this assessment will determine the verification mark of the credit course using the following conversion table:
0-39.9% - Failed
40-54.9 - Pass
55-69.9% - Satisfactory
70-84.9% - Good
85-100% - Excellent

Subject: **PROBLEM BASED LEARNING IN PHYSIOLOGY**
Year, Semester: 2nd year/2nd semester
Number of teaching hours:
Practical: **30**

1st week:
Practical: The practices are listed at the web site of the Department of Physiology (http://phys.dote.hu)

Requirements

Aims of the course: The program offers carefully selected and designed problems from the field of Physiology. Students can learn how to apply problem solving approach, self-conducted strategy and analytic thinking in resolving selected problems. Skill in team-work is helpful in the program.

RULES FOR THE PROBLEM BASED LEARNING (PBL) CREDIT COURSE

1. The program is conducted between 3rd and 11th academic weeks of the second semester.

2. Students must have a tutor, this is the prerequisite for the program. Tutor can be any professor of the Department, not only her/his seminar/practical instructor. The applicant should contact the chosen professor and request him/her to undertake the tutorship. Professors of the Department maintain the right to accept or refuse to be the tutor of the applicant.

3. Special Rule: the applicant has to organize the chosen project and register at the tutor (NOT via NEPTUN) until the end of second academic week. Applications after the second week are not accepted.

4. Preconditions for the program: mark three (3) or better in Physiology I, successful closing lab and permission of the Department (arranged by the tutor).

5. The maximum number of participants in the program cannot exceed 100 students. In case, the number of applicants is higher than 100, the seminar/practical instructor or the course coordinator can refuse applicants with mark three or better. The name of the students registered to the program is published on the website of Department of Physiology on the 3rd academic week.

6. Two students works in team on one project, and prepare one mutual report, thus they get the same score at the end of the program regardless their contribution. The Journal Club and Lab Visit

programs are carried out individually.

7. Evaluation of the students is based on the written report or the oral presentation using five grade score system (1-5). Grades are final, no make-up is allowed.

8. The list of offered programs are available at the practical lab of the Department or on the Department's homepage (http://phys.dote.hu/files/oktatas/kredit/PMO/PBL_topics.pdf).

9. The deadline for the program is the end of the 11th academic week. Reports should be submitted to the tutor. Missing the deadline automatically results grade 1 (fail).

10. Detailed information for the program can be accessed on the website of the Department (http://phys.dote.hu).

Subject: **THE REGULATORY ROLE OF THE CELL MEMBRANE IN PHYSIOLOGICAL AND PATHOLOGICAL CONDITIONS**
Year, Semester: 2nd year/2nd semester
Number of teaching hours:
Lecture: **20**

1st week:
Lecture: The lectures are listed at the web site of the Department of Physiology (http://phys.dote.hu)

Requirements

1. **Signature of Lecture Book**

Lecture attendance may be followed up by the Department. The lecture will not be delivered if 5 or fewer students show up. Nevertheless, the lecture material is going to be asked in the final assessment.
For continuous updates on all education-related maters, please check the departmental web-site (http://phys.dote.hu)

2. **Evaluation during the semester**
None.

3. **Examination**
At the end of the course a written final assessment will be organised in the form of multiple choice questions. The result of this assessment will determine the verification mark of the credit course using the following conversion table:
0-39.9% - Failed
40-54.9 - Pass
55-69.9% - Satisfactory
70-84.9% - Good
85-100% - Excellent

Department of Surgery

Subject: **THE BASICS OF ORGAN-, AND TISSUE TRANSPLANTATION**
Year, Semester: 4th year/1st semester, 4th year/2nd semester
Number of teaching hours:
Lecture: **30**

1st week:
Lecture: Introduction (Dr. B Nemes); Rules and regulations of organ donation. Eurotransplant (S Mihály)

2nd week:
Lecture: Intensive care of organ donor (Dr. Cs. Molnár), Principles of multiorgan donation (Dr D. Kovács)

3rd week:
Lecture: Transplant nephrology (Dr Zsom L.) . History of kidney transplantation. Surgical aspects. (Dr. R. Fedor)

4th week:
Lecture: Visualizing diagnostic approaches in transplantation (Dr. J.Tóth). Interventional radiology in transplantation (Dr. A. Doros)

5th week:
Lecture: Clinical immunology in transplantation. Physicians aspects (Prof. Dr. Á Illés.-Dr L. Váróczy,) Principles of transplant immunology (Dr. A. Szilvási)

6th week:
Lecture: Principles of transplant anaesthesia (Dr. J .Fazakas) Intensive care of transplant patients (Dr. M.Berhés)

7th week:
Lecture: Principles of Lung transplantation (Dr. F.Rényi Vámos)

8th week:
Lecture: Principles of heart transplantation (ifj.Dr. Hartyánszky I.)

9th week:
Lecture: Liver transplantation internalist considerations (Dr I. Tornai) Surgical technique, management, prognosis of liver transplantation (Dr. B. Nemes)

10th week:
Lecture: Pancreas and islet cell transplantation (Dr. L. Piros,)

11th week:
Lecture: Cornea transplantation (Prof. Dr. L. Módis)

12th week:
Lecture: Bone marrow transplantation (Prof. Dr. Á Illés- Dr. L. Váróczy)

13th week:
Lecture: Pediatric kidney transplantation (Dr. T. Szabó). Complications and long term results of organ transplantation (Dr. G Zádori)

14th week:
Lecture: Transplantation pathology (Dr. Bidiga L.)

15th week:
Lecture: Experimental models in the service of successful organ transplantation. (Dr.Németh N.)

Requirements

The goal is to transfer general medical knowledge about the Hungarian and international history, development, protocol, and results of organ-, and tissue transplantation. Further to present the possibilities, technique, results of the transplantation of certain organs, and tissues, as well as to present the possible increase in life-quality in relation to these procedures. The course is optimal for medical students who are candidates to be a general practitioner, and also for those tend to become specialists in anaesthesiology & intensive care, cardiology, gastroenterology, hematology, hepatology, immunology, nephrology ophthalmology, and surgery Nowadays organ, and tissue transplantation become a routine procedure worldwide, representing the highest level of healthcare. Therefore we think this is mandatory to transfer this knowledge to all medical students. Also for this reason the lecturers of this course are invited from all over the country represent the top quality of the different fields of transplantation. Students attending the course have the opportunity to take the relevant messages from the authentic persons. **Optional practice**: Participation in organ harvesting and/or kidney transplantation one occasion during the 2 semesters (180-240 min). Guarantee can be given only for proper information about the date, timing of the coming donor, and implant surgery to the access given by the student. Details on the first occasion.

Department of Traumatology and Hand Surgery

Subject: **TRAUMATOLOGY II.**
Year, Semester: 4th year/1st semester
Number of teaching hours:
Lecture: **10**

6th week:
Lecture: 1. Periprotetic fractures of the femur. Treatment of fractures of the distal femur. 2.Patella and proximal tibial fractures.

7th week:
Lecture: 1.Injuries of the shoulder, humerus fractures. 2. Indication of limb replantation, techniques and expected results. Revascularization syndrome. Skin defects, skin replacement procedures.

8th week:
Lecture: 1. Classification and treatment of wrist fractures. Basic treatment principles of closed and open fractures of the hand. 2. Fractures of the talus and calcaneous. Subtalar dislocation. Fractures of tarsal bones and toes.

9th week:
Lecture: 1. Role of arthroscopy in the diagnosis and surgical treatment of joint injuries. Meniscus injuries, diagnosis and treatment injuries to knee ligaments. Haemarthrosis. Osteochrondritis dissecans. 2. Methods of ligament, bone and joint replacement. Use of metals and plastics in traumatology. Biological osteosynthesis.

10th week:
Lecture: 1. Fractures of the neck and head of radius. Olecranon fractures. Fractures of the forearm diaphysis. Monteggia and Galeazzi fractures. 2. Carpal instability, treatment of ractures of carpal bones. Tendon and nerve injuries of the hand. Treatment of severely injured hand.

Requirements

The lectures will take place in the Auguszta big lecture hall. We strongly advise to participate on the lectures, because the official textbook doesn't include all the diagnostic and therapeutic knowledge. Sign of the lecture book will take place the week before the exam period, at the secretariat of the Department of Trauma and Hand Surgery.
Type of the exam: oral exam (AW5).
In case of the unsatisfactory mark, the student can repeat the exam with the certification of the Education Department.

Department of Urology

Subject: **FACTS AND RECENT ACHIEVEMENTS OF ANDROLOGY**
Year, Semester: 5th year/1st semester**,** 5th year/2nd semester
Number of teaching hours:
Seminar: **30**

Requirements

Course title: Facts and Recent Achievements of Andrology
Course type: required elective
ECTS credit: 2
Conditions: successful Urology exam
Type of exam: AW5
Lecturers:
Molnár, Zsuzsanna MD, PhD assistant lecturer
Drabik, Gyula MD, assistant lecturer
Murányi, Mihály MD, clinical specialist
Benyó, Mátyás MD, PhD assistant professor
(Coordinator: Benyó, Mátyás MD, benyomatyas@gmail.com)
Aims of the Course
The incidence of infertility is has increased in the last decade in the developed countries. About 15% of couples do not achieve pregnancy within one year and seek for medical treatment because of infertility. In 50% of involuntarily childless couples a male-infertility-associated factor is found together with abnormal semen parameters. The improving standard of living resulted in a focused attention on male fertility and sexual dysfunctions. Since the assessment of these patients requires special knowledge, andrologists are needed in these cases. Andrology covers the physiology and pathophysiology of the male reproductive system. Unfortunately andrology can't get the required attention due to time limit during the education of urology.
The aim of the course is to gain detailed knowledge on the physiological basics and clinical practice of wide spectrum of andrological disorders. Throughout ten weeks experts of andrology will demonstrate the different fields of andrology.
During the course 4 certified absences are allowed. In case of 5 absences maximum grade can be 4 (good), in cases of 6 and 7 absences grade 3 (satisfactory) and grade 2 (pass) can be gives, respectively. If the student has at least 8 absences, the course will not be signed.

Program (location: seminary room of the Department of Urology):
1st week: Introduction, anatomy of the male reproductive tract, setting up an andrological diagnosis (Mátyás Benyó)
2nd week: Sexual dysfunctions (background, diagnosis) (Mátyás Benyó)
3rd week: Sexual dysfunctions (treatment), male contraception (Mátyás Benyó
4th week: Role of the hormones in the male reproductive tract (Gyula Drabik)
5h week: Causes of male infertility, environmental exposure (Mátyás Benyó)
6th week: Ageing male, late onset hypogonadism (Gyula Drabik)
7th week: Sperm analysis, assisted reproduction (Zsuzsanna Molnár)
8th week: Development of the testicles, the relationship of testicular cancer with male infertility (Mátyás Benyó)
9th week: Surgery of the penis and urethra, effects of radical procedures on sexual function (Mihály Murányi)

10th week: Microsurgical andrological procedures, closing test (Mátyás Benyó)

Suggested reading: European Association of Urology: Guidelines on Male Infertility, Guidelines on Males Sexual Dysfunction (www.uroweb.org).
Closing test: multiple choice questions, MCQ

Division of Clinical Laboratory Science

Subject: **CLINICAL BIOCHEMISTRY AND LABORATORY EVALUATION OF THROMBOPHILIA**
Year, Semester: 4th year/1st semester
Number of teaching hours:
Lecture: **12**

1st week:
Lecture: Control mechanisms of blood coagulation Biochemistry of antithrombin III. Laboratory diagnosis of antithrombin III deficiencies.

2nd week:
Lecture: Biochemistry of protein C and protein S. Laboratory diagnostics of protein C and protein S deficiencies

3rd week:
Lecture: Thrombophilias caused by APC resistance and prothrombin 20210 polimorphism and their laboratory diagnostics. Rare thrombophilias.

4th week:
Lecture: Hereditary thrombophilias in the clinical practice. Obstetric and gynecologic aspects of hereditary thrombophilias.

5th week:
Lecture: Laboratory diagnostics of antiphospholipid syndrom. Anti-phospholipid syndrome in the clinical practice

6th week:
Lecture: Factors influencing anticoagulation therapy. Novel anticoagulants.
Self Control Test

Requirements

Min. 5, max. 50 students.
Clinical biochemistry II is a prerequisite
Only 1 missed seminar is acceptable.
At the end of the course there will be a written test.

Subject: **PBL IN HAEMOSTASIS**
Year, Semester: 3rd year/2nd semester
Number of teaching hours:
Seminar: **20**

1st week:
Seminar: Studying of actual hemostasis cases by problem based learning methods.

2nd week:
Seminar: Studying of actual haemostasis cases

by problem based learning methods

3rd week:
Seminar: Studying of actual haemostasis cases by problem based learning methods

4th week:
Seminar: Studying of actual haemostasis cases by problem based learning methods

5th week:
Seminar: Studying of actual haemostasis cases by problem based learning methods

6th week:
Seminar: Studying of actual haemostasis cases by problem based learning methods

Requirements

Entrance conditions: min. 5 - max. 20 students.
Clinical biochemistry I is a prerequisite.
Only 1 missed seminar is acceptable.
Students will have to work on and present hemostasis cases during the course.
Examination: Oral case evaluation.

Division of Clinical Physiology

Subject: **INTRODUCTION TO STUDENTS’ SCIENTIFIC ACTIVITIES**
Year, Semester: 1st year/2nd semester
Number of teaching hours:
Lecture: **10**

1st week:
Lecture: The position of the students’ scientific activities within the medical education (Dr. Zoltán Papp)

2nd week:
Lecture: Truthfulness in scientific research, the system of laboratory notes, ethical considerations (Dr. László Virág)

3rd week:
Lecture: Managing experimental and clinical data (Dr. László Mátyus)

4th week:
Lecture: Practical aspects of students’ scientific lectures and theses (Dr. Miklós Fagyas)

5th week:
Lecture: How can one become a successful student researcher? (the student chairman and secretary of the Students’ Scientific Society, currently Veronika Sebestyén and Bálint Rehó)

Requirements

AIM of the course: students learn the routine of students' scientific work, the rules and ethics of scientific data collection and publication and get acquainted with the system of medical research.

Topics: personal learning sessions are supported with e-learning lessons (http:\\www.tdk.dote.hu

Division of Operative Techniques and Surgical Research

Subject: **ADVANCED SURGICAL OPERATIVE TECHNIQUES**
Year, Semester: 5th year/1st semester**,** 5th year/2nd semester
Number of teaching hours:
Lecture: **30**
Practical: **12**

1st week:
Lecture: Scrubbing and behaviourial rules in the Operating Theatre. Main principles of surgical hemostasis. Basic surgical techniques of laparotomies, intestinal anastomoses, management of splenic injury, resection of the spleen and cholecystectomy. Operative techniques of preparation and cannulation of the external jugular vein, arteriotomy and closure of arteries, conicotomy and tracheostomy.

2nd week:
Practical: Overviewing basic surgical techniques on models prior to the living operations.

3rd week:
Practical: Paramedian laparotomy, one layer end-to-end jejuno-jejunostomy. Preparation and cannulation of the external jugular vein. Conicotomy and tracheostomy.

4th week:
Practical: Paramedian laparotomy, spleen stitches, resection of the spleen, cholecystectomy. Preparation and cannulation of the external jugular vein. Preparation, arteriotomy and suturing of the common carotid artery and femoral artery. Conicotomy and tracheostomy.

5th week:
Practical: Paramedian laparotomy, spleen stitches, resection of the spleen. Preparation and cannulation of the external jugular vein. Preparation, arteriotomy and suturing of the common carotid artery and femoral artery. Conicotomy and tracheostomy.

Requirements

Prerequisite: Basic Microsurgical Training. Introduction to Microsurgery, Basic Laparoscopic Training (simultaneous completion is also accepted), Introduction to Laparoscopic Surgery, Surgery II

Aim of the course:

To provide an opportunity for those students, who are interested in specialties which require manual skills before they finish their university studies and start their clinical practice. The course will be based on the knowledge obtained during the “Basic Surgical Technique”, “Surgical Operative Technique”, “Basic Microsurgical Training. Introduction to Microsurgery” and “Basic Laparoscopic Training. Introducion to Laparoscopic Surgery” compulsory and compulsory elective courses.

Course description: During the course, student will have the opportunity to practice surgical hemostasis, to secure a venous access, to make a venous cutdown, conicotomy, tracheostomy, to perform a laparotomy and to implement the basic surgical techniques in the abdominal cavity in a living tissue (anaesthetized pig). Student will work in teams (3 students/team) in a rotational system.

Subject: **BASIC LAPAROSCOPIC SURGICAL TRAINING**
Year, Semester: 5th year/1st semester**,** 5th year/2nd semester
Number of teaching hours:
Lecture: **5**
Practical: **15**

1st week:
Lecture: History of laparoscopic surgery. Basic principles of laparoscopic surgery. Laparoscopic equipments: insufflator, optics, monitor, laparoscopic instrumentation. (3 hours)
Laparoscopic surgical interventions (clinical lecturer). (2 hours)

2nd week:
Practical: Practising the use of laparoscopic instruments in open pelvi-trainer. Operating in three-dimensional field viewing two-dimensional structure by video-imaging. (3 hours)

3rd week:
Practical: Intracorporal knotting technique on surgical training model in open and closed pelvi-trainer. (4 hours)

4th week:
Practical: Preparation on chicken thigh and practising intracorporal knotting technique in open and closed pelvi-boxes and MATT (Minimal Access Therapy Technique) trainer. (4 hours)

5th week:
Practical: Cholecystectomy on isolated liver-gallbladder biopreparate model and/or phantom model in closed pelvi-box and MATT (Minimal Access Therapy Technique) trainer. (4 hours)
Self Control Test

Requirements

Prerequisite: Basic Surgical Techniques, Surgical Operative Techniques, Surgery II.

Aim of the course: Students have to learn the laparoscopic equipment and instruments and to perform basic laparoscopic interventions working in open and closed pelvi-trainer, MATT (Minimal Access Therapy Technique) trainer on surgical training models, phantom models and biopreparate model.

Course description: History and basic principles of endoscopic surgery. The use laparoscopic equipment and instruments. Intracorporeal knotting technique in open and closed pelvi-trainer on phantom models and biopreparate models.

Cholecystectomy in closed pelvi-trainer and MATT-trainer on liver-gallbladder phantom model and biopreparate model.

Subject: **BASIC MICROSURGICAL TRAINING. INTRODUCTION TO MICROSURGERY**
Year, Semester: 4th year/1st semester**,** 4th year/2nd semester
Number of teaching hours:
Lecture: **2**
Practical: **10**

1st week:
Lecture: General principles of microsurgery. Operating microscopes. Microsurgical instruments (scissors, forceps, needle-holders, approximating vessel clamps). Microsurgical suture materials and needles. Clinical and experimental application of microsurgery.

2nd week:
Practical: Adaptation to the operating microscope by different magnifications. Harmony between eyes and hands. Scraping letter by letter with needle and microsurgical forceps.

3rd week:
Practical: Preparation and pulling of textile fibers with microsurgical forceps (dry and wet method) by different magnifications. Microsurgical knotting technique with needle-holders and forceps under the microscope.

4th week:
Practical: Various suturing and knotting techniques on pieces of rubber glove.

5th week:
Practical: Arterial anastomosis: end-to-end vascular anastomosis on femoral artery biopreparate model.
Self Control Test

Requirements

Prerequisite: Basic Surgical Techniques, Surgical Operative Techniques
Aim of the course: To learn how to use microscope and microsurgical instruments and to perform different microsurgical interventions.

Course description: Students learn how to use microscope and microsurgical instruments, suture materials and needles. Basic interventions under the microscope by different magnifications to make harmony between eyes and hands. Knotting technique on training pads and performing end-to-end vascular anastomosis on femoral artery biopreparate model (chicken thigh).

Subject: **SURGICAL BIOMATERIALS**
Year, Semester: 5th year/2nd semester**,** 5th year/1st semester
Number of teaching hours:
Lecture: **12**

1st week:
Lecture: Definition of surgical biomaterials. Different types and their clinical application.

2nd week:
Lecture: Surgical suture materials, classification of them and the main aspects in selection of the appropriate suture material related to different organs.

3rd week:
Lecture: Surgical clips, surgical staplers (clip applying machines) and their application fields.

4th week:
Lecture: Surgical meshes and their application fields.

5th week:
Lecture: Bioplasts - method of action, types, application fields.

6th week:
Lecture: Tissue adhesives - mode of action, types, application fields.
Self Control Test

Requirements

Prerequisite: Surgical Operative Techniques, Basic Microsurgical Training – Introduction to Microsurgery, Surgery II
Aim of the course:
Evoking, deepening, extending the knowledge of surgical biomaterials acquired during the "Basic Surgical Techniques" subject including their clinical application possibilities.
Course description:
Review of the different surgical biomaterials: extending the knowledge of suture materials, surgical clips, surgical staplers, surgical meshes, bioplasts and surgical tissue adhesives showing a lot of slides and video recordings demonstrating the experimental and veterinarian clinical use on different organs.

Subject: **SURGICAL OPERATIVE TECHNIQUES**
Year, Semester: 3rd year/2nd semester**,** 4th year/1st semester
Number of teaching hours:
Lecture: **4**
Practical: **8**

1st week:
Lecture: Overviewing of basic surgical knowledge: handling surgical instruments, basic surgical techniques, pitfalls in suturing techniques. Surgical suture materials. Advanced knotting and suturing techniques.
Practical: Practicing knotting techniques on knotting pads and different suturing techniques on gauze model and on surgical training model (simple interrupted suture line, special interrupted suture line - Donati sutures, simple continuous suture line, suture removal). Evaluation of the suture lines, discussion of pitfalls.

2nd week:
Lecture: Scrubbing. Possible mistakes. Vein preparation, cannulation, preparation of infusion set. Blood sampling and injection techniques.
Practical: Practicing blood sampling and injection techniques.
Scrubbing. Practicing different suturing and knotting techniques on skin biopreparate model in team work. Practicing vein preparation and cannulation, preparation of infusion set on surgical phantom model.

3rd week:
Lecture: Suturing techniques in vascular surgery.
Practical: Urinary bladder catheterization on phantom model.
Scrubbing. Vascular sutures on aorta biopreparate model. Vein preparation and cannulation on surgical phantom model.

4th week:
Lecture: Anastomosis techniques in the surgery of the gastrointestinal tract.
Practical: Practicing blood sampling and injection techniques.
Scrubbing. End-to-end one-layer intestinal

anastomosis on small bowel biopreparate model. Vein preparation and cannulation on surgical phantom model.

Self Control Test

Requirements

Prerequisite: Basic Surgical Techniques
In case of over-subscription, students who took part of most lectures of "Basic Surgical Techniques" are favoured.
Aim of the course: Evoking, deepening, extending and training of basic surgical knowledge acquired during the "Basic Surgical Techniques" subject, working on different surgical training models, phantom models in "dry" circumstances, then following surgical scrub, in the operating room, working on vein pad phantom model and different biopreparate models.
Course description: Revision of basic surgical techniques. Repeating and practicing basic life saving methods - hemostasis, venous cutdown technique, conicotomy - and basic interventions: wound closure with different suturing techniques, blood sampling and injection (i.m., i.v.) techniques on phantom models and biopreparate models.

Division of Radiology and Imaging Science

Subject: **MEDICAL IMAGING**
Year, Semester: 3rd year/2nd semester
Number of teaching hours:
Lecture: **16**

1st week:
Seminar: Digital X-Ray imaging

2nd week:
Seminar: Ultrasound imaging

3rd week:
Seminar: CT imaging

4th week:
Seminar: Magnetic Resonance Imaging I.

5th week:
Seminar: Magnetic Resonance Imaging II.

6th week:
Seminar: Radionuclide imaging

7th week:
Seminar: Molecular imaging

Requirements

The aim of the course is to teach students the basis of how the different medical imaging modalities work with respect to clinical application. With the knowledge that they acquired throughout the first two years of medical school, students will learn, before studying radiology, how this key diagnostic course many fit among the clinical subjects.
One absence is allowed.
Final test: written

Division of Radiotherapy

Subject: **DEALING WITH IRRADIATION INDUCED SIDE EFFECTS**
Year, Semester: 3rd year/1st semester
Number of teaching hours:
Lecture: **5**
Practical: **10**

Requirements

Min. 5, max. 12 students
Aim of the course: Evoking, deepening and extending the oncology knowledge acquired during the internal- and preventive medicine practices and physiology from the view of radiotherapy. Introduce the treatment modalities for irradiation induced various side effects.

Subject: **RADIOTHERAPY IN THE CLINICAL PRACTICE**
Year, Semester: 4th year/2nd semester
Number of teaching hours:
Seminar: **15**

1st week:
Seminar: Indication, contraindication of radiotherapy neoadjuvant, adjuvant, palliative treatment

2nd week:
Seminar: Equipment in radiotherapy

3rd week:
Seminar: Teletherapy

4th week:
Seminar: Special teletherapy techniques

5th week:
Seminar: Brachytherapy

6th week:
Seminar: Isotope therapy, eye plaque brachytherapy

7th week:
Seminar: The role of localization of tumor spreeding, lymphnode regions and risk organs

Requirements

The goal is to get to know the process and clinical considerations of radiotherapy (indications, contraindications, equipments).

Kenézy Life Sciences Library, University of Debrecen

Subject: **LIBRARY SYSTEM**
Year, Semester: 1st year/1st semester
Number of teaching hours:
Practical: **10**

1st week:
Practical: Introduction to the Library and library use:
- Traditional services (registration, rules of library usage, loans, reading room, computer lab).
- Electronic services (the Library's home page, online catalogs, anatomy databases and links).

2nd week:
Practical: Electronic Information Resources:
- Electronic journals (EBSCO A-to-Z, Science Direct).
- EBSC Ohost Research Data-bases.
- Link collections.

3rd week:
Practical: Databases:
- Medline.
- Impact Factors.

4th week:
Practical: Evidence Based Medicine Synopsis of information retrieval

5th week:
Practical: Test

Requirements

Class attendance!

CHAPTER 21
TITLES OF THESES

Department of Anatomy, Histology and Embryology

1. Title: Inhibition mediated by GABAA and GABAB receptors in the superficial spinal dorsal horn in health and disease
2. Title: Molecular organization of the endogenous cannabinoid signaling apparatus in the superficial spinal dorsal horn in health and disease
Tutor: Miklós Antal M.D., Ph.D., D.Sc.

3. Title: Role of the extracellular matrix in the plasticity of the vestibular system.
4. Title: Termination of the vestibulospinal tract in the rat
Tutor: Klára Matesz M.D., Ph.D., D.Sc.

5. Title: Dendritic impulse propagation in mice showing symptoms of Alzheimer's disease – computer modelling
Tutor: Ervin Wolf M.Sc., Ph.D.

6. Title: Basic mechanisms of visual contour integration in the primary visual cortex using voltage sensitive dye imaging.
7. Title: Dendritic integration of inhibitory and excitatoty cortico-cortical inputsin the primary visual cortex
8. Title: Functional mapping of callosal inputs on the dendritic arbour of neurons in the visual cortex
9. Title: Mapping horizontal connections in the human brain.
10. Title: Synaptic mapping of identified excitatory and inhibitory neurons in the primary visual cortex. Immun-electron microscopic study.
Tutor: Zoltán Kisvárday M.Sc., Ph.D., D.Sc.

11. Title: Investigation of signaling mechanisms that regulate cartilage maturation
Tutor: Róza Zákány M.D., Ph.D.

12. Title: Investigation of neuronal network development in the spinal cord
Tutor: Zoltán Mészár M.Sc., Ph.D.

13. Title: Investigation of PACAP signalling in skeletal tissues
Tutor: Tamás Juhász M.Sc., Ph.D.

14. Title: Identification of genes and proteins which play important role in the induction and maintenance of chronic inflammatory pain.
Supervisor: Krisztina Hollo MSc, PhD
Tutor: Krisztina Holló M.Sc., Ph.D.

15. Title: Correlative physiological and morphological investigation of propriospinal connections in the spinal dorsal horn
Tutor: Zsófia Antal M.D., Ph.D.

Department of Biochemistry and Molecular Biology

1. Title: Apoptosis of differentiating adipocytes
2. Title: Development of effective recombinant tissue transglutaminase production systems. Development of assays to test transglutaminase activity. Studying superGTPase tissue transglutaminases.
Tutor: László Fésüs M.D., Ph.D., D.Sc., M.H.A.Sc.

3. Title: Genetic modification of mesenchymal stem cells and differentiation into macrophages.
4. Title: Investigation of the phagocytosis of apoptotic cells
5. Title: The anti-inflammatory role of adenosine A2A receptor.
6. Title: The anti-inflammatory role of membrane-bound TNFalpha
7. Title: The potential role of LXR receptor in the dexamethasone-induced phagocytosis of apoptotic cells.
8. Title: The role of adenosine A3 receptor in mediating anti-inflammatory action of apoptotic cells.
9. Title: The role of transglutaminase 2 in calcium homeostasis.
Tutor: Zsuzsa Szondy M.D., Ph.D., D.Sc.

10. Title: The role of retroviral proteases in the retroviral life cycle.
Tutor: József Tőzsér M.Sc., Ph.D., D.Sc.

11. Title: The role of tissue transglutaminase in rolling and adhesion of neutrophil granulocytes
Tutor: Zoltán Balajthy M.Sc., Ph.D.

12. Title: Saliva biomarkers of oral cancer.
Tutor: Beáta Scholtz M.Sc., Ph.D.

13. Title: Production of dendritic cells and macrophages from embryonic stem cells.
14. Title: Transcriptional reprogramming of murine embryonic stem cell progenitors.
Tutor: István Szatmári M.Sc., Ph.D.

15. Title: The epigenetic components of transcriptional regulation.
Tutor: Bálint Bálint L. M.D., Ph.D.

16. Title: Modification of the enzymatic activity of transglutaminase 2 by site-directed mutagenesis. Therapeutic utilization of modified transglutaminase 2.
Tutor: Róbert Király M.Sc., Ph.D.

17. Title: Quantitative proteomic analysis of the tear proteins of diabetic patients.
Tutor: Éva Csősz M.Sc., Ph.D.

18. Title: Identification of regulatory SNPs in promoter regions of different species by bioinformatic analyses.
Tutor: Endre Barta M.Sc., Ph.D.

19. Title: The role of aim2 protein and native immune response in inhibiting cell proliferation
Tutor: Máté Demény M.D., Ph.D.

20. Title: Alterations in structural properties of the transcription machinery in relation to disease development
21. Title: Molecular factors in cell differentiation
22. Title: Studying the re-programming mechanisms of viral proteins.
23. Title: The role of signaling pathway perturbations in cancer development
Tutor: Mónika Fuxreiter M.Sc., Ph.D., D.Sc.

Department of Biophysics and Cell Biology

1. Title: Investigation of cell surface distribution of erbB-2 oncoprotein in breast tumor cell lines.
2. Title: Role of tumor stem cells in trastazumab resistant breast tumors
Tutor: János Szöllősi M.Sc., Ph.D., D.Sc., M.H.A.Sc.

3. Title: Studying the inactivation of voltage gated potassium ion channels in heterologous expression systems.
Tutor: György Panyi M.D., Ph.D., D.Sc.

4. Title: Epigenetic regulation of nucleosome-DNA cohesion
5. Title: Interactions between ABC transporters and their membrane environment
Tutor: Gábor Szabó M.D., Ph.D., D.Sc.

6. Title: Mathematical analysis and computer modelling of the topology of cell surface proteins.
7. Title: Role of MHC in the organization of cell surface proteins
Tutor: László Mátyus M.D., Ph.D., D.Sc.

8. Title: Examination of the channel function properties of the P170 multidrug pump by patch-clamp.
Tutor: Zoltán Krasznai M.Sc., Ph.D.

9. Title: Cytometry of cytotoxic lymphocytes
10. Title: Physiological roles of the multidrug resistance transporter P-glycoprotein.
Tutor: Zsolt Bacsó M.D., Ph.D.

11. Title: Elucidation of the catalytic mechanism of ABC transporters
Tutor: Katalin Goda M.Sc., Ph.D.

12. Title: 3-dimensional reconstruction of chromosome conformations based on whole-genome contact probability data
13. Title: Histone point mutations affecting epigenetic modifications: impact on chromosome architecture
Tutor: Lóránt Székvölgyi M.Sc., Ph.D.

14. Title: Biophysical analysis and functional significance of cell surface protein patterns in T cell-mediated immune responses
Tutor: Andrea Dóczy-Bodnár M.Sc., Ph.D.

15. Title: Studying nuclear receptor function by modern microscopy techniques
Tutor: György Vámosi M.Sc., Ph.D.

16. Title: Quantitative investigation of the associations of ErbB proteins using biophysical and molecular biological methods
17. Title: The correlation between the metastatic potential and chemoresistance of breast tumors with the expression level and association state of ErbB proteins
Tutor: Péter Nagy M.D., Ph.D.

18. Title: Molecular mechanisms of anticancer immune therapy.
19. Title: Role of molecular interactions between receptor tyrosine kinases and integrins in the therapy resistance of tumors.
Tutor: György Vereb M.D., Ph.D., D.Sc.

20. Title: Comparative study on Kv1.3 channels conjugated with fluorescent proteins
Tutor: Péter Hajdu M.Sc., Ph.D.

Department of Anesthesiology and Intensive Care

1. Title: Experimental testing of the neuromuscular junction
Tutor: Ákos Fábián M.D., Ph.D.

2. Title: Preemptive and preventive analgesia
Tutor: Béla Fülesdi M.D., Ph.D., D.Sc.

3. Title: Tako-tsubo cardiomyopathy in neurocritical care conditions
Tutor: Csilla Molnár M.D., Ph.D.

4. Title: Clinical studies in the field of neuromuscular block and its reversal
Tutor: Adrienn Pongrácz M.D., Ph.D.

Institute of Behavioural Sciences, Faculty of Public Health

1. Title: Basic issues of psy-complex (psychology, psychotherapy, psychiatry)
2. Title: Medicalization and its social context
3. Title: Sandor Ferenczi: Clinical Diary and the philosophy of doctor-patient relationship
4. Title: The importance of the point of view of psychoanalysis for a humanistic medicine.
Tutor: Attila Bánfalvi M.A., Ph.D., C.Sc.

5. Title: Inborn sociality-socialized individuality: the theory and its roots.
6. Title: Non-verbal behaviour: comparative analysis of biological and social aspects.
Tutor: Péter Molnár M.D., D.Sc.

7. Title: Ethical and legal issues of genetic research
8. Title: Ethical issues of research in the medical and health sciences
9. Title: Professional ethics and the system of gratitude money in Hungary
10. Title: The ethics of end-of-life decisions
Tutor: Péter Kakuk M.A., Ph.D.

11. Title: End of life decisions
Tutor: Sándor Kőmüves M.A., Ph.D.

12. Title: Evolutionary Psychopathology
13. Title: Humor and Mental Health
14. Title: Life History Strategy elements in mate choice, attachment, and mental health
Tutor: Roland Tisljár M.A., Ph.D.

15. Title: Psychological interventions in dental practice
Tutor: Eszter Tisljár - Szabó M.A., Ph.D.

Department of Cardiology

Division of Cardiac Surgery

1. Title: Evaluation of the antibacterial effect of different skin preparation techniques in cardiac surgery
2. Title: The effect of carbon dioxide deairing during valve surgery - review of the literature
Tutor: Tamás Szerafin M.D., Ph.D.

3. Title: Short-term results of operations accomplished in A-type aortic dissections
Tutor: Tamás Maros M.D.

4. Title: Mitral valve repair-review of the literature
Tutor: István Szentkirályi M.D.

5. Title: Mid-term results of aortic valve sparing operations
Tutor: Ambrus Horváth M.D.

6. Title: Comparison of the effects of different anticoagulation therapies after aortic bioprothesis implantation.
Tutor: Lehel Palotás M.D.

Division of Cardiology

1. Title: Ablation in atrial fibrillation
2. Title: Novel treatment modalities in atrial fibrillation (catheter ablation, surgery and pacemakers)
Tutor: Zoltán Csanádi M.D., Ph.D.

3. Title: Flow calculation in 3D reconstructed coronary arteries
Tutor: Zsolt Kőszegi M.D., Ph.D.

4. Title: Cardiovascular aspects of diabets mellitus
5. Title: Left ventricular function of obese patients.
Tutor: Tibor Fülöp M.D., Ph.D.

6. Title: Antithrombotic therapy in patients with ischaemic heart disease.
Tutor: Tibor Szűk M.D., Ph.D.

7. Title: Supraventicular arrhythmias.
Tutor: Csaba Kun M.D.

8. Title: The role of echocardiography in staving off complication of myocardial infarction.
Tutor: Ildikó Farkas-Rácz M.Sc.

9. Title: Stem cell therapy after myocardial infarction.
Tutor: László Balogh M.D.

10. Title: Aspirin - resistency
Tutor: Nóra Homoródi M.D.

11. Title: Cardiovascular complications of dermatomyositis.
Tutor: Andrea Péter M.D.

12. Title: Electrical treatment modalities in heart failure
Tutor: Orsolya Bene M.D.

13. Title: Invasive hemodynamic measurements in heart failure patients
Tutor: László Fülöp M.D., Ph.D.

Division of Clinical Physiology

1. Title: Improvement of myocardial inotropy under physiological and pathological conditions
Tutor: Zoltán Papp M.D., Ph.D., D.Sc.

2. Title: The role of posttranslational modifications in the contractile regulation of the heart.
3. Title: The role of vanilloid receptors in cardiovascular regulatory mechanisms
Tutor: Attila Tóth M.Sc., Ph.D., D.Sc.

4. Title: Endogenous regulation of the renin-angiotensin-aldosterone system and its clinical significance
Tutor: Miklós Fagyas M.D., Ph.D.

Department of Family and Occupational Medicine, Faculty of Public Health

1. Title: Evaluation of the primary health care system of......(the country of origin of student). Recommendations for changes
2. Title: Nutritional factors in prevention and development of diseases
3. Title: The roles of physical activity in disease prevention
Tutor: Imre Rurik M.D., M.Sc., Ph.D., D.Sc.

4. Title: Cardiovascular risk factors and risk assessment

5. Title: Continuing care of patients with high cardiovascular risk in primary care
Tutor: Zoltán Jancsó M.D., Ph.D.

6. Title: Advantages of computer-aided diagnosis in primary care
7. Title: Evaluation of the primary health care system of ....(the country of origin of student). Recommendations for changes
8. Title: Health impairment related to occupational hazard
9. Title: Work related stress and burnout amongst healthcare workers
Tutor: László Róbert Kolozsvári M.D., Ph.D.

10. Title: Effects of burnout on work efficiency
11. Title: Psychosocial etiological factors in the workplace
12. Title: Stress as a risk factor in the working environment
Tutor: Tímea Ungvári M.Sc.

13. Title: Physical, mental and social aspects of aging
14. Title: The family physician as gatekeeper
Tutor: Anna Nánási M.D.

Department of Preventive Medicine, Faculty of Public Health

1. Title: The use of Molecular genetic techniques for the detection of genom alterations in malignant diseases (review the literature)
Tutor: Margit Balázs M.Sc., Ph.D., D.Sc.

2. Title: Improve the mental health of university students
3. Title: Living conditions and health among vulnerable people
4. Title: Mental health of students
5. Title: Mental health of university students
Tutor: Karolina Kósa M.D., M.Sc., Ph.D.

6. Title: Monitoring type 2 diabetes design strategies
7. Title: Prevalence of type 2 diabetes (specific region)
Tutor: Attila Csaba Nagy M.D., Ph.D.

8. Title: Evaluation of foreign aid for the health sector in medium and low income countries
Tutor: János Sándor M.D., Ph.D.

Division of Nuclear Medicine and Translational Imaging

1. Title: Development of E-learning material for nuclear medicine
Tutor: József Varga M.Sc., Ph.D.

2. Title: Analysis of metabolic and morphologic pattern of breast cancer in case of the diameters larger then 3 cm
3. Title: The role of Tc99m-Tektrotyd SPECT/CT to evaluate metastatic neuroendocrine tumors
Tutor: Ildikó Garai M.D., Ph.D.

Department of Human Genetics

1. Title: Characterization of factor-C protein family using sequence databases.
2. Title: Expression of WT1 and its splice variants in different diseases studied by real time PCR.
3. Title: Study of a gene regulating differentiation in bacteria.
4. Title: Study of the WT1 gene in urogenital malformations.
Tutor: Sándor Biró M.Sc., Ph.D., D.Sc.

5. Title: Human disease models in animals and lower eukaryotes (review).
Tutor: Zsigmond Fehér M.D., Ph.D.

6. Title: Ca++-binding proteins in Streptomyces
7. Title: Isolation of mono-ADP-ribosylated proteins from pro- and eukaryotic cells.
Tutor: András Penyige M.Sc., Ph.D.

8. Title: Analysis of an A factor non-producer bald mutant Streptomyces griseus strain with respect of antibiotic production and cell differentiation.
Tutor: Zsuzsanna Birkó M.Sc., Ph.D.

9. Title: Chromosome-tracking studies in complex diseases.
Tutor: György Vargha M.D., Ph.D.

10. Title: Factor-C: a protein regulating differentiation in Streptomycetes.
Tutor: Judit Keserű M.Sc., Ph.D.

11. Title: Copy number variation of WT-1 gene in hematological conditions
Tutor: Gergely Buglyó M.D., Ph.D.

12. Title: Functional analysis of the Streptomyces facC gene in Aspergillus
Tutor: Melinda Paholcsek M.Sc., Ph.D.

13. Title: Global analysis of the human blood plasma epitome and interactome in health and disease.
14. Title: Use of comparative monoclonal antibody proteomics to detect three dimensional conservation relevant to protein function.
Tutor: László Takács M.D., Ph.D., D.Sc., M.H.A.Sc.

15. Title: Study of antibiotic production and differentiation in Streptomyces bacteria.
16. Title: Study the role of miRNAs in oncogenic disorders.
Tutor: Melinda Szilágyi-Bónizs M.Sc., Ph.D.

Department of Clinical Oncology

1. Title: Relationship between exercise and development of malignant tumors
2. Title: Role of microRNAs in development of breast cancer
3. Title: Role of optimalisation of body weight in treatment and prevention of malignant tumors
Tutor: Zsolt Horváth M.D., Ph.D.

4. Title: Re-purposing of clinical drugs for cancer prevention
Tutor: Iván Uray M.D., Ph.D.

Department of Immunology

1. Title: Phenotypic and functional properties of dendritic cells
Tutor: Éva Rajnavölgyi M.Sc., Ph.D., D.Sc.

2. Title: Functional properties of SLAM receptor family proteins in dendritic cells

3. Title: The role of the HOFI/SH3PXD2B adaptor protein in the regulation of the tumor microenvironment
Tutor: Árpád Lányi M.Sc., Ph.D.

4. Title: The role of innate immune cells in the development of allergic responses
5. Title: The role of innate lympoid cells (ILC) in human diseases
Tutor: Attila Bácsi M.Sc., Ph.D.

6. Title: Altered differentiation of monocyte derived dendritic cells and their functional differences
Tutor: Péter Gogolák M.Sc., Ph.D.

7. Title: Study of non-apoptotic cytotoxic processes during immune response, new way of killing apoptosis resistant tumor cells
Tutor: Gábor Koncz M.Sc., Ph.D.

Division of Clinical Oncology

1. Title: Current treatment of kidney cancer
Tutor: Balázs Juhász M.D.

2. Title: Palliation in oncology
Tutor: Éva Szekanecz M.D., Ph.D.

3. Title: Epidemiology, prognostic factors and therapeutic options of neuroendocrine tumors
4. Title: Neoadjuvant treatment of breast cancer, as field of research
Tutor: Judit Kocsis M.D., Ph.D.

Department of Laboratory Medicine

1. Title: Investigation of thrombosis and inflammation in PSGL-1 deficiency.
2. Title: The effect of thrombotic and inflammatoric stimuli on platelet activation
Tutor: János Kappelmayer M.D., Ph.D., D.Sc.

3. Title: Functional analysis of antimicrobial fusion proteins
4. Title: Molecular genetic diagnostics of hematological and other malignant diseases
Tutor: Péter Antal-Szalmás M.D., Ph.D.

5. Title: Molecular genetic diagnosis of cystic fibrosis

6. Title: Molecular genetic diagnosis of severe inherited disease
Tutor: István Balogh M.Sc., Ph.D.

7. Title: Analysis of stem cell mobility during pheripherial stem cell transplantation
8. Title: Application of FXIII-A in the detection of minimal residual disease in acute lymphoblastic leukemia
Tutor: Zsuzsa Hevessy M.D., Ph.D.

9. Title: Laboratory diagnostic of osteoporosis
Tutor: Harjit Pal Bhattoa M.D., Ph.D.

10. Title: Applications of calculated GFR
Tutor: Anna Oláh M.Sc., Ph.D.

11. Title: The significance of the laboratory investigation of HE4 in cystic fibrosis
Tutor: Béla Nagy Jr. M.D., Ph.D.

Division of Clinical Laboratory Science

1. Title: Correlation of FXIII levels and FXIII-B subunits polymorphisms with the risk of deep vein thrombosis
2. Title: New chromogenic assay to detect APC resistance
Tutor: László Muszbek M.D., Ph.D., D.Sc., M.H.A.Sc.

3. Title: Effect of alfa2-plasmin inhibitor polymorphisms on the risk of thrombosis
4. Title: Effect of FXIII on smooth muscle cell functions
5. Title: Investigation of alfa2-plasmin inhibitor and fibrinogen interaction
6. Title: Method development for the detection of various alpha2 plasmin inhibitor isoforms
Tutor: Éva Katona M.Sc.

7. Title: Inherited hemostasis disorders; laboratory and molecular genetic aspects
8. Title: Laboratory monitoring of the new generation oral anticoagulants
9. Title: New diagnostic methods in Protein S deficiency.
Tutor: Zsuzsanna Bereczky M.D., Dr. habil., Ph.D.

10. Title: Characterization oh the heparin-antithrombin interaction with surface plasmon resonance
11. Title: Coagulation factor and inhibitor levels in end-stage renal disease
12. Title: The interactions of blood coagulation factor XIII B subunit with different proteins
Tutor: Krisztina Pénzes-Daku M.Sc., Ph.D.

13. Title: Hybrid quantum mechanics - molecular mechanics (QM/MM) calculations on biological systems
Tutor: István Komáromi M.Sc., Ph.D.

14. Title: Fibrinolytic marker levels and polymorphisms in ischemic stroke patients
15. Title: Local hemostasis alterations in the left atrium of patients with atrial fibrillation
Tutor: Zsuzsa Bagoly M.D., Ph.D.

Division of Radiotherapy

1. Title: Dealing with irradiation induced side effects
2. Title: Neoadjuvant radio-chemotherapy of rectal cancer
3. Title: Palliative and supportive care in radiooncology
4. Title: Partial irradiation of the breast
5. Title: Radiotherapy of breast cancer
Tutor: Andrea Furka M.D., Ph.D.

Department of Dermatology

1. Title: Ablative laser treatment in Hailey-Hailey disease
2. Title: DNA repair mechanisms
3. Title: Genetic susceptibility in psoriasis
4. Title: Laser therapy of vascular skin lesions
5. Title: Lipid metabolism in psoriasis
Tutor: Éva Remenyik M.D., Ph.D., D.Sc.

6. Title: Importance of sentinel node dissection in the complex therapy of melanoma
7. Title: Modern moist wound dressings with simultaneous effective antibacterial properties in the treatment of difficult to heal wounds
8. Title: Options for treatment of basal cell cancer including targeted therapy
9. Title: Possibilities of biotechnological skin

substitution in the treatment of burns
10. Title: Possibilities of cell therapy in the treatment of burns
11. Title: Possibilities of scar correction
12. Title: Role of Negative Pressure Therapy in burn treatment
Tutor: István Juhász M.D., Ph.D., C.Sc.

13. Title: Deformities and discolorations of the nails: relation to other medical conditions. Overview of the literature and case reports.
Tutor: Éva Szabó M.D., Ph.D.

14. Title: Significance of compression therapy in treating venouos leg ulcer
Tutor: Zoltán Péter M.D.

15. Title: Biological therapy in psoriasis - mechanism of action and reasons for secunder loss of response
16. Title: New approaches in the classification and therapy of chronic urticaria
17. Title: Possibility of allergen specific immuntherapy in the treatment of atopic dermatitis
Tutor: Krisztián Gáspár M.D., Ph.D.

18. Title: Lipid disorder associated dermatological symptoms
19. Title: Role of lipid environment in the activation of dermal macrophages
Tutor: Dániel Törőcsik M.D., Ph.D.

20. Title: New therapies in severe psoriasis vulgaris
21. Title: Opalizumab therapy in chronic urticaria
Tutor: Andrea Szegedi M.D., Ph.D., D.Sc.

Department of Medical Chemistry

1. Title: Investigation of Ser/Thr protein phosphatase in pathogenic fungi
Tutor: Viktor Dombrádi M.Sc., Ph.D., D.Sc.

2. Title: Interaction of protein phosphatase 1 catalytic subunit with regulatory proteins
Tutor: Ferenc Erdődi M.Sc., Ph.D., D.Sc.

3. Title: Mechanism of oxidative stress-induced cell death
4. Title: Mesenchymal stem cell differentiation
5. Title: Regulation of macrophage activation and pyroptotic death
Tutor: László Virág M.D., Ph.D., D.Sc.

6. Title: Scaffolding proteins in the endothelium
Tutor: Csilla Csortos M.Sc., Ph.D.

7. Title: Structural and functional investigation of a fungus specific protein phosphatase
Tutor: Ilona Farkas M.Sc., Ph.D.

8. Title: Study of metabolic processes with special regard to the involvement of mitochondrial activity.
Tutor: Péter Bay M.Sc., Ph.D.

9. Title: Identification of adenosine receptor 2A interacting proteins in macrophages
Tutor: Endre Kókai M.Sc., Ph.D.

10. Title: Study of the role of protein phosphatase in wound healing
Tutor: Beáta Lontay M.Sc., Ph.D.

11. Title: Regulation of protein phosphatase-1 by inhibitory proteins and the translation of the targing subunit
Tutor: Andrea Kiss M.Sc., Ph.D.

12. Title: High-Throughput Screening
Tutor: Csaba Hegedűs M.Sc., Ph.D.

Department of Medical Microbiology

1. Title: Antimicrobial cell-mediated immunity measured by mRNA tests
Tutor: József Kónya M.D., Ph.D.

2. Title: Evaluation of in vitro efficacy of different new antibiotics against multiresistant bacteria
Tutor: Judit Szabó M.D., Ph.D.

3. Title: Role of HPV in head and neck cancers
Tutor: Krisztina Szarka M.Sc., Ph.D.

4. Title: Evaluation of fungicidal effect of antifungal agents using time-kill curves

5. Title: New and older agents in antifungal chemotherapy
Tutor: László Majoros M.D., Ph.D.

6. Title: Prevalance of human polyomaviruses
Tutor: Eszter Csoma M.Sc., Ph.D.

7. Title: Effects of human papillomavirus oncoproteins on cellular signaling pathways in keratinocytes
Tutor: Anita Szalmás M.Sc., Ph.D.

8. Title: Molecular epidemiology of aminoglycoside resistance in nosocomial Gram negative bacteria
Tutor: Gábor Kardos M.D., Ph.D.

9. Title: Intratypical variation of human papillomaviruses
Tutor: György Veress M.Sc., Ph.D.

10. Title: The importance of fungal quorum-sensing in antifungal therapy against Candida biofilms.
Tutor: Renátó Kovács M.Sc., Ph.D.

Department of Internal Medicine

1. Title: Immunotherapy of B cell lymphomas.
2. Title: Safety profile of prolonged rituximab therapy in lymphomas.
3. Title: Targeted therapy in non-Hodgkin's lymphomas
Tutor: Lajos Gergely M.D., Ph.D., D.Sc.

4. Title: Clinical testing of sinus node function.
Tutor: Péter Kovács M.D., DLA, Ph.D., D.Sc.

5. Title: Lipid abnormalities in hypothyreoidism.
6. Title: The function of LDL in lipid metabolism
Tutor: György Paragh M.D., Ph.D., D.Sc.

7. Title: Diagnostic tests and imaging techniques in endocrinology.
Tutor: Endre Nagy M.D., Ph.D., D.Sc.

8. Title: Antiarrhythmic drug treatment.
9. Title: Cardiac arrhythmias in patients end-stage renal failure.
10. Title: Pacemaker treatment and myocardial infarction.
11. Title: Pathophysiology of neurocardiogenic syncope.
12. Title: Rhythm disturbances and the autonomic system of the heart.
13. Title: Ventricular repolarization and drugs.
Tutor: István Lőrincz M.D., Ph.D.

14. Title: Investigations of lipoproteins in normo- and hypercholesterinemic patients.
Tutor: Judit Boda M.D.

15. Title: Adipokines and Insulin Resistance
16. Title: Obesity: Diagnosis and Treatment
17. Title: Obesity: Etiology and Co-morbidities
Tutor: Péter Fülöp M.D., Ph.D.

18. Title: Characteristics of rare systemic vasculitides
19. Title: Sjögren's syndrome associated with other autoimmune disease
Tutor: Margit Zeher M.D., Ph.D., D.Sc.

20. Title: Immunoregulatory abnormality in undifferentiated connective tissue disease
21. Title: Interstitial lung diseases in MCTD.
22. Title: The presence of antiphospholipide antibodies in the disease course of the MCTD
23. Title: Vascular involvement in mixed connective tissue disease.
24. Title: Vascular risk factors in undifferentiated connective tissue disease
Tutor: Edit Bodolay M.D., Ph.D., D.Sc.

25. Title: Dermato/polymyositis overlap with antiphospolipide syndrome.
26. Title: Genetical study in myositis
27. Title: Improvement of quality of life in polymyositis and dermatomyositis patients by physiotherapy
Tutor: Katalin Dankó M.D.,Ph.D.,D.Sc.

28. Title: Plasmapheresis treatment in intensive therapy
Tutor: Pál Soltész M.D., Ph.D., D.Sc.

29. Title: Autoimmune disorders and GI tract
Tutor: Zsolt Barta M.D., Ph.D.

30. Title: Ischemic colitis.
31. Title: Life quality of Raynaud syndrome
Tutor: Zoltán Csiki M.D., Ph.D.

32. Title: The disease course after stent inplantation in peripheral arterial disease
Tutor: György Kerekes M.D., Ph.D.

33. Title: Novel therapeutical approaches in multiple myeloma
34. Title: The impact of multi-drug resistance genes in the prognosis of lymphoproliferative disorders
Tutor: LászlóVáróczy M.D., Ph.D.

35. Title: Inherited and acquired thrombophilia
36. Title: New direct oral anticoagulants
37. Title: Stem cell therapy in peripheral arterial disorders
Tutor: Zoltán Boda M.D.,Ph.D.,D.Sc.

38. Title: Gastric cancer: clinics and treatment
39. Title: Gastrointestinal bleeding
40. Title: Gluten sensitive enteropathy
41. Title: Inflammatory bowel diseases.
42. Title: Lymphomas in the gastrointestinal tract.
Tutor: István Altorjay M.D.,Ph.D.

43. Title: Langerhans histiocytosis
44. Title: Osteosclerotic myeloma
45. Title: Therapeutic challenges in rare haemostatic disorders
Tutor: György Pfliegler M.D., Ph.D.

46. Title: Epidemiology, diagnostics and therapy of chronic hepatitis C
47. Title: Pathomechanism of alcoholic hepatitis
48. Title: Signs, diagnostics and treatment of portal hypertension.
49. Title: Therapeutic options in primary sclerotizing cholangitis
50. Title: Treatment of autoimmune hepatitis
Tutor: István Tornai M.D.,Ph.D.

51. Title: A case history of an interesting acute myeloid leukaemia patient in the 2nd Department of Medicine (connection with the literature data)
Tutor: Attila Kiss M.D., Ph.D.

52. Title: Chronic neutrophilic leukaemia
Tutor: Béla Telek M.D., Ph.D.

53. Title: Therapeutic options of CML
Tutor: László Rejtő M.D., Ph.D.

54. Title: Biological treatment of ulcerative colitis
Tutor: Károly Palatka M.D., Ph.D.

55. Title: The role of Willebrand factor in various internal diseases.
Tutor: Ágota Schlammadinger M.D., Ph.D.

56. Title: Bacterial infection in liver cirrhosis
57. Title: Current therapeutic options of acute pancreatitis
Tutor: Zsuzsa Vitális M.D., Ph.D.

58. Title: Diagnosis and treatment of chronic lymphocytic leukemia
59. Title: Novel therapeutic approches in the treatment of multiple myeloma
60. Title: Philadelphia negative chronic myeloproliferative neoplasms - novel genetic and therapeutic improvements
61. Title: Recent advances in the management of chronic ITP
Tutor: Péter Batár M.D., Ph.D.

62. Title: Heparin-induced thrombocytopenia
Tutor: Zsolt Oláh M.D., Ph.D.

63. Title: Are the bacterial infections predictable in liver cirrhosis?
64. Title: Role of serological markers in prediction of disease course and response to therapy in inflammatory bowel diseases.
Tutor: Mária Papp M.D., Ph.D.

Department of Pathology

1. Title: Molecular classification of glial neoplasms
2. Title: Overview of non-adenohypophysaer

neoplastic lesion within and around the sella
3. Title: Use of IDH-1 immunohistochemistry in surgical neuropathology
Tutor: Péter Molnár M.D., D.Sc.

4. Title: Functional analysis of malignant lymphomas using image analysis
5. Title: Mitotic failures and cancer progression
6. Title: Molecular diagnostics of solid tumors
Tutor: Gábor Méhes M.D., D.Sc.

7. Title: Clinicopathological studies in haemorrhagic stroke
8. Title: Clinicopathological studies in ischaemic stroke
9. Title: Dementia with Lewy bodies (DLB) and Parkinson's disease dementia (PDD)– differences and similarities
10. Title: Molecular pathology of glial brain tumours
11. Title: Pathomechanisms of cell death in neurodegenerative diseases
Tutor: Tibor Hortobágyi M.D.,Ph.D.

Department of Pharmacology and Pharmacotherapy

1. Title: Cardiovascular risk factors
2. Title: Metabolic link between obesity and insulin resistance
Tutor: Zoltán Szilvássy M.D., Ph.D., D.Sc.

3. Title: Arrhythmic patient in dentistry
4. Title: Optional title in pharmacology
5. Title: Pharmacological and clinical significance of adenosine receptor antagonists
6. Title: Pharmacological and non-pharmacological treatment of endothelial dysfunction
7. Title: Pharmacology of antidepressive drugs: dental implications
Tutor: József Szentmiklósi M.D., Ph.D.

8. Title: Emerging roles of prostaglandin DP1 and DP2 receptors in acute and chronic aspects of allergic diseases
9. Title: Optional title in pharmacology
10. Title: Pharmacological treatment of acute decompensated heart failure (ADHF)
11. Title: Pharmacology of herbal remedies
12. Title: Pharmacology of neurogenic inflammation
13. Title: Pharmacotherapy of Amyotrophic Lateral Sclerosis (ALS)
14. Title: Pharmacotherapy of Duchenne Muscular Dystrophy (DMD)
15. Title: Possible pharmacological exploitations of TRPV1 receptors
16. Title: Use of Histone deacetylase inhibitors (HDI): Novel advances in cancer treatment
Tutor: Róbert Pórszász M.D., Dr. habil., MBA, Ph.D.

17. Title: Effect of colony stimulating factors or other drugs on bone marrow-derived cell lines
18. Title: How insulin resistance influences drug effects
19. Title: Selected topic in field experimental hemato-oncology
Tutor: Ilona Benkő M.D., Ph.D.

20. Title: Optional title on cancer chemotherapy
Tutor: Attila Megyeri M.D., Ph.D.

21. Title: Optional title in pharmacology
Tutor: Ágnes Cseppentő M.D.

22. Title: Optional title on antibacterial chemotherapy
Tutor: Zsuzsanna Gál M.Sc., Ph.D.

23. Title: Optional title in pharmacology
Tutor: Béla Juhász D.Pharm., Dr. habil., Ph.D.

24. Title: Optional title in pharmacology
Tutor: Balázs Varga D.Pharm., Ph.D.

25. Title: Optional title in pharmacology
Tutor: Mariann Bombicz D.Pharm.

26. Title: Optional title in pharmacology
Tutor: Dániel Priksz D.Pharm.

Department of Physiology

1. Title: Expression and significance of the TASK channels in physiological and pathological conditions
Tutor: Péter Szűcs M.D., Ph.D.

2. Title: Alterations of intracellular calcium concentration in pathological conditions
Tutor: László Csernoch M.Sc., Ph.D., D.Sc.

3. Title: Regional differences in the electrophysiological properties of cardiomyocytes
Tutor: Péter Nánási M.D., Ph.D., D.Sc.

4. Title: Role of afterdepolarization mechanisms in the arrhythmogenesis
Tutor: Tamás Bányász M.D., Ph.D.

5. Title: Electrophysiological properties of mammalian cardiac tissues
Tutor: János Magyar M.D., Ph.D., D.Sc.

6. Title: Beat-to beat variability of cardiac repolarization
Tutor: Norbert Szentandrássy M.D., Ph.D.

7. Title: Studies on ion channels incorporated into artificial membranes
Tutor: István Jóna M.Sc., Ph.D., D.Sc.

8. Title: Role of late sodium current in the arrhythmogenesis
Tutor: Balázs Horváth M.D.,Ph.D.

9. Title: Role of potassium channels in neuron function
Tutor: Balázs Pál M.D., Ph.D.

10. Title: Properties of vanilloid receptors
Tutor: István Balázs Tóth M.Sc., Ph.D.

11. Title: Role of Protein Kinase C isoforms in cell function.
Tutor: Gabriella Czifra M.Sc., Ph.D.

Division of Gastroenterology

1. Title: Gastric cancer: clinics and treatment
2. Title: Gastrointestinal bleeding
3. Title: Gluten sensitive enteropathy
4. Title: Inflammatory bowel diseases
5. Title: Lymphomas in the gastrointestinal tract
Tutor: István Altorjay M.D., Ph.D.

6. Title: Epidemiology, diagnostics and therapy of chronic hepatitis C
7. Title: Pathomechanism of alcoholic hepatitis
8. Title: Signs, diagnostics and treatment of portal hypertension
9. Title: Therapeutic options in primary sclerotizing cholangitis
10. Title: Treatment of autoimmune hepatitis
Tutor: István Tornai M.D., Ph.D.

11. Title: Biological treatment of ulcerative cholitis
Tutor: Károly Palatka M.D., Ph.D.

12. Title: Are the bacterial infections predictable in liver cirrhosis?
13. Title: Role of the serological markers in prediction of disease course and response to therapy in inflammatory bowel diseases
Tutor: Mária Papp M.D., Ph.D.

14. Title: Bacterial infection in liver cirrhosis
15. Title: Current therapeutic options of acute pancreatitis
Tutor: Zsuzsanna Vitális M.D., Ph.D.

Division of Haematology

1. Title: Immuno-chemotherapy in B-cell non-Hodgkin lymphomas
2. Title: Infections during aggressive therapies in lymphoma patients
3. Title: New monoclonal antibody based therapeutic approaches in the treatment of hematologic malignancies.
4. Title: Next generation sequencing and identification of mutations in lymphomas. New targets in therapy.
5. Title: The role of miRNA in the pathogenesis of lymphomas, possible targets for therapy

6. Title: Vaccination based therapies in lymphomas
Tutor: Lajos Gergely M.D., Ph.D., D.Sc.

7. Title: Examination of polyneuropathy in multiple myeloma patients treated with bortezomib
8. Title: New treatment approaches in multiple myeloma
9. Title: The role of autologous stem cell transplantation in the treatment of autoimmune disorders
10. Title: Treatment results in our multiple myeloma patients
Tutor: László Váróczy M.D., Ph.D.

11. Title: Therapeutic options of CML
Tutor: László Rejtő M.D., Ph.D.

12. Title: Diagnosis and treatment of chronic lymphocytic leukemia
13. Title: Novel therapeutic approaches in the treatment of multiple myeloma
14. Title: Philadelphia negative myeloproliferative meoplasms - novel genetic and therapeutic improvements
15. Title: Recent advances in the management of chronic ITP
Tutor: Péter Batár M.D., Ph.D.

Division of Rare Diseases

1. Title: Langerhans histiocytosis
2. Title: Osteosclerotic myeloma
3. Title: Therapeutic challenges in rare haemostatic disorders
Tutor: György Pfliegler M.D., Ph.D.

Division of Rheumatology

1. Title: Cardiopulmonary manifestation in systemic sclerosis
2. Title: Pulmonary arterial hypertension in systemic sclerosis.
Tutor: Gabriella Szűcs M.D., Ph.D.
3. Title: Rheumatology 2015 - modern diagnostics and therapy.
Tutor: Zoltán Szekanecz M.D., Ph.D., D.Sc.

4. Title: Quality of life in systemic sclerosis
Tutor: Szilvia Szamosi M.D.,Ph.D.

5. Title: Diagnosis and therapy of early arthritis
6. Title: Modern therapy of vasculitides
Tutor: Edit Végh M.D.

7. Title: Extra-articular manifestations of ankylosing spondylitis
8. Title: Modern treatment of spondyloarthritides
Tutor: Sándor Szántó M.D.,Ph.D.

9. Title: Efficacy of long-term therapy with biological agents in rheumatoid arthritis.
Tutor: Ágnes Horváth M.D.

Department of Neurology

1. Title: Cerebral hemodynamics and cognitive dysfunction in treated and non-treated stroke patients
2. Title: Neurosonological investigations in acute and chronic stroke patients
3. Title: Non-invasive investigation of endothelial dysfunction.
Tutor: László Csiba M.D., Ph.D., D.Sc., M.H.A.Sc.

4. Title: Comorbidity in Multiple sclerosis
Tutor: Tünde Csépány M.D., Ph.D.

5. Title: Effect collateral circulation from the external carotid artery in patients with unilateral internal carotid artery occlusion.
6. Title: Effect of actual blood pressure on the cerebrovascular reactivity.
Tutor: László Oláh M.D., Ph.D.

7. Title: Cardiovascular risk in sleep apnea.
8. Title: Hypoxic stress and its consequences in sleep apnea.
9. Title: Obesity and sleep apnea.
Tutor: Tünde Magyar M.D., Ph.D.

Department of Neurosurgery

1. Title: Comparison of cerebral vasopasm following endovascular or surgical treatment of aneurysmal rupture
2. Title: Do middle cerebral artery aneurysms exhibit right sided dominance?

3. Title: Treatment of multiple cerebral metastases: clinical results
Tutor: Sándor Szabó M.D., Ph.D.

4. Title: Current treatment of multiloculated hydrocephalus.
5. Title: Surgical treatment of lesional epilepsy
Tutor: László Novák M.D., Ph.D.

6. Title: Connection of proteoglycans and cell membrane receptors in the peritumoral extracellular matrix
Tutor: Álmos Klekner M.D., Ph.D.

7. Title: History of neurosurgical radiosurgery.
Tutor: József Dobai M.D.

8. Title: Vertebroplasty.
Tutor: Péter Ruszthi M.D.

Department of Obstetrics and Gynecology

1. Title: Clinical trials of new drugs for the treatment of osteoporosis
Tutor: Ádám Balogh M.D., Ph.D., D.Sc.

2. Title: Diagnosis and Treatment of Endometrial Cancer
3. Title: Diagnosis and Treatment of Ovarian Cancer
4. Title: Diagnosis and Treatment of Vulvar Cancer
5. Title: Screening /Diagnosis and Treatment of Cervical Cancer
Tutor: Zoltán Hernádi M.D., Ph.D., D.Sc.

6. Title: Labour induction
Tutor: Tamás Major M.D., Ph.D.

7. Title: Non-invasive prenatal testing for chromosomal aneuploidies
Tutor: Olga Török M.D., Ph.D.

8. Title: Efficiency and safety of first line chemotherapy in ovarian cancer
9. Title: Efficiency and safety of second and subsequent line chemotherapy in ovarian cancer
10. Title: Efficiency of HPV vaccination
11. Title: Fetal assessment by biophysical profile
12. Title: Marker studies in ovarian cancer
13. Title: Molecular medicine and ovarian cancer
14. Title: Molecular medicine and prenatal diagnosis
15. Title: Neoadjuvant chemotherapy of cervical cancer
16. Title: Placental atherogenesis
17. Title: Surgical treatment of recurrent ovarian cancer
18. Title: Surgical treatment of vulval cancer
19. Title: The role of inherited and acquired thrombophilia in reproductive health
20. Title: The role of lymphadenectomy in the treatment of endometrial cancer
21. Title: The role of preoperative MRI in cervical cancer
22. Title: Trends in operative delivery
Tutor: Róbert Póka M.D., Dr. habil., Ph.D.

23. Title: Acceptance of invasive prenatal diagnostic tests
24. Title: Meiotic abnormalities and their clinical significance in human reproduction
25. Title: Role of Doppler ultrasound in antenatal care
Tutor: Tamás Szilveszter Kovács M.D., Ph.D.

26. Title: Anovulatory infertility
27. Title: Examination of genetic concerns about the safety of assisted reproduction
28. Title: Role of antimullerian hormone (AMH) in clinical practice
29. Title: Ultrasound dating in pregnancy
Tutor: Attila Jakab M.D., Ph.D.

30. Title: Vaginal Birth After Cesarean
Tutor: Alpár Gábor Juhász M.D., Ph.D.

31. Title: Cervical cancer prevention: the role and the future of HPV vaccination besides conventional screening
32. Title: New treatment strategies in ovarian cancer
Tutor: Zoárd Krasznai M.D., Ph.D.

33. Title: Role of endoscopy in infertility work-up
Tutor: Péter Török M.D., Ph.D.

34. Title: Pregnancy care in PCOS patients
35. Title: Special aspects of pregnancy care in patients with endocrine disorders
36. Title: Thyroid autoimmunity - clinical significance, prevention and treatment in human reproduction
Tutor: Tamás Deli M.D., Ph.D.

37. Title: Transvaginal hydrolaparoscopy - a new method
38. Title: Hysteroscopic treatment of different gynecologic pathologies
39. Title: White blood cell function in preeclampsia
Tutor: Rudolf Lampé M.D., Ph.D.

40. Title: Contraception in the 21st century
Tutor: Balázs Erdődi M.D.

Division of Gynecological Oncology

1. Title: Chemotherapy of ovarian cancer
2. Title: Prognostic relevance of HPV-infection in cervical cancer
3. Title: Surgical treatment of HPV-infection
4. Title: The prognostic role of CA-125 in ovarian cancer
Tutor: Zoltán Hernádi M.D., Ph.D., D.Sc.

5. Title: Chemotherapy of cervical cancer
6. Title: Epidemiology and therapy of vulvar cancer
7. Title: Epidemiology of metastatic ovarian cancer
8. Title: Follow-up of endometrial cancer patients, analysis of prognostic factors
9. Title: Prothrombotic states in gynaecologic cancer
10. Title: Superoxid anion production of granulocytes in gynecologic cancer
Tutor: Róbert Póka M.D., Dr. habil., Ph.D.

11. Title: Prognostic factors and treatment of cervical cancer
12. Title: The role of CA125 and HE4 in the follow-up of ovarian cancer
Tutor: Zoárd Krasznai M.D., Ph.D.

Department of Ophthalmology

1. Title: Biomechanics of different corneal diseases
2. Title: Corneal tomography in the diagnosis of keratoconus
3. Title: Diagnosis and treatment of dry eye
4. Title: Lamellar and penetrating keratoplasty techniques
Tutor: László Módis M.D., Ph.D., D.Sc.

5. Title: Intraocular tumors
Tutor: Judit Damjanovich M.D., Ph.D.

6. Title: Ocular clinical signs in rare diseases
Tutor: Valéria Nagy M.D., Ph.D.

7. Title: Corneal dystrophies
8. Title: Stem cells of the cornea
Tutor: Lili Takács M.D., Ph.D.

9. Title: Nuclear medicine measurements in the inflammatory disorders of the eye’s anterior segment
10. Title: Prospective study of vascular pathogenesis of eye diseases associated to rheumatologic and immunologic disorders
11. Title: Tear citokine measurements in inflammatory diseases of the anterior segment of the eye associated to immunological and autoimmunological disorders
12. Title: Tear-clearance measurements in dry eye syndrome with dacryoscintigraphy
Tutor: Ádám Kemény-Beke M.D., Ph.D.

13. Title: Contact lens wear and complications
14. Title: Cosmetical contact lenses
Tutor: Beáta Kettesy M.D., Ph.D.

15. Title: Importance of screening in diabetic retinopathy
16. Title: Morfologic changes in glaucoma
Tutor: Adrienne Csutak M.D., Ph.D.

17. Title: Corneal measurments with Pentacam
18. Title: Refractive laser-surgical interventions
Tutor: Bence Lajos Kolozsvári M.D., Ph.D.

19. Title: Examination of peptide receptors in human uveal melanoma
20. Title: Results of orbital decompression surgeries

21. Title: VEGF level in tears after PKP
Tutor: Zita Steiber M.D., Ph.D.

22. Title: Color Doppler in the follow-up of choroidal melanoma after brachytherapy
23. Title: Subtenon TCA in the treatment of radiogen retinopathy
Tutor: Éva Surányi M.D.

24. Title: Molecular genetic analysis of ocular fundus disorders
25. Title: Novel methods for periosteal fixation in ophthalmic plastic surgery
Tutor: Gergely Losonczy M.D., Ph.D.

26. Title: Graves' orbitopathy - current concepts in diagnosis and therapy
27. Title: Pathogenesis of Graves' orbitopathy
Tutor: Bernadett Ujhelyi M.D.,Ph.D.

28. Title: Assessing the safety and efficacy of intravitreal ranibizumab as a preoperative adjunct treatment before vitrectomy surgery in severe proliferative diabetic retinopathy (PDR) compared to standard vitrectomy alone
29. Title: Evaluate and demonstrate the results of the Hungarian Lucentis National Patient Registry
Tutor: Attila Vajas M.D.

30. Title: Congenital ptosis peculiar associated movements of the affected lid
31. Title: Diagnosis and therapy in retinopathy of prematurity
32. Title: Non - surgical and surgical therapy of congenital ptosis
Tutor: Annamária Nagy M.D.

33. Title: Ocular manifestations of Weill-Marchesani syndrome
34. Title: Pellucid marginal degeneration
Tutor: Mariann Fodor M.D., Ph.D.

35. Title: BCVA change after intravitreal ranibizumab injection
36. Title: IOP change after intravitreal ranibizumab injection
Tutor: Erika Papp M.D.

Department of Orthopedic Surgery

1. Title: The role of arthrodesis in the treatment of degenerative arthritis of the knee.
2. Title: Treatment options in knee instability.
Tutor: Henrik Rybaltovszki M.D.

Department of Otolaryngology and Head and Neck Surgery

1. Title: The role of the biofilm in the inflammatory diseases of the otorhinolaringology
2. Title: The role of the bone anchored hearing aids and the cochlear implantation in hearing rehabilitation
Tutor: László Tóth M.D., Ph.D.

3. Title: Middle ear implantation
4. Title: Pathology and treatment of Cholesteatoma
Tutor: István Sziklai M.D., Ph.D., D.Sc.

5. Title: Cartillage tympanoplasty
Tutor: István Jókay M.D., Ph.D.

6. Title: Local fleps in head and neck surgery
7. Title: Methods of reconstruction in head and neck surgery
8. Title: Reconstruction of nasal deformities
Tutor: Attila Szűcs M.D., Ph.D.

Department of Pediatrics

1. Title: Contemporary evalutation and treatment of medulloblastoma
2. Title: Thalassemia minor in North-East Hungary
Tutor: Csongor Kiss M.D., Ph.D., D.Sc.

3. Title: Beta-blocker therapy for preventing and treating cyanotic spells in pre-operative patients with tetralogy of Fallot
Tutor: Gábor Mogyorósy M.D., Ph.D.

4. Title: Hydrocephaly of infants
Tutor: Andrea Nagy M.D.
5. Title: IgA nephropathy in childhood
Tutor: Tamás Szabó M.D., Ph.D.

6. Title: Fungal infections in malignant hematology
Tutor: István Szegedi M.D., Ph.D.

7. Title: Experience with tissue adhesives in lip cleft surgery
Tutor: Ágnes Magyar M.D.

8. Title: Aldosteron producing suprarenal tumors in children
9. Title: Efficiency of Nordic Walking therapy in case of obese children regarding motivation for slimming
10. Title: Physiotherapy of diabetic children - prevention of hypoglycemia
Tutor: Enikő Felszeghy M.D.,Ph.D.

Department of Physical Medicine and Rehabilitation

1. Title: The importance of multidisciplinary rehabilitation to improve functional capacity, quality of life, cardiovascular function and metabolic parameters of obese patients, those suffering from osteoarthritis.
2. Title: The significance of conductive rehabilitation activities in gait development (gait analysis test)
3. Title: The significance of the (upper extremity) functional capacity of patients with cerebrovascular diseases in the effectiveness of rehabilitation
Tutor: Zoltán Jenei M.D., Ph.D.

4. Title: Assessment of quality of life of people with disabilities or with the risk of disability
5. Title: Goal Attainment Scaling in rehabilitation medicine
6. Title: Treatment of spasticity in children with cerebral palsy
Tutor: Zsuzsanna Vekerdy-Nagy M.D., Ph.D. habil.

Department of Psychiatry

1. Title: Effectiveness of schema therapy in personality disorders
2. Title: Emotion dependent and independent cognitive functions in unipolar depression
3. Title: Significance of disfunctional attitudes in depression and anxiety disorders
4. Title: Theory of mind and mentalization deficits in patients with personality disorders
Tutor: Anikó Égerházi M.D., Ph.D.

5. Title: Brain imaging in psychiatry.
6. Title: Oxidativ stress and chronic inflamation in psychiatric disorders
7. Title: Post-traumatic stress disorder and post-traumatic growth.
8. Title: The neurobiology of depression.
9. Title: The role of mikrobiota in mental health
10. Title: The therapeutic potentials of psychodelics
Tutor: Ede Frecska M.D., M.A., Ph.D.

Department of Pulmonology

1. Title: New perspectives in the treatment of lung cancer.
Tutor: Andrea Fodor M.D.

2. Title: New perspectives in the treatment of community acquired pneumonia
Tutor: László Brugós M.D., Ph.D.

3. Title: The role of extracellular matrix in growing propagation and metastatization of lung cancer
Tutor: Imre Varga M.D., Ph.D.

4. Title: Modern Therapy of NSCLC
Tutor: Tamás Kardos M.D.

Department of Surgery

1. Title: Surgical treatment of Graves disease with ophthalmopathy
Tutor: Ferenc Győry M.D., Ph.D.

2. Title: Surgical treatment of bowel obstruction in colorectal diseases
Tutor: László Damjanovich M.D., Ph.D.

3. Title: Surgical and endovascular interventions in critical limb ischemia
Tutor: Sándor Olvasztó M.D.

4. Title: Histopathologic examination of the carotid plaques regarding their possible prognostic value
Tutor: Krisztina Litauszky M.D.

5. Title: Liver resections for metastases of colorectal cancer
Tutor: János Pósán M.D.

6. Title: Prevention of bronchial stump insufficiency after lung resections
Tutor: István Takács M.D.,Ph.D.

7. Title: The surgical treatment of hyper-parathyroidism
Tutor: Roland Fedor M.D., Ph.D.

8. Title: Different forms of hereditary colorectal cancer among our patients.
Tutor: Miklós Tanyi M.D.,Ph.D.

9. Title: Mesh implantation in the surgical treatment of thoracic defects
Tutor: Attila Enyedi M.D.

10. Title: Assessment of the results of hybrid operations during pelveo-femoral vascular reconstruction.
11. Title: Assessment of tumor regression after neoadjuvant chemo-irradiation in distal rectal cancer.
Tutor: Gábor Martis M.D.

Division of Operative Techniques and Surgical Research

1. Title: Anesthesia in experimental animals (for Medicine and Pharmacy students)
Tutor: Ádám Deák D.V.M., Ph.D.

2. Title: New technical possibilities in surgery (for Medicine students)
Tutor: Andrea Furka M.D., Ph.D.

3. Title: Famous surgeons and famous discoveries (for Medicine students)
Tutor: Irén Mikó M.D., Ph.D., C.Sc.

4. Title: Changes of red blood cell mechanical stability in surgical pathophysiological processes (for Medicine and Dentistry students)
5. Title: Investigation of hemorheological and microcirculatory changes in ischemia-reperfusion, including therapeutical possibilities (for Medicine students)
Tutor: Norbert Németh M.D., MBA, Ph.D.

6. Title: Hemostatic agents (bioplasts) in surgery (for Pharmacy students)
7. Title: Ischemia-reperfusion injury and its prevention with different methods (for Medicine and Dentistry students)
Tutor: Katalin Pető M.D.,Ph.D.

8. Title: Instruments and devices used in pharmacological care (for Pharmacy students)
Tutor: Tamás Lesznyák M.D., D.Pharm.

9. Title: Chapters from the history of surgical asepsis, antisepsis (for Medicine and Dentistry students)
Tutor: Irén Mikó M.D., Ph.D.

10. Title: Technical development of laparoscopic surgery
Tutor: Zsuzsanna Sarolta Magyar M.D.

Department of Traumatology and Hand Surgery

1. Title: Bone and ligament injuries of the hand (ÁOK)
2. Title: Exercisers of the physiotherapy in the postoperative treatment of the flexor tendon injuries (gyógytornász)
Tutor: István Frendl M.D.

3. Title: Endoscopical treatment of shoulder dislocations (ÁOK, gyógytornász)
4. Title: The operative treatment and physiotherapy of the adult distal humeral fractured patients in our department (gyógytornász)
5. Title: Up-to-date operative treatment of femoral neck fractures (ÁOK)
Tutor: István Szarukán M.D.

6. Title: Fractures of the leg (ÁOK)
7. Title: Physiotherapy after operation of the shoulder instability (gyógytornász)
Tutor: András Nagy M.D.

8. Title: Treatment of open fractures (ÁOK)
Tutor: Péter Horkay M.D.

9. Title: Operative treatment of severe skull injuries (ÁOK)
Tutor: Zoltán Németi M.D.

10. Title: Current concept in operative treatment of proximal tibial fractures (ÁOK)
11. Title: Current treatment of intertrochanteric and subtrochanteric femoral fractures (ÁOK)
Tutor: Béla Turchányi M.D., Ph.D.

Department of Urology

1. Title: Role of laparoscopy in urology
Tutor: Tibor Flaskó M.D., Ph.D.

2. Title: Assessment of urinary incontinence
Tutor: László Lőrincz M.D.

3. Title: Different topics regarding prostate and kidney cancer
Tutor: Csaba Berczi M.D., Ph.D.

4. Title: Bladder replacement after radical cystectomy
Tutor: Antal Farkas M.D., Ph.D.

5. Title: Different topics regarding andrology
Tutor: Mátyás Benyó M.D., Ph.D.

6. Title: Pathology of clear cell renal cancer
Tutor: Krisztián Szegedi M.D.

7. Title: Treaement of urethral stricture
Tutor: Mihály Murányi M.D.

8. Title: Assessment of chronic LUTS
Tutor: Sándor Árpád Tóth M.D.

9. Title: Assessment of ejaculatory disturbances
Tutor: József Zoltán Kiss M.D.

10. Title: Effect of ochidopexy on male fertility
Tutor: Gyula Drabik M.D.

CHAPTER 22
LIST OF TEXTBOOKS

BMC

Introduction to Biophysics I.:
Serway/Vuille: College Physics.
10th edition. Cengage Learning, 2014. ISBN: 978-1285737027.
Gáspár R.: Physics for BMC students.
University of Debrecen,.

Introduction to Medical Chemistry I.:
McMurry, J., Fay, R.C.: Chemistry.
7th edition. Pearson Education, 2015. ISBN: 978-0321943170.

Introduction to Medical Chemistry II.:
McMurry, J., Fay, R.C.: Chemistry.
7th edition. Pearson Education, 2015. ISBN: 978-0321943170.
F., Erdődi, Cs., Csortos: Organic Chemistry for Premedical Students.
University of Debrecen, 2011.

Introduction to Biology I.:
Sadava, Hillis, Heller, Berenbaum: Life: The Science of Biology.
10th edition. Sinauer Macmillan, 2013. ISBN: 978-1-4641-4124-9.

Introduction to Biophysics II.:
Serway/Vuille: College Physics.
10th edition. Cengage Learning, 2014. ISBN: 978-1285737027.
Gáspár R.: Physics for BMC students.
University of Debrecen,.

Introduction to Biology II.:
Sadava, Hillis, Heller, Berenbaum: Life: The Science of Biology.
10th edition. Sinauer Macmillan, 2013. ISBN: 978-1-4641-4124-9.

English for BMC students:
Soars, John and Liz: Headway - Pre-Intermediate Students' Book and Workbook.
The 3rd edition. Oxford,.

SBMC

Introduction to Biophysics:
Serway/Vuille: College Physics.
10th edition. Cengage Learning, 2014. ISBN: 978-1285737027.

Introduction to Medical Chemistry:
McMurry, J., Fay, R.C.: Chemistry.
7th edition. Pearson Education, 2015. ISBN: 978-0321943170.
F., Erdődi, Cs., Csortos: Organic Chemistry for Premedical Students.
University of Debrecen, 2011.

Introduction to Biology:
Sadava, Hillis, Heller, Berenbaum: Life: The Science of Biology.
10th edition. Sinauer Macmillan, 2013. ISBN: 978-1-4641-4124-9.

1st year

Biophysics:
Biophysics laboratory manual.
Department of Biophysics and Cell Biology, 2001.
Wayne W. Daniel: Biostatistics. A foundation for Analysis in the Health Sciences.
John Wiley & Sons,. ISBN: 0-471-16386-4.
Edited by János Szőllősi: Medical Biophysics.
Medicina, 2009.

Basics of Behavioural Sciences:
Segerstrale, U., Molnár, P.: Nonverbal Communication: Where Nature Meets Culture.
1st edition. Psychology Press, 1997. ISBN: 0-8058-2179-1.
Alan Stoudemire: Human Behavior. An Introduction for Medical Students.
J.B. Lippincott Company, Philadelphia, 1994.
Márta Csabai and Péter Molnár: Medical Psychology.
Background material. Reprint University of Debrecen, 2008.

Smith, E. E., & Nolen-Hocksema, S.: Atkinson and Hilgards's Introduction to Psychology..
16th. Cengage Learning EMEA, 2014. ISBN: 978-1408089026.
Kantor, J. E.: Medical Ethics for Physicians-in-Training..
New York & London: Plenum.,.
Helman, C. G.: Culture, Health and Illness..
CRC Press.(Chapter 1.),.
Barry, A-M. – Yuill, Ch.: Understanding the Sociology of Health..
SAGE., 2012. ISBN: (Chapters 1., 2.).

Medical Chemistry:

McMurry, J., Fay, R.C.: Chemistry.
7th edition. Pearson Education, 2015. ISBN: 978-0321943170.
Gergely, P.: Organic and Bioorganic Chemistry for Medical Students.
3rd edition. Medical and Health Science Center, University of Debrecen, 2008.
Gergely, P.: Introduction to Bioinorganic Chemistry for Medical Students.
Medical and Health Science Center, University of Debrecen, 2008.
Ed. Dombrádi, V.: Laboratory Practicals in Medical Chemistry.
Medical and Health Science Center, University of Debrecen, 2009.

Hungarian Crash Course:

Marschalkó, Gabriella: Hungarolingua Basic Level 1.
Debreceni Nyári Egyetem, 2011.

Latin Language:

Répás, L.: Basics of Medical Terminology.
Répás László, 2012.

Computer Science:

Greg Perry: Microsoft Office.
2007. ISBN: 9789-6396-3737-5.

Biostatistics:

Wayne W. Daniel: Biosatatistics: a foundation for analysis in the health sciences.
7th edition. John Wiley and Sons, New York, 1991. ISBN: 0-471-52988-5.

Physical foundations of biophysics:

Halliday-Resnick-Walker: Fundamentals of Physics.

Hungarian Language I/1.:

Győrffy Erzsébet, Ph.D.: Hogy s mint? I..
2013.

First aid and reanimation:

The St. John Ambulance Association and Brigade, The British Red Cross society: First Aid Manual.
Dorling Kisnerdsley Ltd., 1992. ISBN: 0-863-18-4.
Jerrold B. Leikin, Bernard J. Feldman: Handbook of First Aid and Emergency Care.
Random House, New York, 2000. ISBN: 0-375-75486-5.
József Betlehem: First Things to Be Done in Emergencies – Providing First Aid for Health Professionals.
Medicina Könyvkiadó Zrt., 2012.

Anatomy, Histology and Embryology I.:

K.L. More: Clinically Oriented Anatomy.
6th edition. Lippincott Williams &Wilkins, 2004. ISBN: 9781-60547-652-0.
M.H. Ross: Histology. A Text and Atlas.
5th edition. Lippincott Williams &Wilkins, 2006. ISBN: 0-781-75056-3.
Sobotta: Atlas of Human Anatomy I.-II..
14th edition. Urban & Schwarzenberg,. ISBN: 978-0-443-10349-0.
Sadler, T. W.: Langman's Medical Embryology.
12th edition. Lippincott Williams &Wilkins, 2012. ISBN: 978-1-4511-4461-1.
E.K. Sauerland: Grant's Dissector.
11th edition. Williams & Wilkins, 2000. ISBN: 0-683-03701-3.

Molecular Biology:

Alberts et al.: Molecular Biology of the Cell.
5th edition. Garland Public Inc., 2007.
T. Á. Brown: Genomes.
3rd edition. Garland Public Inc. ISBN: 0-8153-4138-5.
Lodish et al.: Molecular Cell Biology.

4th edition..

Cell Biology:

Alberts et al.: Molecular Biology of the Cell.
5th edition. Garland Public Inc., 2007.
Alberts et al.: Essential Cell Biology.
3rd edition. Garland Public Inc., 2004. ISBN: 0-8153-3481-8.
Cell Biology Laboratory Manual.
Department of Biophysics and Cell Biology, 2003.
Lodish et al.: Molecular Cell Biology.
4th edition..

Latin Medical Terminology:

Répás, L.: Basics of Medical Terminology.
Répás László, 2012.

Hungarian Language I/2.:

Győrffy Erzsébet, Ph.D.: Hogy s mint? I..
2013.

Medical Genetics:

Robert L. Nussbaum, Roderick R. McInnes, Huntington F. Willard, Ada Hamosh: Thompson and Thompson Genetics in Medicine.
7th edition. Saunders Elsevier, 2007. ISBN: 978-1-4160-3080-5.
Practical Courses in Genetics.
University Medical School of Debrecen, 2002.
Hartl D. L.: Essential Genetics: A Genomics Perspective.
6th edition. Jones & Bartlett Publishers, 2014.
ISBN: 978-1-4496-8688-8.
Thomas D. Gelehrter, Francis S. Collins, David Ginsburg: Principles of Medical Genetics.
2nd. Williams and Wilkins, 1998. ISBN: 0-683-03445-6.
Tom Strachan, Andrew P. Read: Human Molecular Genetics.
4th. Garland Science, 2011. ISBN: 0-8153-4184-9.
Eberhard Passarge: Color Atlas of Genetics.
2nd edition. Georg Thieme Verlag, 2001. ISBN: 3-13-100362-6.

Medical Genomics:

Campbell, A. M., Heyer, L. J.: Discovering genomics, proteomics and bioinformatics.
Pearson Education Inc.,. ISBN: 0-8053-4722-4.
: www.genetics.dote.hu.
URL: http://www.genetics.dote.hu/

2nd year

Biochemistry I.:

Thomas M. Devlin: Textbook of Biochemistry with Clinical Correlations.
6th edition. Wiley-Liss, 2006.
Lubert Stryer: Biochemistry.
7th edition. W.H. Freeman and Company, 2012.

Medical Physiology I.:

A. Fonyó: Principles of Medical Physiology.
Medicina Publishing House, Hungary, 2002.
ISBN: 963-242-726-2.
Physiological Practice, A Laboratory Guide.
2nd (revised) edition.2007.
J. B. West: Best and Taylor's Physiological Basis of Medical Practice.
12th edition. Williams & Wilkins, 1990.
R. M. Berne, M. N. Levy, B. M. Koeppen, B. A. Stanton: Physiology.
5th edition. V.C. Mosby Co., 2003.
A.C. Guyton, J. E. Hall: Textbook of Medical Physiology.
11th edition. W.B. Saunders Co., 2005. ISBN: 1007-2160-240-1.
R. M. Berne, M. N. Levy: Principles of Physiology.
4th edition. V. C. Mosby Co., 2005. ISBN: 1003-2303-195-1.
Gillian Pocock, Christopher D. Richards: Human Physiology - The Basis of Medicine.
3rd edition. Oxford University Press, 2006.
ISBN: 9780-1985-6878-0.
Physiology Practice. Exercise Book.
revised edition.2000.

Anatomy, Histology and Embryology II.:

K. L. More: Clinically Oriented Anatomy.
4th edition. Lippincott Williams &Wilkins, 2004.
ISBN: 0-683-06141-0.
Sobotta: Atlas of Human Anatomy I.-II..
14th edition. Urban & Schwarzenberg, ISBN: 978-0-443-10349-0.

Sadler, T. W.: Langman's Medical Embriology.
12th edition. Lippincott Williams &Wilkins, 2012. ISBN: 978-1-4511-4461-1.
E.K. Sauerland: Grant's Dissector.
11th edition. Williams & Wilkins, 2000. ISBN: 0-683-03701-3.
Ross, M.H., Romrell, L.J., Kaye, G.I.: Histology. A Text and Atlas.
5th edition. Lippincott Williams & Wilkins, 2006. ISBN: 0-781-75056-3.

Multimodal imaging and virtual reality in neurosciences:

Fred A. Mettler: Essentials of Radiology.
2. Elsevier, 2005. ISBN: ISBN 0-7216-0527-3.

Investigation of the embryonic cell-and tissue differentiation:

Scott F. Gilbert: Developmental Biology.
6th edition..

Biochemistry II.:

Thomas M. Devlin: Textbook of Biochemistry with Clinical Correlations.
6th edition. Wiley-Liss, 2006.
Lubert Stryer: Biochemistry.
7th edition. W.H. Freeman and Company, 2012.

Medical Physiology II.:

A. Fonyó: Principles of Medical Physiology.
Medicina Publishing House, Hungary, 2002. ISBN: 963-242-726-2.
Physiological Practice, A Laboratory Guide.
2nd (revised) edition.2007.
J. B. West: Best and Taylor's Physiological Basis of Medical Practice.
12th edition. Williams & Wilkins, 1990.
R. M. Berne, M. N. Levy, B. M. Koeppen, B. A. Stanton: Physiology.
5th edition. V.C. Mosby Co., 2003.
A.C. Guyton, J. E. Hall: Textbook of Medical Physiology.
11th edition. W.B. Saunders Co., 2005. ISBN: 1007-2160-240-1.
R. M. Berne, M. N. Levy: Principles of Physiology.
4th edition. V. C. Mosby Co., 2005. ISBN: 1003-2303-195-1.
Gillian Pocock, Christopher D. Richards: Human Physiology - The Basis of Medicine.
3rd edition. Oxford University Press, 2006. ISBN: 9780-1985-6878-0.
Physiology Practice. Exercise Book.
revised edition.2000.

Neurobiology (Neuroanatomy, Neurobiochemistry, Neurophysiology):

K. L. More: Clinically Oriented Anatomy.
4th edition. Lippincott Williams &Wilkins, 2004. ISBN: 0-683-06141-0.
Sobotta: Atlas of Human Anatomy I.-II..
14th edition. Urban & Schwarzenberg,. ISBN: 978-0-443-10349-0.
Sadler, T. W.: Langman's Medical Embriology.
12th edition. Lippincott Williams &Wilkins, 2012. ISBN: 978-1-4511-4461-1.
A. Fonyó: Principles of Medical Physiology.
Medicina Publishing House, Hungary, 2002. ISBN: 963-242-726-2.
Haines, D.E.: Fundamental Neuroscience Haines.
3rd edition. Churchill Livingstone, 2006. ISBN: 0-443-06751-1.
Snell, R.E.: Clinical Neuroanatomy for Medical Students.
5th edition. Lippincott Williams & Wilkins,. ISBN: 0-7817-2831-2.
L. Komáromy: The Dissection of the Brain.
A Topographical and Technical Guide Medicina,. ISBN: 9-632-26050-3.
Ross, M.H., Romrell, L.J., Kaye, G.I.: Histology. A Text and Atlas.
5th edition. Lippincott Williams & Wilkins, 2006. ISBN: 0-781-75056-3.
Physiology Practice. A Laboratory Guide.
revised edition.2000.
Physiology Practice. Exercise Book.
revised edition.2000.
: Biochemistry and Molecular Biology, Sillabus, Volume III. Chapter IX..
3rd edition.2002.
Exercise Book.
2nd (revised) edition.2007.
Purves: Neuroscience.
Fourth Edition. Sinauer Publishing, 2008.
George J Siegel: Basic Neurochemistry.
6th edition.. ISBN: 10: 0-397-51820-X.
: Lecture handouts (including figures).

URL: http://bmbi.med.unideb.hu

Functional Anatomy of the Visual System:

Eric R. Kandel, MD (winner of the Nobel Prize in 2000); James H. Schwartz, MD, PhD; Thomas M. Jessell, PhD; Steven A. Siegelbaum, PhD; and A. J. Hudspeth, PhD: Principles of Neural Science.
Fifth Edition. 2012. ISBN: 13: 978-0071390118.
Gordon M. Shepherd: The Synaptic Organization of the Brain.
Edition: 5.2003. ISBN: -10: 019515956X.

Selected Problems of the Neural Control: Modelling of Single Neurons and Neural Networks:

Christof Koch and Idan Segev: Methods in Neuronal Modeling, From Synapses to Networks.
MIT Press, Cambridge, Massachusetts, and London, England, 1991.,. ISBN: ISBN 0-262-61071-X.

Latin Medical Terminology:

Répás, L.: Basics of Medical Terminology.
Répás László, 2012.

Modern biophysical methods in biology and medicine:

Damjanovich, S., Fidy, J., Szöllősi, J.: Medical Biophysics.
1st edition. Medicina, 2009. ISBN: 978 963 226 249 9.

3rd year
Clinical Biochemistry I.:

W.J. Marshall and S.K. Bangert: Clinical Chemistry.
6th edition. Mosby Elsevier Ltd., 2008. ISBN: 9-78072-343460-3.
János Kappelmayer, László Muszbek: Practicals in Clinical Biochemistry.
Debrecen, 2010.
Hoffbrand A.V., Pettit J.E.: Essential Haematology.
3rd edition. Blackwell Sciences, 1999. ISBN: 0-632-03083-6.

Pathology I.:

Kumar-Abbas-Fausto-Mitchell: Basic Pathology.
8th edition. WB Saunders, 2007. ISBN: 1-4160-2973-7.
Zoltán Nemes: Histopathological Practicals.
2005.
Zoltán Nemes: The Technique of Gross Pathological Description.
1993.

Immunology:

Fred S. Rosen: Case studies in immunology.
3rd.2001.
Parham, P.: The Immune System.
Third Edition. Garland Science, 2009. ISBN: 0-8153-4146-6.
Abbas, A. K., Lichtman, A. H., Pillai, S.: Basic Immunology.
4th Edition. Saunders, 2012. ISBN: 1-4557-0707-4.

Medical Microbiology I.:

Levinson, W.: Review of Medical Microbiology and Immunology.
14th edition. McGraw Hill, 2016. ISBN: 0-0718-4574-7.
Lajos Gergely: Diagnostic Medical Microbiology, Laboratory Exercises.
1989.

Hungarian Language III/1.:

Dr. Paragh György & Dr. Hajnal Judit: 1. Tessék mondani!.
2000.
Lampé, Judit Ph.D.: Jobbulást kívánok I..
2014.
Lampé, Judit Ph.D.: Jobbulást kívánok II..
2014.

Basic Oncology:

: Basic Science of Oncology.
Fifth Edition. McGraw-Hill International Editions, 2013.

Propedeutics of Internal Medicine (Internal Medicine I.):

David R. Ferry: Basic Electrocardiography in

Ten Days.
. ISBN: 0-07-135292-9.
Dr. Paragh György & Dr. Hajnal Judit: 1. Tessék mondani!.
2000.
McPhee St. J., Papadakis, M.: Current Medical Diagnosis and Treatment.
55th edition. McGraw-Hill Incorporated, 2015. ISBN: 0-0718-4509-7.
Harrison: Principles of Internal Medicine.
17th. International Edition of Health Profession Series, 2008.
Merck Manual.
Latest edition. Merck Research Laboratories, ISBN: 0-9119-1016-6.
Győrffy Mária: 2. "Mi a panasz?".
Idióma Bt. Pécs, 1997. ISBN: 963-04-8860-4.

Basic Surgical Techniques:

Mikó I., Furka I.: Basic Surgical Techniques, Faculty of Medicine.
3rd enlarged edition. Debrecen University Press, 2011. ISBN: 978-963-318-145-4.
H.E. Grewe: Grewe's Manual of Basic Surgical Skills. An Introduction to Surgical Procedures.
B.C. Decker Inc., 1986. ISBN: 0-941158-84-5.
G.R. McLatchie, D.J. Leaper: Oxford Handbook of Operative Surgery.
Oxford University Press, 1996. ISBN: 0-19-262097-5.

Dealing with irradiation induced side effects:

C.A.Perez, L.W.Brady, E.C.Halperin, R.K.Schmidt-Ullrich: Principles and Practice of Radiation Oncology.
4th edition. Lippincott Williams & Wilkins,. ISBN: 0-7817-3525-4.

Dark side of the human mind with anatomical implications:

K.L. More: Clinically Oriented Anatomy.
6th edition. Lippincott Williams &Wilkins, 2004. ISBN: 9781-60547-652-0.
Sobotta: Atlas of Human Anatomy I.-II..
14th edition. Urban & Schwarzenberg,. ISBN: 978-0-443-10349-0.

Medical Anthropology:

Helman C.G.: Culture, Health and Illness. An Introduction to Health Professionals.
Butterworth-Heinemann, 2000.
Thomas M. Johnson and Carolyn F. Sargent: Medical Anthropology. A Handbook of Theory and Method.
Greenwood Press, 1990.
Byron J. Good: Medicine, Rationality, and Experience. An Anthropological Perspective.
Cambridge University Press, 1994.

Social acceptance of people with disabilities:

DeLisa / Gans / Walsh: Physical Medicine and Rehabilitation. Principles and practice.
4th edition. Lippincott Williams & Wilkins, 2005.
Gutenbrunner C, Ward AB, Chamberlain MA: White Book on Physical and Rehabilitation Medicine in Europe.
UEMS, 2006.
International Classification of Functioning. Disability and Health.
World Health Organisation, Geneva, 2001.

Medical Psychology:

Alan Stoudemire: Human Behavior. An Introduction for Medical Students.
J.B. Lippincott Company, Philadelphia, 1994.
Csabai, M. and Molnar, P.: Health, Illness and Care. A Textbook of Medical Psychology..
Springer, Budapest, 2000.
Edward P. Sarafino: Health Psychology: Biopsychosocial Interactions.
Wiley, 1990.
Márta Csabai and Péter Molnár: Medical Psychology.
Background material. Reprint University of Debrecen, 2008.

Pathology II.:

Kumar-Abbas-Fausto-Mitchell: Basic Pathology.
8th edition. WB Saunders, 2007. ISBN: 1-4160-2973-7.
Zoltán Nemes: Histopathological Practicals.
2005.
Zoltán Nemes: The Technique of Gross

Pathological Description.
1993.

Clinical Physiology:

S.J., Ganong, W.F.: Pathophysiology of Disease. An Introduction to Clinical Medicine.
McGraw Hill, 2005. ISBN: 0-0714-4159-X.
Houghton A.R., Gray D.: Making Sense of the ECG.
Hodder Arnold, 2003. ISBN: 9-780340-80978-5.
Dale Davis: Quick and Accurate 12-Lead ECG Interpretation.
. ISBN: 0-7817-2327-2.
David R. Ferry: Basic Electrocardiography in Ten Days.
. ISBN: 0-07-135292-9.

Medical Microbiology II.:

Levinson, W.: Review of Medical Microbiology and Immunology.
14th edition. McGraw Hill, 2016. ISBN: 0-0718-4574-7.

Internal Medicine II. (Immunology and Rheumatology):

Abbas A. K., Lichtmann A. H., Pober S.: Cellular and Molecular Immunology.
4th edition. W.B. Saunders Co., 2000. ISBN: 0-7216-8233-2.
Merck Manual.
latest edition. Merck Research Laboratories. ISBN: 0-9119-1016-6.
Robert R Rich, et al.: Clinical Immunology (Principles and practice) I..
Mosby, 2008.
Robert R Rich, et al.: Clinical Immunology (Principles and practice) II..
Mosby, 2008.
Buchanan WW., de Ceulaer K., Bálint G.: Clinical examination of the musculoskeletal system.
1st edition. Williams and Wilkins, 1997. ISBN: 0-683-01127-8.
Klippel JH., Dieppe PA.: Practical rheumatology.
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